## LO.a: Explain ethics.

1. Standards of conduct can be *least likely* described as:
   A. a set of principles that define rules for acceptable and forbidden behaviour.
   B. minimal acceptable behaviour expected of members of a community.
   C. a set of principles that define the legal boundaries of a community.

2. Which of the following statements is *most likely* correct?
   A. Ethics can be described as a set of moral principles that provide guidance for our behaviour.
   B. Ethical conduct is behaviour that balances one's own interest with only the direct consequences of the behaviour on others.
   C. Professional associations adopt a code of ethics to protect their own professional community.

## LO.b: Describe the role of a code of ethics in defining a profession.

3. A profession can be *best* described as:
   A. work done to earn a livelihood in the short-term.
   B. a job that requires specialized skills, is based on the service to others and requires adherence to a code of ethics.
   C. a job to which one is well suited.

4. Which one of the following is a *least likely* reason for a profession to establish a code of ethics?
   A. A code of ethics serves as an aid in decision-making.
   B. A code of ethics helps instil confidence among clients and prospective clients.
   C. A code of ethics helps ensure that members of the profession will follow the law.

5. Which one of the following statements *most likely* differentiates clients from customers?
   A. A client's relationship is transactional in nature whereas a customer uses the services of a professional on an ongoing basis.
   B. A customer's relationship is limited to small transactions whereas a client engages in relatively large transactions.
   C. A customer's relationship is transactional in nature whereas a client uses the services of a professional on an ongoing basis.

## LO.c: Identify challenges to ethical behavior.

6. Which of the following is *least likely* a challenge faced by professionals to display ethical behaviour?
   A. People tend to believe they are more ethical than they actually are.
   B. People tend to underestimate their own morality.
   C. People tend to underestimate the impact of situational influences.

7. Which of the following statements is *most likely* correct?
   A. Money and prestige prod people to act in their own self-interests and take actions that are less ethical.

B. Loyalty to employer and colleagues can only have a positive effect on one's ethical behaviour.
C. Processes focused solely on compliance simplify decision making and help the larger cause.

**LO.d: Describe the need for high ethical standards in the investment industry.**

8. Which of the following statements is *least likely* accurate? Trust is particularly important in the investment profession because:
   A. investment professionals have specialized knowledge and access to information is asymmetrical.
   B. products and services in the investment industry tend to be intangible.
   C. returns cannot be guaranteed for most types of investments.

9. Which of the following statements is *most likely* accurate?
   A. Ethical firms are subject to higher costs as compared to less ethical firms.
   B. Investors expect a lower return on their capital when they lose trust.
   C. Lack of trust in financial markets can lower investments consequently harming society.

**LO.e: Distinguish between ethical and legal standards.**

10. Which of the following is *most likely* a good example of ethical conduct?
    A. Make appropriate choices even in the absence of clear laws.
    B. Restrict one's behaviour to what is legally acceptable.
    C. Make sensible decisions that minimize the risks to one's employer only.

11. Which of the following is *least likely* a reason for laws being insufficient to ensure ethical conduct among market participants?
    A. Laws can be interpreted differently.
    B. Laws are largely the same across jurisdictions.
    C. Passing a law takes significant time.

**LO.f: Describe and apply a framework for ethical decision making.**

12. Which of the following statements about ethical decision framework is/are *most likely* accurate?
    - **Statement 1**: An ethical decision framework helps decision makers justify actions to stakeholders.
    - **Statement 2**: Too many choices can at best lead to inaction.
    - **Statement 3:** An ethical decision framework serves as a tool for investment professionals to choose the best possible alternative.

    A. Statement 1 and 3.
    B. Statement 3 only.
    C. Statement 1, 2 and 3.

13. Which of the following parties should an investment professional consider as stakeholders while making decisions in an ethical manner?
    A. Employer and clients only.

B. Clients and market participants only.
C. Employer, clients, family and market participants.

14. Which of the following would be a step in the consideration phase in an ethical decision-making process?
    A. Assess the decision to see if it had the desired outcome.
    B. Seek guidance to navigate through situational influences.
    C. Assess any potential conflicts of interest.

**Solutions**

1. C is correct. Standards of conduct can sometimes be different from what is stated in the law. Statements A and B are accurate descriptions of standards of conduct.

2. A is correct. Statement B is incorrect because ethical conduct is behaviour that balances one's own interest with the direct and indirect consequences of the behaviour on others. Statement C is incorrect.

3. B is correct. A profession is a type of job that 1) requires specialized training and skills, 2) is based on service to others, and 3) is practiced by members who share and adhere to a common code of ethics.

4. C is correct. The code of ethics cannot ensure that members of the profession will follow the law. Statements A and B are true.

5. C is correct. Clients differ from customers. A customer is one who engages in a single or a series of transactions to buy a good or service. The relationship is transactional in nature. A client, on the other hand, uses the services of a professional for his knowledge and skills on the subject on an ongoing basis, for a fee.

6. B is correct. Challenges faced by professionals to display ethical behaviour include: 1) overestimating one's morality and 2) underestimating the effect of situational influences.

7. A is correct. Statement B is incorrect because loyalty can have both positive and negative effects towards one's behaviour. Statement C is incorrect because processes focused solely on compliance oversimplify decision making and that does not necessarily help the larger cause.

8. C is correct. Statement A and B are valid reasons for trust being important in the investment profession. C does not represent a reason for why trust is particularly important in the investment industry.

9. C is correct. Statement A is incorrect because ethical firms enjoy lower costs as they are not subjected to investigations by regulators. Statement B is incorrect because when investors lose trust, they expect higher returns for their capital, which in turn increases the cost for borrowers.

10. A is correct. Statement B is incorrect because ethical conduct requires a professional to go beyond what is legally required. Statement C is incorrect because a professional should minimize the risks of all stakeholders such as the employer, clients, family, and market participants.

11. B is correct. Laws can vary across jurisdictions. This may encourage questionable practice to move to places that are less restrictive in nature. Statements A and C are valid reasons for why the law alone might be insufficient to ensure ethical behaviour.

12. C is correct. All three statements regarding ethical decision frameworks are correct.

13. C is correct. An investment professional should consider the risk to all stakeholders such as employer, clients, family, and market participants while making decisions.

14. B is correct. Statement A is a step once the decision is already made and Statement C is a step in the identification phase of the ethical decision-making process.

**LO.a: Describe the structure of the CFA Institute Professional Conduct Program and the process for the enforcement of the Code and Standards.**

1. Who among the following is responsible for the enforcement of Code and Standards?
   A. The Disciplinary Review Committee.
   B. The Professional Conduct Program.
   C. The Professional Conduct Program in conjunction with the Disciplinary Review Committee.

2. Who is required to comply with the Code and Standards?
   A. Only CFA Institute members.
   B. Anyone working in the investment industry reporting to CFA Institute members.
   C. All CFA Institute members and candidates enrolled in the CFA program.

3. A CFA Institute candidate enrolled for the Level II program has a popular Facebook page under a pseudonym. He posts exam-style questions to his page every day that has taken the number of likes from 50 to over 3,000 in less than four months. After the exam, the candidate expresses his displeasure over the topics that were not tested. As a first step, this act would *most likely* result in:
   A. a professional conduct inquiry.
   B. suspension of the candidate's membership and further participation in the CFA program.
   C. the candidate being referred to a panel composed of DRC members.

4. The Professional Conduct division of the CFA Institute is responsible for enforcing testing policies for:
   A. The CIPM Program only.
   B. The CFA Program only.
   C. The CFA Institute education programs and the CIPM program.

5. Who maintains oversight and responsibility for the Professional Conduct Program?
   A. The Disciplinary Review Committee.
   B. The CFA Institute Board of Governors.
   C. The Disciplinary Review Committee and the CFA Institute Board of Governors.

6. A proctor files a report about a candidate who sat for the Level III exam, who he believes was looking sideways multiple times during the exam and did not stop writing when asked to. A professional conduct inquiry is initiated. What is the course of action the Professional Conduct staff investigating the matter is *most likely* to take as soon as the inquiry is initiated?
   A. Ask the member or candidate for a written explanation.
   B. Impose sanctions on the candidate.
   C. The investigating panel believes the offense is not serious and concludes without asking for a written explanation, and does not impose a disciplinary sanction.

7. Which of the following is *not* the result of a sanction imposed by CFA Institute?
    A. Public censure.
    B. Revocation of the CFA charter.
    C. Termination of employment if the firm claims compliance with the Code and Standards.

**LO.b: State the six components of the Code of Ethics and the seven Standards of Professional Conduct.**

8. According to the CFA Institute Code of Ethics, which one of the following is *incorrect*? Members and Candidates must:
    A. Act with integrity, competence, diligence, and respect and in an ethical manner with the public, clients, prospective clients, employers, employees and other participants in the global capital markets.
    B. Place the integrity of the investment profession and the interests of clients at par with their own interests.
    C. Use reasonable care and exercise independent professional judgment when conducting investment analysis, making investment recommendations, taking investment actions and engaging in other professional activities.

9. According to the CFA Institute Code of Ethics, which of the following statements is *correct*? Members and Candidates must:
    A. Act with honesty, efficiency, thoroughness, and in an ethical manner with the public, clients, prospective clients, employers, employees and other participants in the global capital markets.
    B. Refrain from encouraging others to act in a professional and ethical manner that will reflect credit on the employer and the profession.
    C. Promote the integrity and viability of the global capital markets for the ultimate benefit of society.

10. According to the CFA Institute Code of Ethics, which of the following statements is *least likely* correct? Members and Candidates must:
    A. Place the integrity of the investment profession and the interest of clients above their own personal interests.
    B. Maintain and improve their professional competence and strive to create a competitive environment for other investment professionals.
    C. Use reasonable care and exercise independent professional judgment when conducting investment analysis, making investment recommendations, taking investment actions, and engaging in other professional activities.

11. Which of the following is *not* a Standard of Professional Conduct?
    A. Efficiency of capital markets.
    B. Professionalism.
    C. Duties to clients.

12. Which one among the following is a Standard of Professional Conduct?
    A. Duties to Capital Markets.
    B. Equity Analysis, Recommendations, and Actions.
    C. Conflicts of Interest.

13. Which one among the following is *not* a Standard of Professional Conduct?
    A. Duties to Employers.
    B. Responsibilities as a CFA Institute Member or CFA Candidate.
    C. Communication with Employers.

14. According to the CFA Institute Code of Ethics, which of the following statements is *correct*? Members and Candidates must:

    A. Promote the integrity and efficiency of the global capital markets for the ultimate benefit of society.
    B. Promote the integrity and efficiency of the global capital markets for the ultimate benefit of investors.
    C. Promote the integrity and viability of the global capital markets for the ultimate benefit of society.

15. Promote the integrity and viability of the global capital markets for the ultimate benefit of society. According to the CFA Institute Code of Ethics, which of the following statements is *correct*? Members and Candidates must:

    A. Use independence and exercise discretion when conducting investment analysis, making investment recommendations, taking investment actions, and engaging in other professional activities.
    B. Use reasonable care and exercise independent professional judgment when conducting investment analysis, making investment recommendations, taking investment actions, and engaging in other professional activities.
    C. Use independence and objectivity when conducting investment analysis, making investment recommendations, taking investment actions, and engaging in other professional activities.

**LO.c: Explain the ethical responsibilities required by the Code and Standards, including the sub-sections of each Standard.**

16. The Standards of Practice Handbook is most likely to require a member to disclose which of the following to clients and prospective clients?
    A. Guidelines of CFA Institute Standards of Professional Conduct.
    B. The use of outside advisers to manage various portions of clients' assets.

C. A one-time investment loss that occurred after disclosure of certain risks of investment.

17. According to the Standards of Practice Handbook, which of the following statements about Performance Presentation is least accurate? The Standard related to performance presentation requires members and candidates :
    A. to ensure that the investment performance information is fair, accurate, and complete.
    B. to deal fairly and objectively with all clients when providing investment analysis, making investment recommendations, or taking investment action.
    C. To avoid misrepresenting past performance to clients and prospective clients.

18. According to the Standards of Practice Handbook, members and candidates must outline to clients significant limitations and risks associated with the investment process. The disclosure would least likely include:
    A. the risks associated with the use of complex financial instruments.
    B. any changes that materially affect the investment processes used to analyze investments and select securities.
    C. relevant information on factors important to investment analyses and recommendations in plain language.

19. According to the Standards of Practice Handbook, members are most likely required to disclose to clients their:
    A. ownership of stock in companies they recommend to clients.
    B. information on the Professional Conduct Statement.
    C. the screening steps used to select stocks.

20. According to the Standards of Practice Handbook, a member has to protect the interests of his firm, refraining from any conduct that would deprive it of profit, or his skills and ability. If the member fails, he violates the CFA Institute Standards of Professional Conduct related to:
    A. Duties to Clients.
    B. Loyalty.
    C. Responsibilities of Supervisors.

21. Which of the following statements is most accurate according to the Standards of Practice Handbook? Members and Candidates must:
    A. deal fairly and objectively with all clients when providing investment recommendations, taking investment action, or engaging in other professional activities.
    B. ensure that anyone under their supervision complies only with the Code and Standards.
    C. not accept gifts, benefits or compensation if it creates a conflict with their employer's interest unless they obtain a written consent from all parties involved.

22. A failure to reveal information about a client involved in drug trafficking is most likely a violation of:
    A. Preservation of confidentiality.
    B. Loyalty, prudence and care.
    C. Disclosure of conflicts.

23. Which of the following statements is most accurate according to the Standards of Practice Handbook? Members and Candidates:
    A. who possess nonmaterial nonpublic information that could affect the value of an investment must not act or cause others to act on the information.
    B. who possess material nonpublic information that could affect the value of an investment must not act or cause others to act on the information.
    C. who possess nonmaterial public information that could affect the value of an investment must not act or cause others to act on the information.

24. Which of the following statements is most accurate according to the Standards of Practice Handbook? Members and Candidates:
    A. may engage in practices to boost the liquidity of an illiquid stock.
    B. must not engage in practices to artificially inflate trading volume.
    C. are not prohibited from creating rumor campaigns on blogs and social media outlets with the intent of pumping prices.

25. Which Standard requires members and candidates responsible for managing a portfolio to a specific mandate, strategy, or style, to make investment recommendations or take investment actions that are consistent with the stated objectives and constraints of the portfolio?
    A. Standard III(C) Suitability.
    B. Standard V(A) Diligence and Reasonable Basis.
    C. Standard III(A) Loyalty, Prudence and Care.

26. Which of the following statements is most accurate according to the Standards of Practice Handbook? Members and Candidates:
    A. must keep information about current, former, and prospective clients confidential if it concerns illegal activities on the part of the client or prospective client unless disclosure is required by the law.
    B. must disclose information about current, former, and prospective clients confidential if it concerns illegal activities on the part of the client or prospective client irrespective of whether disclosure is required by the law.
    C. must keep information about current, former, and prospective clients confidential if it concerns illegal activities on the part of the client or prospective client unless clients or prospective clients permit disclosure.

27. Which Standard relates to distinguishing between fact and opinion in the presentation of investment analysis and recommendations?

A. Standard V(C) Record Retention.
B. Standard V(A) Diligence and Reasonable Basis.
C. Standard V(B) Communication with Clients and Prospective Clients.

28. A member gets verbal consent from his employer before accepting a 7-day vacation for him and his family at his client's private villa in southern Spain, including travel in a private jet as it is in a remote location. This was in appreciation for the outstanding performance of his client's portfolio. Did the member violate any Standard?
    A. No.
    B. Yes, Standard IV(A) Loyalty.
    C. Yes, Standard IV(B) Additional Compensation Arrangements.

29. Which Standard requires Members and Candidates to disclose to their employer, clients, and prospective clients, as appropriate, any compensation, consideration, or benefit received from or paid to others for the recommendation of products or services?
    A. Standard VI(C) Referral Fees.
    B. Standard IV(B) Additional Compensation Arrangements.
    C. Standard IV(A) Loyalty.

30. Which Standard requires Members and Candidates to make full and fair disclosure of all matters that could reasonably be expected to impair their independence and objectivity or interfere with respective duties to their clients, prospective clients, and employer?
    A. Standard VI(A) Disclosure of Conflicts.
    B. Standard IV(A) Loyalty.
    C. Standard I(B) Independence and Objectivity.

**Solutions**

1. C is correct. The Professional Conduct Program, in conjunction with the Disciplinary Review Committee, is responsible for the enforcement of the Code and Standards.

2. C is correct. All CFA Institute members and candidates enrolled in the CFA program are required to comply with the Code and Standards.

3. A is correct. A professional conduct inquiry will be initiated.

4. C is correct.

5. B is correct. The CFA Institute Board of Governors maintains oversight and responsibility for the Professional Conduct Program.

6. A is correct. Continuing to write after the final call is an offense taken seriously and it is likely that an investigation will be carried out by the Professional Conduct staff.

7. C is correct. Sanctions include public censure, suspension of membership, use of the CFA designation, and revocation of the CFA charter.

8. B is correct. According to the CFA Code of Ethics: “Place the integrity of the investment profession and the interests of clients above their own personal interests” and not at par with their own interests.

9. C is correct. A is incorrect because the Code of Ethics talks about integrity, competence, diligence, and respect. B is incorrect because members and candidates must not only practice themselves but also encourage others to practice in a professional and ethical manner that will reflect credit on *themselves* and the profession.

10. B is correct. The Code of Ethics does not talk about creating a competitive environment. The focus is on maintaining and improving the professional competency of self and others in the profession.

11. A is correct. It is Integrity of Capital Markets, not Efficiency of Capital Markets.

12. C is correct. B is incorrect because it is Investment Analysis, Recommendations, and Actions. A is incorrect because it is Duties to Clients and Duties to Employers.

13. C is correct. Communication with clients and prospective clients is a substandard under Investment Analysis, Recommendations, and Actions.

14. C is correct. Refer to the Code of Ethics.

15. B is correct. Refer to the Code of Ethics.

16. B is correct. According to Standard V(B) Communication with Clients and Prospective Clients members should inform their clients about the expertise provided by the external advisers.

17. B is correct. Refer to Standard III(D) Performance Presentation.

18. C is correct. Refer to Standard V(B) Communication with Clients and Prospective Clients.

19. A is correct. Refer to Standard VI(A) Disclosure of Conflicts.

20. B is correct. Refer to Standard IV(A) Loyalty.

21. C is correct. A is incorrect because they must deal fairly and objectively with all clients, not just fee-paying clients. B is incorrect they must comply with applicable laws, not just domestic laws.

22. A is correct. Members and Candidates must reveal information when required by the law, or when the client is involved in illegal activities.

23. B is correct. Refer to Standard II(A) Material Nonpublic Information.

24. B is correct. Refer to Standard II(B) Market Manipulation.

25. A is correct. Refer to Standard III(C) Suitability.

26. B is correct. Refer to Standard III(E) Preservation of Confidentiality.

27. C is correct. Refer to Standard V(B) Communication with Clients and Prospective Clients.

28. C is correct. The member failed to obtain written consent and a gift such as is this might potentially create a conflict of interest.

29. A is correct. Refer to Standard VI(C) Referral Fees.

30. A is correct. Refer to Standard VI(A) Disclosure of Conflicts.

**LO.a: Demonstrate the application of the Code of Ethics and Standards of Professional Conduct to situations involving issues of professional integrity.**

1. Cory Griffin, a Level II candidate, works as an investment advisor for Trust Mutual Fund. He specializes in commodities and informs his clients that the energy prices are going to rise due to political turmoil in the Middle East. He informs his broker at Xylan Mercantile to invest long in oil futures for him. Griffin should:
   A. disclose his personal transaction.
   B. manage his personal account separately.
   C. refrain from any personal transaction as long as he is employed by Trust.

2. Klaus Matthias, CFA, works at Meinhard Capital, an investment and brokerage firm where he supervises a team that develops and markets fixed income funds to cater to different high net worth clients internationally. Recently, due to the popularity of Islamic products he has asked his team to develop an Islamic Fund to market to his clients in the Middle East. The team includes three individuals who are all candidates in the CFA Program. After some research, they come up with a product that seems marketable to this specific niche. Before distribution of the fund, Matthias is worried whether the Fund is suitable for all Islamic investors. Matthias should:
   A. not launch the fund because it is not suitable for all Islamic investors.
   B. launch the fund but clearly acknowledge areas where the fund may not be suitable for certain clients.
   C. launch the fund because there will always be differences in cultural and religious laws around the world.

3. Nargis Dilawez, CFA, works as an independent research analyst and also uses various online social media sites to make announcements, recommendations and analysis of various securities. She is a resident of Country S where there is no law against posting of comments and opinions, but since her views are read globally she is worried about regulators in certain countries who impose restrictions and requirements on online communications. According to the Standards, Dilawez should:
   A. continue to post her comments since her resident country does not impose any regulatory restrictions.
   B. discontinue immediately and wait for the restrictions to ease in the nonresident countries.
   C. seek guidance from appropriate, knowledgeable, and reliable sources to diligently follow legal and regulatory trends affecting her professional responsibilities.

4. Wynona Fritz works for Brady Brokerage as a fixed income analyst. She is also registered to take the Level III examination. After analyzing both the qualitative and quantitative aspects of Saber Inc., Fritz concludes that the company is not correctly rated by the credit rating agency and should be downgraded due to the leverage in its capital structure. A senior manager from the investment banking department informs her that Saber Inc. has chosen Brady Brokerage as one of the firms to underwrite and market their new bond issue. Fritz is

concerned that her report will cause the company to terminate their relationship with Brady and affect her employment. According to the Standards, Fritz should:

A. dissociate from the report, the underwriting, and the client.
B. be independent and objective in her analysis based solely on the company's fundamentals.
C. change her recommendation about the credit rating to remove the conflict.

5. Jessica Morales works as an investment adviser for Chris Crosby, a middle-aged, risk averse investor. As per the investment policy statement, Morales invests in low-risk, high-income equities for Crosby keeping in mind his current needs and objectives. Recently Crosby's mother passed away leaving him with a significant inheritance. Morales continues to invest as before without any change in the investment strategy. According to the CFA Institute Standards of Professional Conduct, Morales should:

   A. stay abreast of changes in the client's net worth and accordingly update the investment policy to reflect changes in investment objectives.
   B. consider the long term aspect of Morales' investments and continue with the current strategy.
   C. keep changing the asset allocations in line with market changes.

6. Christie Tania, CFA, works as a fixed income manager for Mastermind Invest Capital. She finds an error in the performance results of one of her accounts as the report is about to be released to the client. The correction of the error will show an underperformance of the account compared to the selected benchmark. The client is not satisfied with Mastermind and had previously indicated that the account will be terminated if it did not meet the requisite returns. According to the CFA Institute Standards, Tania should:

   A. not send the report and wait till account shows an improvement in results.
   B. inform the appropriate individuals that the report needs to be updated before releasing it to the client.
   C. not correct the error and send it.

7. Bernhard Investment and Brokerage Company, has recently changed its stock selection method based on fundamental analysis to technical analysis. After testing it in-house under various scenarios, the new method seems more appropriate to the investments done by Bernhard. Kurt Ludwig, CFA, a portfolio manager with Bernhard feels that his clients will not understand the change and decides not to inform them. The *most appropriate* action Ludwig should take to avoid a violation of the Code and Standards is:

   A. to communicate the change of method to his clients and prospective clients.
   B. to communicate to only those clients who have a previous knowledge of technical analysis.
   C. not to inform of the change because it might lead the clients to challenge the new method of stock selection.

8. Dave Daisuke, CFA, works in the corporate finance department of Advile Securities. He receives a non-cash compensation for every referral he makes to the brokerage department.

This arrangement is an accepted norm within the company but the clients are not informed because no cash is given out within the firm for interdepartmental referrals. According to the CFA Institute Standards, the *most appropriate* action to take for the firm to avoid a violation is to:

A. adjust the non-cash compensation in the salaries of the personnel including Daisuke who are referring clients to the brokerage department.
B. disclose to clients at the time of a referral, the referral arrangements within Advile's departments.
C. stop the referral policy to remove any conflicts of interest.

9. Lauren Crawley is enrolled to take the Level I exam. As he tries hard to remember a formula to complete a question, he notices that the person in front of him gets up to drink water and a piece of paper slips from his pocket and falls on Crawley's table. In order to avoid a violation of the CFA Institute Standards of Professional Conduct, the *least appropriate* action taken by Crawley is to:
   A. remove it without looking at it and call the proctor.
   B. immediately call the proctor to her table and have the paper removed.
   C. look at the paper and then remove it before anyone else notices it.

10. Anna Becker is employed by Jergen Investment Management Company (JIMC). Becker is a Level II candidate and is the only CFA candidate employed by JIMC. Becker is given supervisory responsibilities of the compliance department and asked to review the firm's compliance policies and procedures, which she finds inadequate. She voices her concerns during a meeting with the CEO, who tells her to submit her recommendations in a report but these will not be implemented since the firm is undergoing a change in structure and no compliance changes will be entertained till then. According to the Code and Standards, Becker should:
    A. decline to accept supervisory responsibilities.
    B. accept supervisory responsibilities and lay down the compliance policies and procedures for future.
    C. wait till a new structure is implemented and then review the entire firm.

**LO.b: Distinguish between conduct that conforms to the Code and Standards and conduct that violates the Code and Standards.**

11. Cory Crawford works as a fixed-income portfolio manager focusing on investment grade bonds at Doonesbury Capital. His clients are primarily risk-averse, retired pensioners. Crawford's firm has introduced a bonus system to reward those portfolio managers who achieve a return higher than their respective benchmarks. Crawford, who is also a Level I candidate, purchases certain high-yield bonds in order to increase the return of his portfolio. No change in the objective or strategy has been suggested by Crawford. Crawford has *least likely* violated the Standard related to:
    A. Suitability.
    B. Disclosure of Conflict.

C. Priority of Transactions.

12. Rhonda Gates, CFA, works as a senior analyst covering basic materials and mining industry at Marcel Investments. After a thorough and independent research, Gates concludes that the stock of Riley Mining is overpriced and recommends selling it to take profits. She informs all the department heads of Marcel of her findings. Thomas Toffler, head of trading, after being informed about Riley's stock immediately places a sell order on behalf of the firm and is able to trade aggressively. The next day Gates' report is sent to all clients and the sales force. Toffler *least likely* violated which of the following Standards?
    A. Loyalty, Prudence and Care.
    B. Priority of Transactions.
    C. Fair Dealing.

13. Ratti Sonali, a Level III candidate, works as a trader at Rupali Investments. While working on trades for high net-worth clients, she notices a decline in the portfolio value due to certain investments made by the portfolio manager. She informs her supervisor Ashok Rajan who tells her not to concern herself with the portfolio manager's performance. Sonali then speaks to the compliance officer who tells her that the high net worth client portfolio is successful and the portfolio manager is very competent. The Standard *least likely* violated is:
    A. Loyalty.
    B. Misrepresentation.
    C. Responsibilities of Supervisors.

14. Shehroze Parvan, CFA, manages a balanced fund at McCoy Securities. He recently joined the company after working for ten years at Russell Securities. McCoy hired Parvan because of his proven track record at Russell. The new advertising material that Parvan develops for the clients of McCoy carries his past performance which he achieved at Russell as an endorsement of his knowledge and skills in investing. However, the performance results at the end include a qualifier stating, "These results were achieved by Parvan at Russell Securities." Has Parvan violated any Standard?
    A. Yes, relating to Misconduct.
    B. Yes, relating to Performance Presentation.
    C. No.

15. Ankit Aacharya, CFA, while making the marketing material for his firm Aakash Capital writes in the brochure, "Aakash Capital is committed to achieving excellent performance for its clients. It hires the most eligible personnel in the field of investment management. Most of the employees have either completed the CFA Program or are enrolled as candidates in the CFA Program. As a CFA charterholder, I am the most qualified to manage client investments." Aacharya *most likely* violated the Standard with improper references to the:
    A. CFA Designation.
    B. CFA Program.
    C. CFA Institute.

16. Rasmussen Hadley, CFA, writes in an independent blog about the findings of his research on various companies. He also works as an analyst with Brooklyn Brokers. He has written permission from his employer and appropriate regulator to give his opinion about various securities in his blog. Hadley, however uses the pseudonym Sam Smith, CFA, to hide his identity on the internet. Does Hadley violate the Standards?
    A. No.
    B. Yes, related to reference to CFA Designation.
    C. Yes, related to loyalty.

17. Sylvia Lancaster, a CFA candidate, is hired by Trevor Securities as a junior analyst. James Brokovich is the director of research at Trevor and feels that Lancaster should cover equities in emerging markets because of their rapid growth. Lancaster reads various brokerage reports on the subject and talks to other analysts of the company. Brokovich also arranges for her to meet with an old friend, Bryan Lee, who is on the board of various East Asian companies. Lancaster is then asked to submit a report on the companies in the consumer durables industry of East Asia. Due to shortage of time, Lancaster finalizes her report based on her conversation with Lee and the brokerage reports, and gives her "buy" recommendations on Malaysian stocks from the consumer durables industry. Lancaster does not give reference of the brokerage reports as sources in her report. The Standard *least likely* violated by Lancaster is:
    A. Diligence and Reasonable Basis.
    B. Misrepresentation.
    C. Conflicts of Interest.

18. Greg Vladislav, CFA, works for Anatoli Securities as a portfolio manager. One of his clients Boris Vladmir has left the firm. Vladislav receives a request from a college friend who has recently started his money management firm to share information and records of clients who have left Anatoli recently. Vladislav feels that it will not be inappropriate to send him Vladmir's records. Vladislav has *most likely* violated the Standard of:
    A. Misconduct.
    B. Loyalty.
    C. Preservation of Confidentiality.

19. Lara Whitman, CFA, worked for Rapid Results Brokerage Company (RRBC) as a trader. She recently resigned her position as a trader to join another competing investment and brokerage firm. Whitman did not sign any non-compete agreement while at RRBC that would have prevented her from soliciting former clients. Whitman, however, had saved her client list and records while working at RRBC, in her personal computer at home as a second copy. She accesses this file to contact her former clients in her new job. The Standard *most likely* violated is:
    A. Loyalty.
    B. Duties to Clients.
    C. Communications with Clients and Prospective Clients.

20. Julie Grosky, CFA, works for Harvest Mutual Fund where she manages a fixed income fund. In a hastily compiled performance review, Grosky reports to her clients that her fund has exceeded the benchmark by 0.20%. Stuart Brennan is a client of Harvest, who writes back to inform Grosky that the fund actually underperformed the benchmark. Grosky incorrectly blames the error on a computer program newly implemented at Harvest. Grosky *least likely* violated the Standard relating to:
    A. Misrepresentation.
    B. Misconduct.
    C. Independence and Objectivity.

21. Bryan Lee, CFA, works as a fund manager for Westlink Securities which historically has focused on US equities. Due to his past experience, Lee is also knowledgeable about emerging markets. After discussing the matter with the Chief Investment Officer (CIO) of Westlink, he decides to extend his fund's investment universe to include equities from emerging markets. The firm's marketing and promotional literature is updated to reflect the change in investment strategy. Has Lee violated any Standard?
    A. No.
    B. Yes relating to Communications with Clients and Prospective Clients.
    C. Yes, relating to Professionalism.

22. Siri Shekar, CFA, manages a balanced fund at Starlight Investments. She realizes that the fund's holdings in the stock of GYI Company are excessive, and selling the stock will not be easy since it is thinly traded. Shekar is also a regular participant in various social media sites as well as internet chat rooms where she mentions that the company is going into expansion. The company has not yet announced any expansion plans. Shekar believes that this will build interest in the stock and she will be able to get rid of some of her stock's overweight position. Shekar *least likely* violated the CFA Institute Standards of Professional Conduct related to:
    A. Market Manipulation.
    B. Material Nonpublic Information.
    C. Diligence and Reasonable Basis.

23. Nick Nader, CFA, works as a trader for Trust Investment Bank. During lunch he receives a phone call from a longtime friend Chris Sandler, who is a trader at SYI Securities. Sandler talks about various market rumors and tells Nader about a software company which is going through merger talks with another company in the same industry. Nader has a large purchase order from his portfolio manager for this stock. He searches various internet reports and the software company's website but finds no such news of the merger. Upon returning to his desk he places the order aggressively and completes it by the next day before the company releases any information. Has Nader violated any Standard?
    A. No.
    B. Yes, related to Material Nonpublic Information.
    C. Yes, Independence and Objectivity.

24. Shazi Agnimukha, a CFA candidate, writes in her blog after taking the Level II exam of the CFA program. She posts that the derivatives part of the exam was very easy while the ethics questions were difficult and time consuming. She further writes that a question from ethics was not properly structured and she was confused by the language. Agnimukha further describes a question in the Fixed Income portion in detail and asks if anyone can explain it to her. Agnimukha has *most likely* violated the Standard related to:
    A. Conduct as Participants in the CFA Program.
    B. Conflicts of Interest.
    C. Professionalism.

25. Raul Devgan, CFA, is a portfolio manager for Khadri Investments. He manages a high growth equity fund known as SmartMoney. Devgan reports the performance of SmartMoney in its quarterly newsletter and states, "SmartMoney was able to surpass its benchmark, S&P BSE by 0.20%. However, this type of performance should not be expected from the fund always." Adrik Vanyusha is a client of Devgan and follows the performance of SmartMoney closely. Upon receiving the newsletter, he immediately contacts Devgan and informs him that the fund never exceeded its benchmark but in reality had underperformed. Devgan recalculates the results after the complaint, which confirm Vanyusha's claim. He sends Vanyusha the correct results and blames the discrepancy on typographical error. Devgan *least likely* violates the Standard relating to:
    A. Misconduct.
    B. Misrepresentation.
    C. Independence and Objectivity.

26. Vladmir Seriozha, CFA, is fixed-income analyst at Rasputin Securities and describes the investment strategy of securities in a report to the firm's clients which is based on scenarios of certain declines in interest rates. The report explains the interest rate model which shows the increase in securities' valuations as rates decline. The model does not capture the risks of investment if the rates rise. Seriozha informs all the existing clients about the model in capturing the risks related to investments in case of an increase in interest rates, but all the promotional material for new clients does not carry this disclosure. Seriozha has *most likely* violated the Standard related to:
    A. Communications with Clients and Prospective Clients.
    B. Diligence and Reasonable Basis.
    C. Duties to Clients.

27. Preet Khadri, CFA, works for Eminent Capital as an investment advisor. She meets with a college classmate at a dinner who offers to pay Khadri a compensation for selling the stock of her company Zoratri Inc., to her clients. Khadri does not mention this arrangement to her clients or employer, and sells the shares of Zoratri to her clients where appropriate. Khadri has *least likely* violated the Standard related to:
    A. Suitability.
    B. Conflicts of Interest.
    C. Additional Compensation Arrangement.

28. TriStar Money Management wants to invest in emerging market on behalf of its high-net-worth clients and hires Brent Emory, an independent consultant to solicit proposals from various advisers. Emory after considerable due diligence provides a list of managers based on their successful performance in the emerging market, but promotes Asian Tigers as the most competent. TriStar selects Asian Tigers as the new manager from Emory's list and further reviews the selected new manager to ensure that Asian Tigers is the appropriate investment manager for its clients. During the review, TriStar discovers that Emory was being paid by Asian Tigers to promote their services. Even though Emory was being paid by both parties, TriStar's investigation proves that the recommendation was objective and appropriate. Emory has *least likely* violated the Standard related to:
    A. Referral Fees.
    B. Priority of Transactions.
    C. Additional Compensation Arrangements.

29. Ankit Tivari, CFA, is an investment adviser who works for Best Securities. He has two clients: Raveena Ahisma, a 55 year-old widow with two college going children, and Agneya Adya, a 35-year old, single male working as a journalist for a local newspaper. Both her clients are employed and earn a substantial salary. Adya is very aggressive with his investments and wants to invest in high risk securities for a higher return, whereas Ahisma wants to invest in low risk, large cap securities to achieve a constant income for her children's education. Tivari recommends investing a quarter of their portfolios in derivatives that have a potential to earn high returns despite their volatility. Did Tivari violate any Standard while choosing investments for his clients?
    A. Yes, for both his clients.
    B. Yes, only in Ahisma's case.
    C. Yes, only in Adya's case.

30. Catherine Czcibor, CFA, works as a portfolio manager for a local investment counseling firm. She is also a member of her son's school committee to help raise funding for a program for gifted children in music. Czcibor discusses an arrangement with her supervisor in which she will donate a certain percentage of her fees from clients referred to her by the school staff and parents. She gets a written approval from her firm. The school's board also approves Czcibor's plan and agrees to announce it in their upcoming parent teacher meeting along with sending a newsletter to all the parents and staff. When Czcibor starts getting the school referrals, she clearly discusses the referral arrangement with her new clients and the distribution of her donation to the school. Has Czcibor violated any CFA Institute Standards of Professional Conduct?
    A. Yes, related to conflicts of interest.
    B. Yes, related to additional compensation arrangements.
    C. No.

31. Isaac Dobrogost, a candidate in the CFA Program, works as an investment advisor for Zenith Mutual Fund. He is invited by one of his clients, Sahara Inc. (SI), a manufacturing company,

to meet with the finance director along with a few large stakeholders of SI. In the meeting Dobrogost finds out that the company is going through a lean period and will announce a decrease in earnings in their next quarter financial results. Can Dobrogost use this information to change the rating of the company from "buy" to "sell"?

A. No.
B. Yes, because this information is given directly by the company.
C. Yes because it has been disseminated to the other stakeholders as well.

32. Izzy Zubeika, CFA, works for Topworth Mutual Fund and is a portfolio manager for an aggressive growth equity fund. She is planning to sell a large portion of her investment to meet the medical costs of her ailing husband. Zubeika wants to sell her stake in Royal Beverages, but her firm has recently upgraded the stock from "hold" to "buy". Nevertheless after receiving approval from her employer she informs her broker to conduct the trade. Has Zubeika violated any CFA Institute Standards of Professional Conduct?

A. Yes related to Market Manipulation.
B. Yes, related to Priority of Transactions.
C. No.

33. Su Ming Li, CFA, works as a portfolio manager for Peoples Investment Bank. She is asked to analyze certain East Asian equities by her firm, for the purpose of purchasing them. Li talks to Peter Wang, a friend and one of the owners of Dragon Brokerage and Investment Company. He informs her that the East Asian equities are doing very well due to a boom in their respective economies. After thoroughly investigating these equities, she purchases them for her accounts wherever they are suitable. Soon after she gets a call from Dragon to join the firm as a managing partner. Li accepts the offer and resigns from her current job. The week before joining Dragon, she purchases 1500 shares of East Asian equities for her personal account. Once Li begins working at Dragon, she purchases a large block of shares of East Asian equities and allocates them to accounts. Does Li's purchase of shares for her personal account violate the CFA Institute Standard of Professional Conduct?

A. No, she bought the shares before beginning work at Dragon.
B. Yes, relating to Suitability.
C. Yes, relating to Priority of Transaction.

34. Kaori Kazuya and Albert Farnsworth are both candidates in the CFA Program. Kazuya is registered for the Level II exam and Farnsworth has passed the Level III exam of the CFA program. Farnsworth is awaiting his CFA charter. Kazuya works for Metro Investments and her business cards reads, "Kaori Kazuya, CFA Level II candidate" whereas Farnsworth works as an analyst at Sarosky Wealth Management and does not put any CFA designation on his business cards. But at the end of his reports, he does give a reference that, "Albert Farnsworth has passed all three levels of the CFA Program and will be eligible for the CFA charter upon completion of the required work experience." Who *most likely* violated the Standards?

A. Both.
B. Kazuya has violated the Standards, but not Farnsworth.

C. only Farnsworth violated the Standards.

35. Kayla Donovan, CFA, works as a portfolio manager for MacBrady Securities & Co. Some of her wealthy and large clients hold long positions on Swift Delivery, which is a courier service. After analyzing her own company's research reports and information available on various internet sites about Swift, as well as Swift's company website she concludes that the stock is expected to rise sharply on the back of strong quarter-end earnings about to be released in an earnings report in a few days. She informs all MacBrady's clients since some of them will be at a distinct advantage once the quarter-end earnings are reported. Donovan also runs a popular blog as an independent analyst for which she has approval from her employer, where she mentions her predictions about various stocks including observations about Swift's stock. She discloses to her clients about her blog which they regularly visit. Has Donovan violated any CFA Institute Standards of Professional Conduct?
    A. Yes, relating to Market Manipulation.
    B. Yes, relating to Priority of Transactions.
    C. No.

36. Roza Hernandez is a trust officer for Rize Trust Co. Hernandez uses Ricardo Drez, a broker, for trust account brokerage transactions. He gives Hernandez a lower price for her personal purchases than Hernandez's trust accounts. Hernandez is *most likely* violating the Standard related to:
    A. Duty of loyalty to clients.
    B. Fair dealing.
    C. Suitability.

37. Robert Blake is on the board of directors of Rice Industries and receives free tickets at the end of each quarter for his entire family to travel to any city of their choice in Europe for his services to the board. Blake does not disclose this information to his employer since it is not a monetary compensation. Has Blake violated any CFA Institute Standards of Professional Conduct?
    A. No.
    B. Yes, he has to inform his employer of the benefit he receives.
    C. Yes, because he has bought stock of Rice for some of his clients where appropriate.

38. A group of CFA charterholders under the name Research CFA, present online research on several popular stocks. Barry Marlow, a candidate in the CFA program, is an analyst at Drew Hedge Fund. He is under pressure by his firm executives to present his research report and recommendations on certain stocks. Marlow reads the research report by Research CFA and uses material in his report discussed in the online research. The *least likely* violation under the CFA Institute Standards of Professional Conduct is:
    A. Reference to CFA Institute, CFA Designation, and the CFA Program.
    B. Diligence and Reasonable Basis.
    C. Disclosure of Conflicts.

39. Sara Petrowski, a CFA candidate, works as an analyst at Topline Brokers. She reads in the Financial Times a study on the financial markets issued by Ace Research. She uses material from the study in her research report and gives recommendations to her clients. Petrowski does not cite the newspaper as a source since it is merely a conduit of the original information. Has Petrowski violated the CFA Institute Standards of Professional Conduct?
    A. Yes, she has misrepresented the information.
    B. No, the newspaper is not the original source.
    C. Yes, duty to her clients.

40. Janis David is the head of the research department at BAW, Inc. a brokerage firm. She has decided to change her recommendation of the Cooper & Ginto Mines from sell to buy. She informs the other executives of the firm orally before a report is prepared and sent to all customers. David's actions are in line with the firm policy. Roger Little, one of the junior analysts at BAW immediately buys Cooper & Ginto stock for himself and some of his clients for whom it is appropriate. David has *most likely* violated the CFA Institute Standards of Professional Conduct related to:
    A. Responsibilities of Supervisors.
    B. Additional Compensation Arrangements.
    C. Loyalty.

41. Syed Ali works for an investment bank and is involved in the underwriting of Apex Inc. The chief accountant of Apex informs Ali that the information in the financial statements filed with the regulator by Ali overstate sales and understate expenses. Ali seeks the advice of the legal counsel of the firm who states that it will be difficult for the regulator to prove that Ali was involved in any wrongdoing. Ali has *least likely* violated the CFA Institute Standards of Professional Conduct related to:
    A. Misrepresentation.
    B. Misconduct.
    C. Fair Dealing.

42. Hari Ram and his few colleagues are planning to leave Greysons Inc., a local investment bank, to form their private consultancy. Ram has found out that one of his clients has undertaken a request for proposal to hire a new investment adviser. The RFP has been sent to Greysons and all of its competitors but its submission period will end before Ram's and his colleagues' resignations become effective. Nevertheless, Ram and the departing colleagues decide to respond to the client's request. They have *most likely* violated the CFA Institute Standards of Professional Conduct relating to:
    A. Loyalty.
    B. Conflict of Interest.
    C. Duties to Clients.

43. Richard Swanson is an analyst covering the oil industry in Azwitz Securities. He, along with other analysts, has just visited Prell Refineries, an exploration and production company, and concluded based on his own assessment and calculation of the drilling on site, that the

company has abundant oil reserves. This view is not shared by the other analysts who visited the site. Swanson writes in his research report that Prell is in fact sitting on vast oil reserves and makes a buy recommendation. Has Swanson violated any of the CFA Institute Standards of Professional Conduct?

A. No.
B. Yes, Communication with Client and Prospective Clients.
C. Yes, Diligence and Reasonable Basis.

44. Romana Zahoor works for a local brokerage firm and is a CFA candidate. She plans to issue a buy recommendation for the stock of Basics. Before issuing the recommendation, she buys the stock for herself through her sister's account. Zahoor *most likely* violates the Standard of:

A. Priority of Transactions.
B. Fair Dealing.
C. Suitability.

45. Eileen Connors is a chief trader for Ascot Investments, a money management firm. She has been told recently by her most lucrative client Shelby Company that if the performance of its accounts did not improve they will be forced to change their money managers. Connors has purchased certain securities a few days back, whose price has gone up significantly. She has failed to allocate these trades due to her busy schedule. After the threat from Shelby, she decides to allocate the profitable trades to Shelby's account, while spreading the losing trades to other Ascot's accounts. Has Connors violated any Standard?

A. Yes, related to Fair Dealing.
B. No.
C. Yes, related to Diligence and Reasonable Basis.

46. Penelope Cox is employed by Jameason Investment, and provides investment advice to the trustees of SYU University in order to recommend investments that would generate capital appreciation in endowment funds. Cox has been given internal reports by the trustees that highlight the expansion of the university. Cox is approached by Bradley Cooper, a local philanthropist who is considering a generous contribution to SYU and another university in the area, but he would like to see the expansion plans of SYU before making the donation. Cox knows that he does not want to speak to the trustees hence she gives a copy of the internal report to Cooper. Has Cox violated the Code and Standards?

A. No.
B. Yes, preservation of confidentiality.
C. Yes, loyalty.

47. Carla Simone, a CFA candidate and a research analyst, follows firms in the beverage industry. She has been recommending the purchase of Citrus, because of its introduction of a popular new drink for athletes and exercise enthusiasts. Simone's husband has inherited from a relative, the stock of Citrus worth $3.5 million. Simone has been asked to write a follow up report on Citrus. She writes the report and gives a strong buy recommendation. The report

does not mention her husband's ownership of the stock. Has Simone violated the CFA Institute Standards?

A. No.
B. Yes, disclosure of conflicts.
C. Yes, independence and objectivity.

48. Babar Ahmed is a trader at Cooper & Baines, a local brokerage firm. He trades frequently in the stock of Zelle, despite the fact that Zelle is not on the recommended list of securities of Cooper. Ann Miller is the supervisor and compliance officer of Ahmad. Part of her compensation is based on the trading revenues of Cooper. She notices the large volume of trade of Zelle, but does not investigate it. Has Miller violated the CFA Institute Standards?

A. Yes, conflict of interests.
B. No.
C. Yes, responsibilities of supervisors.

49. XYZ, an investment firm, manages pension plans of various large companies. XYZ mainly uses Greatson, Inc. for most of its trading activity. This is because the CEOs of the two companies are close friends. Greatson is more expensive than the other brokerage firms offering the same brokerage services. Its research and execution are average compared to the other brokerage firms. But Greatson absorbs XYZ's rent in exchange for the brokerage business given to it by XYZ. Has XYZ violated any CFA Institute Standards of Professional Conduct?

A. Yes, relating to loyalty, prudence, and care.
B. No.
C. Yes, relating to misconduct.

50. Tracy Chapman works as a proctor for the administration of the CFA examination in her city. She reviews a copy of the Level III exam on the evening prior to the exam and discloses information to two candidates who use it to prepare for the exam. Chapman and the two candidates have *least likely* violated the CFA Institute Standards of Professional Conduct, related to:

A. Conduct that compromises the integrity, validity or security of CFA Institute programs.
B. Suitability.
C. Attempt to circumvent security measures established by the CFA Institute.

51. Christina Lucci, a CFA candidate, who is a portfolio manager of a growth mutual fund, maintains an account in her sister's name at several brokerage firms with which her fund's clients also do business. Whenever an eagerly awaited equity IPO is announced, she instructs the brokers to buy it for her sister's account. Because such issues are scarce, her clients are unable to receive any new shares. Lucci *most likely* violates the CFA Institute Standards of Professional Conduct related to:

A. Priority of Transactions.
B. Disclosure of Conflicts.

C. Additional Compensation Arrangements.

52. Stefan Ericsson, a CFA candidate is an analyst working for publicly traded companies to electronically promote their stocks. He has also set up a website to market his research capabilities as an independent analyst. Ericsson posts a buy recommendation on his website for each company that he has a contractual relationship with and fails to disclose this in the research reports he issues or statements in the internet chat rooms. Ericsson *least likely* violated the CFA Institute Standards of Professional Conduct related to:
    A. Misrepresentation.
    B. Disclosure of Conflicts.
    C. Fair Dealing.

53. Brendon Frazer, a CFA candidate, is an analyst with ITI, an investment and brokerage company. ITI requires him to give a recommendation and research report every month on a different company. He is also enrolled in a university where he takes night classes to earn an MBA. Frazer has informed his employer of his enrollment in the university. Due to excessive workload he finds it difficult to complete his research report on a technology company as the deadline comes nearer. In order to save time he develops his report based on a few articles he read recently about the company and gives his 'buy' recommendation. Frazer gives the reference of the articles in his report. Is Frazer's report and recommendation in compliance with the CFA Institute Standards of Practice?
    A. No.
    B. Yes, because he gives reference of the articles.
    C. Yes, because the technology company is suitable for some clients of ITI.

54. Nancy Keene recently left Kay Investments to join another competing firm. She left her former employer after 10 years without any non-compete agreement, and did not solicit any of her clients during the transition period. After joining the new firm, she wants to contact her former clients because she developed close ties with them after earning strong returns for their portfolios. Keene knows that many will follow her to the new employer. Is Keene in violation of CFA Institute Standards of Professional Conduct?
    A. Yes, because she cannot contact her former clients.
    B. No, because she does not use any material from her former employer.
    C. Yes, because of loyalty to her former employer.

55. Phillip Cochran, a CFA charterholder, is a portfolio analyst with Frazier Trust, and manages the portfolio of Dennis Quad. Although Cochran receives a salary from his employer, Quad tells him that "any year my portfolio exceeds a rate of return of 16% before tax; you can fly to Paris at my expense and use my apartment for a week". Cochran fails to inform his employer of the arrangement and his vacation in Paris the following year. Cochran *most likely* violated the CFA Institute Standards of Professional Conduct related to:
    A. Additional Compensation Arrangement.
    B. Suitability.
    C. Independence and Objectivity.

56. Selma Hyek, a senior executive of Avery Capital, issues a performance report for the accounts that showed capital appreciation for the years 1990 to 2006. Avery Capital claims compliance with GIPS standards. Returns are not calculated in accordance with the GIPS standards, because the composites are not asset weighted. Hyek *most likely* violates the CFA Institute Standards of Professional Conduct relating to:
    A. Performance Presentation.
    B. Integrity of Capital Markets.
    C. Record Retention.

57. Steve Tylor, a CFA candidate and a technology analyst with Rock Brokers, is invited by SuperTech to participate in a technology conference at SuperTech's expense. SuperTech has also invited a few other analysts from different companies to the same conference. It arranges and pays for Tylor's airfare and accommodation for two nights. The trip is strictly for business purposes and Tylor is not offered any lavish hospitality by SuperTech. Tylor informs his employer of the arrangement and is given permission to attend the conference. By accepting this invitation, has Tylor violated the CFA Institute Standards of Professional Conduct?
    A. No.
    B. Yes, because it creates a conflict of interest.
    C. Yes, because it compromises Tylor's independence and objectivity.

58. Steve Miller is enrolled as a candidate in the CFA Program. He works as an assistant manager in Trust Investment Bank. He enjoys drinking liquor during his lunch break. Miller's colleagues have noticed that he is visibly intoxicated after the lunch break and is not in a position to make rational investment decisions. Miller *most likely* violates the Standard of:
    A. Misconduct.
    B. Knowledge of the Law.
    C. Disclosure of Conflicts.

59. Franz Beckenbaur, CFA, is a trader for Lee Inc., an investment and brokerage firm. He receives compensation for referrals from the firm's portfolio and financial planning division. He usually refers clients from his previous employer and does not have a non-compete arrangement with them. Beckenbaur uses his own personal material to contact them and informs them duly of the referral arrangement. Has Beckenbaur violated any Standard?
    A. No, because he discloses to his former clients the referral arrangement.
    B. Yes, because he has a duty of loyalty to his clients.
    C. Yes, because of a breach of loyalty to his former employer

60. Penelope Gonzales is employed as a part-time analyst with Cooper Associates, an institutional asset manager. She is paid a flat fee to complete a study of the technology industry within a certain time span. She is also given unlimited access to Cooper's files and data. Gonzales can use the office facilities of Cooper during normal working hours. Towards

the conclusion of her report, she is offered a job at Noblex, which is an IT firm. Gonzales submits a copy of her report along with recommendations to her new employer. Has Gonzales violated any Standard?

A. No.
B. Yes, loyalty.
C. Yes, misrepresentation.

61. Leila Salman works for a firm that advertises its past performance in various periodicals. Salman discovers that some accounts have left the firm recently and the returns of these accounts are not included in the promotional material. The omission has led to inflated performance returns. Salman is asked to use the same material while soliciting clients. By doing so, Salman will *least likely* be violating the CFA Institute Standard of:

    A. Knowledge of the Law.
    B. Misrepresentation.
    C. Performance Presentation.

62. Janice McDowell, CFA, is the chief investment officer of Zenith Investment Bank and wants to improve the diversification of one of its balanced funds in order to improve its returns. The investment policy statement of the fund mentions low risk investments in large-cap equities, government bonds of AA ratings and corporate bonds of high investment grade ratings. However, a new IPO offering of a small pharmaceutical company but with high growth potential, promises high returns since the issue is being offered at a discount. He immediately allocates some portion of the issue to his fund, without exceeding the limit on the equity exposure of this fund. McDowell has *least likely* violated the CFA Institute Standards of Professional Conduct relating to:

    A. Loyalty, prudence and care.
    B. Suitability.
    C. Fair dealing.

63. Alan Clay, candidate in the CFA Program, works for a large money manager. He recently applied for an analyst position at Rodham & Winston, an investment bank and was hired by them. Before leaving his current employer, he copies the firm's software that he developed, which he believes is his property. Clay feels that his software is one of a kind and will help him in his new job. Has Clay violated any Standard?

    A. No, the software was developed exclusively by him.
    B. Yes, with respect to loyalty.
    C. Yes, because he failed to inform his new employer that the model was developed for his previous employer.

64. Avi Sharon is an analyst for Ariel Investment Management. He recommends the purchase of ABC company's stock after conducting due diligence on the company and has published a research report that is well accepted by the company's management. The business managers of ABC invite him for further discussions. They sponsor his air ticket and accommodations at an expensive hotel. Sharon, as per the policy of Ariel, discusses the travel and stay

arrangements with his employer and is given permission. He further meets with the CFO in a dinner arranged by ABC and gives full disclosure to his employer upon his return. According to the Standards of Practice Handbook, has Sharon violated any CFA Institute Standard?

A. Yes, with respect to Disclosure of Conflicts.
B. Yes, with respect to Additional Compensation Arrangements.
C. No.

65. Zion mutual fund advertises in its marketing brochures that all the fund managers at Zion are CFA charterholders, and hence achieve better performance results. Which CFA Institute Standard of Professional Conduct is *most likely* violated?

A. Reference to CFA Institute, CFA Designation, and the CFA Program.
B. Professional misconduct.
C. Misrepresentation.

66. Ann Haley posts on her Twitter account that her Level III of the CFA exam went very well. She further adds that although the exam was difficult and very tiring she still managed to do fairly well by effectively managing time. Has Haley violated any Standard?

A. No.
B. Yes, with respect to her conduct as participant in the CFA Program.
C. Yes, with respect to reference to the CFA Program.

67. Signa is a local wealth management firm that mostly employs either CFA charterholders or candidates in the CFA Program as its employees. Hence it uses the name Signa, Chartered Financial Analysts, Inc. as the firm's name. Which Standard did Signa *most likely* violate?

A. Reference to the CFA Designation.
B. Misrepresentation.
C. Knowledge of the Law.

68. Shiraz Ahmed is a trader at an investment management firm. He is also involved in the buy-side trades of an aggressive equity fund managed by the firm. During a recent decline in the market many securities of the aggressive equity fund show a marked decline in value, but the performance of the fund does not show a change in return. Ahmed at once mentions it to his supervisor and the compliance officer, who tell him that the fund is doing well and he should concentrate on his job at the trading desk instead of asking irrelevant questions. The CFA Institute Standard that is *least likely* violated is:

A. Professional Misconduct.
B. Responsibilities of Supervisors.
C. Material Nonpublic Information.

69. Chang Li is head of sales at an investment bank. Li while reviewing the marketing material of the bank realizes that some of the information contained there-in is out of date. The marketing material is generated from the results provided by the bank's mutual funds and Li has no control over it. He continues to provide the material to his sales team without updates. Did Li violate any Standard?

A. Yes, with respect to misrepresentation.
B. No, because he has no control over the marketing material.
C. Yes, with respect to disclosure of conflicts.

70. Greg Lou has been asked by his firm, Binkley Investment Management, to find an adviser for one of its funds which invests in derivatives and complex securities. Lou selects 12 firms based on their annual total return performance and finalizes on the adviser with the highest annual total return. Which CFA Institute Standards of Professional Conduct did Lou violate?
    A. Communications with Clients and Prospective Clients.
    B. Professional Misconduct.
    C. Diligence and Reasonable Basis.

71. Samina Haq a CFA candidate, works for Superior Trust Company. While reviewing the performance of one of the trust funds, she finds out that the trust fund has on an average performed at 5% for the last three years yet the brochure of her fund advertises an annual compound growth rate of 20%, which happened only in the past year. It also boasts of a consistent increment in the investment value above the entire market which also took place during last year. Haq's *highest* priority in avoiding a violation of the CFA Institute Standards of Professional Conduct is to:
    A. correct the performance calculation and length of time.
    B. continue with the advertisement since it did rise above the market.
    C. use the firm's average rate of return in her marketing material for all accounts.

72. Weinberg Inc., a global asset management company, has a large position in Wessner Pharma. The trading volume of this stock is low. In order to boost the liquidity of the stock, multiple trading desks at Weinburg start buying and selling Wessner shares from each other. The CFA Institute Standard *most likely* violated by Weinberg is:
    A. Market Manipulation.
    B. Misconduct.
    C. Acting on Non Public Information.

73. Norman Bates, CFA works as an analyst for Angle Investments. She has been asked to cover investments in the Asian markets for their high rate of return. The trip is sponsored by Sia, an investment and brokerage firm. Bates knows that Sia charges commission at a higher rate than the other brokerage facilities used by her firm. Nevertheless she convinces the trading desk at Angle to give more business to Sia so she can take the trip. Bates is *most likely* violating the CFA Institute Standard of Professional Conduct related to:
    A. Diligence and Reasonable Basis.
    B. Loyalty, Prudence, and Care.
    C. Additional Compensation Arrangements.

74. Mary Burnette supervises a team of research analysts at Brigham Money Managers. One of her team member Siri Desai, an auto analyst, follows various websites and blogs for research purposes on the auto industry. Desai while browsing through the internet comes across a

report by an independent research analyst on the hybrid car introduced by Koyota Motor Company. Based on that report she gives a recommendation of 'buy' in her research report without giving reference of her source. Burnette is under a deadline by her firm to compile the reports and to implement the recommendations. She does not review Desai's work and sets up a meeting with the portfolio managers to discuss the execution strategy based on the research reports submitted by her team. Burnette *least likely* violated the CFA Institute Standard of:

A. Responsibilities of Supervisors.
B. Diligence and Reasonable Basis.
C. Disclosure of Conflicts.

75. Raza Jaffery works as an independent analyst for the medical equipment industry. His reports are based on an analysis of customer interviews, manufacturers, on-site company visits, and secondary research from other analysts. Jaffery does not maintain any records or files for the information he collects but he mentions the source of his research in his reports. If the clients need information on the specific web sites, Jaffery always provides them with the relevant information. Jaffery *most likely* violated which of the following Standards?

A. Record Retention.
B. Diligence and Reasonable Basis.
C. Misrepresentation.

76. Cora Bentley works for an investment counseling firm. She is approached by a new client Sue Grey for financial advice. Bentley very enthusiastically explains to her how she can increase her return by investing in a few small-cap stocks that are selling at a discount in the market. Has Bentley committed a violation of the CFA Institute Standards?

A. No.
B. Yes, Bentley should have explained her qualifications, her education, and experience and the meaning of her CFA Designation.
C. Yes, Bentley should have determined Grey's needs, objectives, tolerance and risk before making any recommendations.

77. Robert Brown is an analyst at Lazarus Investment Bank, which is one of the underwriters of Coolidge Inc. Brown discovers that the company has not given accurate earnings figures. The actual figures are much lower than the numbers presented. The preliminary prospectus has been distributed. Brown talks to his supervisor, who casually dismisses the matter. Brown requests his manager to assign him to another project. His action most likely conforms to which Standard?

A. Knowledge of the Law.
B. Misrepresentation.
C. Difference between fact and opinion.

78. An independent analyst recommends a stock based on a 5-minute pre-market talk show by a reputed analyst, on the TV that morning. The recommendation is *least likely* a violation of:

A. Diligence and reasonable basis.

B. Suitability.
C. Fair dealing.

**LO.c: Recommend practices and procedures designed to prevent violations of the Code of Ethics and Standards of Professional Conduct.**

79. Martin Bart, CFA, is working as a portfolio manager at a large global investment manager. Most of her clients are residents of a conservative country called Inara, where the new government has introduced a new law barring equity holdings in tobacco companies. Bart's clients have significant exposure to tobacco companies through international funds in their portfolio because of the handsome returns they have earned in the past. Three months have passed, Bart is unaware of the change in law and takes no action. According to the Standards, his inaction is:
    A. is a violation of the Standards as members should stay informed of the changes in applicable laws.
    B. not a violation of the Standards since the exposure is through international funds and not domestic tobacco companies.
    C. not a violation since it is a recommended procedure and a member cannot be expected to keep track of the laws of all the countries his clients are from.

80. BU Airlines has taken INR 1.1 billion of debt and is unable to service it. The stock prices have been falling and some investors are accumulating the stock in the hope it will rise soon. Most investors are unaware of the health of the loss-making airline. The research team at Emitus Investment Management, covers the stock and wants to publish an adverse opinion on the stock. The firm's policy does not permit dissemination of a negative opinion about a client, as it was the underwriter when BU went public two years ago. The *best* course of action is:
    A. defy the firm's orders and issue an adverse opinion as loyalty to clients takes precedence.
    B. to put BU on a restricted list.
    C. issue a favorable report for now as the airline industry is volatile and the company may turn around.

81. Lunu Mbasa is an independent analyst who writes a popular financial blog on stock selection. He is hired by an investor relations firm to publish a research report on FKart, an online lifestyle firm, on his blog. Mbasa will be paid a fixed fee plus a monthly voucher that can be redeemed on the site if any investor buys the stock based on his report. There is no disclaimer about the arrangement in his blog post. This arrangement is *least likely* a violation of:
    A. Disclosure of conflicts.
    B. Independence and Objectivity.
    C. Suitability.

82. Pratik Mathew, a candidate registered for the Level II exam copies important concepts ad formulas from difficult topics such as Economics, Quantitative Methods and Derivatives daily from the CFA Institute curriculum and posts them on his Facebook page. He had paid for the online version of the curriculum. He does not attribute the source of his post. Mathew is *most likely* in violation of:
    A. Misrepresentation.
    B. Misconduct.
    C. Responsibilities as a CFA Institute Member or CFA Candidate.

83. Inventure Advisors hires ten research analysts at the entry level from a reputed management school. One of the recruits, Smith, has served a three-day jail term for drug abuse, while still in school, that was not disclosed at the time of recruitment. He has since reformed after being to a rehabilitation center. However, Smith had provided references, who would have acknowledged this incident if the firm had done the background check. Who is most likely in violation of Standard I(V) Misconduct?
    A. Smith, for not revealing the offence at the time of recruitment.
    B. The firm for not conducting the background check.
    C. Both Smith and the firm.

84. Sanjay Babu is a research analyst at Waterhouse Investment Management firm. He covers Sat Corp, a technology services firm. Babu, during a visit to the firm to interview the business heads about future growth prospects, overhears a conversation between the CFO and VP-HR in the adjoining room, that the market regulator of India is privately interrogating the CEO's involvement in an insider trading case of Sat Corp. What is the *best* course of action for Babu to take?
    A. Issue a sell recommendation as the stock will fall once the information is public.
    B. Encourage Sat Corp. to make the information public.
    C. Communicate the information to his research team members so that they do not make any investment recommendation on the firm.

85. The Food Safety and Standards Authority of India (FSSAI) was investigating the presence of dangerous substances in a popular baby cereal, manufactured by Selet Limited. Selet is a publicly listed company with operations around the world. The tests concluded the presence of harmful chemicals above permissible limits which may result in product recalls and a temporary ban on production. The results of the test have not made public yet. Tara, a lead scientist at one of Selet's labs, confides the results to Raul, a research analyst who covers Selet and manages Tara's portfolio. She asks him to sell her holdings in Selet. If Raul acts on Tara's information only for her portfolio, he would *most likely* violate which of the following Standards?
    A. Fair Dealing.
    B. Material Nonpublic Information.
    C. Market Manipulation.

86. Alex Karachanis, CFA, is an independent financial advisor with a roster of over 100 clients. Along with advisory services, he also facilitates in executing the trades for his clients and manages their portfolio. Adonia Papadakis signed up Alex in November 2013 to advise and manage her portfolio. After detailed discussions on Adonia's circumstances and return requirements, it was agreed that only large cap equity investments will be made. In mid-2013 Alex felt that large cap stocks were excessively overvalued and shifted 50% of the portfolio to small-cap stocks. Over the next six months, small-cap stocks significantly outperformed large cap stocks. It is now January 2014 and Adonia has just received her account statement for 2013. She is very happy with the performance of her portfolio. Which standard did Alex least likely violate?
    A. Performance presentation.
    B. Communication with clients and prospective clients.
    C. Loyalty, prudence and care.

87. Riya, CFA, a portfolio manager has two high net worth clients: Rita and Anita. The two clients are sisters and except a few asset classes, their portfolio holdings are the same. The sisters have received $200,000 each in inheritance. Both, Rita and Anita, have expressed interest in taking exposure to risky international equities, especially China. Anita also plans to buy a new house in the next 3-4 months and needs to make a down payment of $450,000. Riya is aware of Anita's plans and her need for liquidity if she has to make the down payment. Riya, in the meantime, after thorough research identifies a fund that has the potential to earn good returns in the next three years, and disseminates the recommendation to Rita for investing the surplus funds. Has Riya violated any Standard by discriminating against Anita and not recommending the fund?
    A. Yes, Standard III (B) Fair Dealing.
    B. No.
    C. Standard III (C) Suitability.

88. Roland Andrade manages a small-cap, growth fund called Equity Opportunity Series – Growth. He purchases stock of the country's largest dividend paying company because it has weathered recent volatility in the markets, and will bring stability to the fund. In terms of percentage of assets in the fund, the stock now has the highest holding in the fund. Which Standard did Andrade *most likely* violate?
    A. Suitability.
    B. Diligence and Reasonable Basis.
    C. Loyalty, Prudence, and Care.

89. Alba Parker, CFA, is working on a presentation to present to prospective clients. She showcases the return for the past seven years of a composite of the firm's discretionary accounts whose objective is to invest in European growth companies. Parker includes the returns of terminated accounts as the returns are impressive. She includes a note that the returns of terminated accounts have also been included. Is Parker in compliance with Standard III (D) Performance Presentation and GIPS Standards?
    A. No.

B. Yes, in compliance with Standard III (D) Performance Presentation, but not with GIPS.
C. Yes.

90. Ind Bank has recently started advisory services at its new branch in Nhasi. The affluent neighborhood houses many residential apartments of high net worth individuals. To promote its services, the bank conducts a marketing drive in each apartment complex and has signed up many clients in the last one month. Ent Nes, an advisor at the bank, is meeting with a new client at the latter's home. The client is inquisitive and wants to know if anyone from the community are Nes' clients and if they have made any private equity (PE) investments. Nes boasts of the business he has garnered in the past month and says a few people have recently made PE investments, but does not reveal the names. Has Nes violated any Standards?
    A. No.
    B. Loyalty.
    C. Preservation of Confidentiality.

91. Vishal Kachru, CFA, works as a research analyst with HDC Investments. He is passionate about teaching; on Saturdays, he gives lectures on leadership and brand building for three hours at a management school nearby. He is compensated well for this activity as an independent lecturer. Kachru ensures that he schedules this class only when he is not required at work. Did Kachru violate any Standard?
    A. Yes, Standard IV (A) Loyalty by not informing his employer of this engagement and compensation.
    B. No, because it does not affect the responsibilities to his employer.
    C. Yes, Standard VI (C) Disclosure of Conflicts.

92. Andrea Whistler, CFA is a research analyst at Awesome Investments. Among the list of stocks she covers is home e-tailer Fabnish, which was issued a buy recommendation recently. Whistler is also a passionate home décor blogger in her spare time. To promote their newly launched home décor section, Fabnish has approached Whistler to do an objective post on home improvement using the products on their site. She will be compensated through vouchers for this activity that can be redeemed on the site. Whistler does not inform her employer of this activity as it does not interfere with her work commitments. Did any violation take place?
    A. Yes, she should have informed her employer of the additional compensation.
    B. No, because there was no conflict of interest.
    C. No, because she was loyal to her employer.

93. Aidan Ackermann, CFA, is recently hired as a banking analyst at Becker Investments. One of the mandates given by his supervisor Abigail Wohlers, is to improve the online presence of Becker among social media platforms. Ackermann posts regularly on the company's Facebook page and Twitter on the various services offered by Becker as well as snippets of the companies on his research list. He shares his buy/sell/hold recommendation in a brief

manner on Twitter before the report is released to all clients. Did Wohlers violate any Standard?

A. Fair Dealing.
B. Responsibilities of Supervisors.
C. Preservation of Confidentiality.

94. Dan Belkin works for Benedict Advisors. The firm advises and manages the portfolio of clients with various mandates. To cater to the increasing number of requests for diversification by including international equities, Belkin has been assigned the task of selecting a sub-adviser who specializes in this area. The selection must be made within the next six weeks. Belkin shortlists ten names from a database of fund managers who focus on this region. He eliminates those with a high expense ratio and a high turnover rate, and narrows the list to five. Due to shortage of time, Belkin has a brief interaction with each of the five fund managers to understand how they calculate returns, and does not go into their stock selection or due diligence process. He chooses the one with highest total returns in the past two years. In seleting the manager with highest returns, Belkin is *most likely* in violation of:

A. Diligence and reasonable basis.
B. Independence and Objectivity.
C. Loyalty to employer.

95. Ashwin Kaushal, CFA develops a stock screener model using several parameters, while he is employed at Reliable Investments Inc. He documents the assumptions made regarding the model and the reasoning behind using parameters such as shareholding pattern, performance of the stock relative to index, and comparing it with peers. The success of the model lands him a job as the head of research at Trust Advisors. Kaushal takes all the documents related to the model developed by him. Did Kaushal violate any Standards?

A. Yes, Conflicts of Interest.
B. Yes, Record Retention.
C. No, there was no violation.

96. Eli Sorkin, is a research analyst covering the electronics industry. One of the companies he follows closely is Canc Inc. as they often come up with innovative products. When they release a wireless printer, he thinks it is a breakthrough and after thorough research, strongly recommends the stock. A fortnight after the report is released, Sorkin inherits $1million worth of Canc stock from a distant uncle. What is the *most* appropriate action for Sorkin to take?

A. Disclose the ownership to his employer.
B. Do nothing as the recommendation as sufficient time has passed since the report released.
C. Ask his employer to assign further coverage of the stock to another analyst.

**Solutions**

1. A is correct. According to Standard VI(A) Disclosure of Conflicts, Griffin should disclose this personal transaction.

2. B is correct. Refer to Standards I(A) Knowledge of the Law and III(C) Suitability. Members and candidates should understand that a single product cannot be suitable for all Islamic investors. The best way to deal with this situation is to clearly define which Islamic laws and regulations are being followed in the creation of the product and the types of investors for whom this fund will be suitable.

3. C is correct. According to Standard I(A) Knowledge of the Law Dilawez should adopt the stricter law.

4. B is correct. Fritz should be independent and objective in her report. Alternatively, Brady Brokerage could place Saber Inc. on a restricted list and issue only factual information.

5. A is correct. Refer to Standard III(C) Suitability.

6. B is correct. According to Standard III(A) Loyalty the client needs to be informed with the updated result of the underperformance of his account. Withholding information is not in the best interest of the client.

7. A is correct. Ludwig must disclose to his clients the change in the process of selection. Refer to Standard V(B) Communications with Clients and Prospective Clients.

8. B is correct. Disclosure to clients is important even if the referrals result in a noncash compensation. Refer to Standard VI(C) Referral Fees

9. C is correct. Refer to Standard VII(A) Conduct as Participants in CFA Institute Programs.

10. A is correct. According to Standard IV(C) Responsibilities of Supervisors, a member or candidate should decline in writing to accept supervisory responsibilities until reasonable compliance procedures are laid down by a firm for her to assume and exercise responsibility.

11. C is correct. Crawford doesn't own the same securities as his clients therefore he least likely violates Standard VI(B) Priority of Transactions. He violates Standard VI(A) Disclosure of Conflicts by failing to inform his clients of the change in his compensation arrangement with his employer which causes a conflict between his compensation and the clients' IPS. He violated III(C) Suitability because high-yield bonds are not suitable for his risk averse clients.

12. C is correct. Standard III(A) Loyalty, Prudence and Care has been violated because Toffler did not place his clients' interests before his employer's interests. Standard VI(B) Priority of Transactions has been violated. Toffler would have avoided the conflict by waiting until his

clients had the opportunity to receive and assimilate Gates' report. The report was sent out to all clients at the same time; hence Standard III(B) Fair Dealing is not violated.

13. B is correct. Standards IV(A) Loyalty and IV(C) Responsibility of Supervisors have been violated since both the supervisor and compliance officer did not investigate Sonali's concerns. There is no evidence of misrepresentation.

14. C is correct. No violation has occurred. It is acceptable to share past performance as long as a clear disclaimer is provided that this performance was achieved at another firm.

15. A is correct. CFA Institute and CFA Designation were improperly referenced. Refer to Standard VII(B) Reference to CFA Institute, the CFA Designation, and the CFA Program.

16. B is correct. Hadley cannot use the CFA designation tagged to a pseudonym or online profile name used to hide his identity. He is free to use a pseudonym but without the CFA designation.

17. C is correct. Lancaster has violated Standard I(C) Misrepresentation by not citing the brokerage reports as sources and Standard V(A) Diligence and Reasonable Basis because of her lack of independent research in the preparation of her report.

18. C is correct. Vladislav has violated III(E) Preservation of Confidentiality because he has to maintain the confidentiality of client information even if the person or entity is no longer a client.

19. A is correct. Standard IV(A) Loyalty is most likely violated. A member cannot take records or work performed on behalf of the firm in paper copy or electronically without permission to another firm. In this case she cannot use the firm's records of clients without the firm's permission.

20. C is correct. Standard I(B) Independence and Objectivity involves members and candidates not accepting any gifts or benefits that could be expected to compromise their independence and objectivity. Since no benefits were received Grosky has least likely violated I(B). Grosky most likely violated the Standards I(C) Misrepresentation, and I(D) Misconduct because she knowingly misrepresents the cause of the error.

21. B is correct. Westlink and Lee's current clients need to be informed along with the prospective clients, of the change in the fund's mandate since they might have objections concerning the Fund's new allocations. Hence Standard V(B) Communications with Clients and Prospective Clients is most likely violated. Significant risks and limitations of the new investments should also be disclosed along with their impact on the fund as a whole.

22. B is correct. A is incorrect because Shekar was trying to artificially boost the price of the GYI’s stock in order to sell her holdings. C is incorrect because there is no basis for her statements in the social media sites.

23. A is correct. Nader did not violate any Standard. There are always rumors in the market, before an official release by the company. Unless Nader knew that Sandler was in a business relationship with the merger companies, there was no reason to suspect that he was receiving nonpublic material information.

24. A is correct. Agnimukha has violated the Standard VII(A) Conduct as Participants in the CFA Institute Programs by sharing exam content, undermining the validity and integrity of the exam.

25. C is correct. The Standard relating to Independence & Objectivity has not been violated because Devgan has not received any gifts, benefits or consideration to compromise his independence and objectivity

26. A is correct. Standard V(B) Communications with Clients and Prospective Clients has been violated. Seriozha has not run the downside risks and has not explained the limitations of his model with respect to a change in rates contrary to the one he has reported. Members and Candidates must adequately disclose the market-related risks and limitations contained in their investment products and recommendations especially in their investment process.

27. A is correct. Khadri is in violation of Standard VI(A) Conflicts of Interest by failing to disclose to her clients that she is receiving additional compensation for promoting and selling Zoratri’s shares. Khadri has also not informed her employer of the additional benefits received for recommending Zoratri’s stock. Therefore her employer cannot evaluate her loyalty and objectivity. She also failed to disclose the additional compensation arrangement.

28. B is correct. No violation of Standard VI(B) Priority of Transactions is committed by Emory.

29. B is correct. Tivari has violated Standard III(C) Suitability by not identifying the risks and objectives of Ahisma and selecting an aggressive investment for both clients which is only suitable for Adya, since the two clients have different financial objectives and circumstances.

30. C is correct. Czcibor has not violated VI(C) Referral Fees because she obtained permission from her employers, the school, and the clients.

31. A is correct. If the information is not publicly disseminated by the company and Dobrogost uses it, then it becomes material nonpublic information, hence a violation of Standard II(A). A small group of stakeholders does not qualify as the public. He cannot use the information.

32. C is correct. No violation has occurred because she has received approval from her employer. Standard VI(B) Priority of Transactions does not limit transactions of employees which are

different from the current recommendations as long as they do not disadvantage the current clients.

33. B is correct. It is not specified if Li determined the suitability of accounts at Dragon to which she allocated shares of East Asian equities. She did not violated the Standard relating to Priority of Transactions as she purchase the shares before joining Dragon and has no fiduciary duty.

34. B is correct. Kazuya violates Standard VII(B) Reference to CFA Institute, the CFA Designation, and the CFA Program, by using an improper designation on her business cards. Farnsworth reference is proper according to Standard VII(B) Reference to CFA Institute, the CFA Designation, and the CFA Program.

35. C is correct. Kayla Donovan has not violated any Standard. Donovan has not caused the price of Swift to move up she has only given her opinion based on research. Further, she informed MacBrady's clients prior to her internet broadcast and has approval from her employer to run her blog.

36. A is correct. Hernandez is violating her duty of loyalty to her trust accounts by using Drez, because he gives her favorable terms for her personal account.

37. B is correct. Blake has violated Standard IV(B) Additional Compensation Arrangements by failing to disclose to his employer benefits received in exchange for his services on the board.

38. C is correct. Research CFA has violated Standard VII(B) Reference to CFA Institute, the CFA Designation, and the CFA Program by using CFA designation inappropriately. Marlow violated Standard V(A) Diligence and reasonable basis.

39. A is correct. Petrowski has violated Standard I(C). She should get the complete study from its original author Ace Research review it and acknowledge it in her report instead of simply plagiarizing the report.

40. A is correct. David has violated Standard IV(C) by failing to supervise the actions of those accountable to her. She did not set up procedures to prevent the dissemination of or trading on the information.

41. C is correct. Ali has clearly misrepresented some important information. By not being honest, he is also violating the standard with regards to misconduct.

42. A is correct. By responding to the client's RFP, the group of employees is competing directly with the employer, hence Standard IV(A) Loyalty is violated.

43. B is correct. Yes Standard V(B) Communication with Client and Prospective Clients has been violated, because Swanson's assessment is an opinion not a fact. He did not distinguish between opinion and fact.

44. A is correct. Zahoor has violated Standard VI(B) Priority of Transactions by taking advantage of her knowledge of the stock and buying it for herself rather than her client.

45. A is correct. Connors has violated Standard III(B) Fair Dealing by failing to deal fairly with all her clients in taking these investment actions.

46. B is correct. Cox was given the internal reports by the trustees; because the information was confidential Cox should have refused to divulge it to Cooper. Therefore by handing the internal reports to him Cox violates Standard III(E) Preservation of Confidentiality.

47. B is correct. Simone must disclose her husband's ownership of the stock to avoid violation of Standard VI(A) Disclosure of Conflicts.

48. C is correct. Yes Miller violates Standard IV (C) Responsibilities of Supervisors, by not investigating the purchase of the stock and her failure to supervise the trader's activities.

49. A is correct. Refer to Standard III(A) Loyalty, Prudence and Care.

50. B is correct. Refer to Standard VII(A) Responsibilities as a CFA institute member or CFA candidate.

51. A is correct. Refer to Standard VI(B) Priority of Transactions.

52. C is correct. Refer to Standard I(C) Misrepresentation.

53. A is correct. Refer to Standard V(A) Diligence and Reasonable Basis.

54. B is correct. Refer to Standard IV(A) Duties to Employers.

55. A is correct. Refer to Standard IV(B) Additional Compensation Arrangements.

56. A is correct. Refer to Standard III(D) Performance Presentation.

57. A is correct. Refer to Standard I(B) Independence and Objectivity.

58. A is correct. Refer to Standard I(D) Misconduct.

59. A is correct. Refer to Standard VI(C) Referral Fees.

60. B is correct. Refer to Standard IV(A) Loyalty.

61. A is correct. Refer to Standards I(A) Knowledge of the Law, I(C) Misrepresentation and III (D) Performance Presentation.

62. C is correct. The Standards related to III(A) Loyalty, Prudence, and Care and III(C) Suitability are violated. The IPS mentions low risk securities, and describes the asset classes. Therefore investment in the pharma stock may not be suitable for this portfolio.

63. B is correct. Clay violated Standard IV(A) because he misappropriated her firm's property without permission

64. C is correct. Sharon disclosed his travel and accommodation arrangements to his employer and had only accepted them after being given permission by his firm. His actions on return do not cause conflicts of interest between his company and ABC, because he makes a full disclosure of his dinner with the CFO to his employer.

65. A is correct. There is improper reference to the CFA Designation that the charter holders achieve better performance results. Refer to Standard VII(B).

66. A is correct. Haley did not violate Standard VII(A) Responsibilities as a CFA Institute Member or CFA Candidate.

67. A is correct. Signa has violated Standard VII(B) Reference to the CFA Designation by using it inappropriately as the company's name. The designation is only meant for individuals and must not be used as a firm's name.

68. C is correct. According to Standard IV(C) Responsibilities of Supervisors, the supervisor and the compliance officer have the responsibility to investigate Ahmed's concerns. Also see Standard I(D) Misconduct.

69. A is correct. Li has violated Standard I(C) Misrepresentation by presenting out-of-date information to clients.

70. C is correct. Lou violated Standard V(A) Diligence and Reasonable Basis by not conducting sufficient review of potential firms.

71. A is correct. According to Standard III(D) Performance Presentation Haq needs to correct the calculation and length of time specifying the performance of her trust fund.

72. A is correct. Refer to Standard II(B) Market Manipulation. Weinberg created an appearance of greater liquidity of stock through its trading strategy and was able to manipulate the market.

73. B is correct. Bates is violating Standard III(A) Loyalty, Prudence and Care. He should have weighed the benefits of the trip against the commission charged by Sia. He should have also determined whether best execution and prices could be received from Sia.

74. C is correct. Burnette has violated Standard IV(C) Responsibilities of Supervisors by neglecting to review thoroughly Desai's report and her recommendations. It is Burnette's responsibility to set up appropriate procedures; these are documented, communicated and followed by the personnel working for her. She has also violated Standard of Diligence and Reasonable basis.

75. A is correct. Refer to Standard V(C) Record Retention. Jaffery must carefully document and maintain copies of all information that goes in his reports in order to avoid violation of Standard V(C).

76. C is correct. Bentley should determine whether the investment is suitable to the client's financial situation. She should make an inquiry into the risk and return objectives of the client before making any recommendations. Refer to Standard III(C) Suitability.

77. A is correct. Brown's actions are in line with Standard I(A) Knowledge of the Law

78. C is correct. There is no evidence of discrimination among clients. However, by recommending the stock without due diligence, the analyst has violated Standard V(A) Diligence and Reasonable Basis, and Standard III (C) Suitability.

79. A is correct. If it is illegal to hold stocks of tobacco companies, Bart should have taken steps to stay informed of the applicable laws.

80. B is correct. The recommended course of action would be to put BU Airlines on a restricted list and disseminate only factual data.

81. C is correct. Refer Standard I(B) Independence and Objectivity and VI(A) Disclosure of Conflicts.

82. A is correct. Refer Standard I(C) Misrepresentation.

83. C is correct. It is recommended that firms check reference of potential employees.

84. B is correct. C is incorrect because when public dissemination is not possible, member must communicate only to the designated supervisory or compliance personnel and not to their teams.

85. B is correct. Raul must not act on the information passed by Tara and must encourage her and her firm to achieve public dissemination.

86. A is correct. Standard III(D) Performance Presentation is not violated as Alex sends a quarterly itemized statement of the funds and securities in his custody, and the transactions that occurred during this period. Standard V(B) Communication with Clients and Prospective Clients is violated because Alex should have discussed the change with the client before moving to small cap stocks. Standard III(A) Loyalty, Prudence, and Care is violated because small cap stocks might not correspond to client's risk profile.

87. B is correct. Anita's circumstance have changed and the down payment takes precedence. She cannot invest any surplus in risky investments now. Since the stock was not suitable, Riya did not recommend the fund. So, she did not violate any standard.

88. A is correct. A large-dividend paying company is usually not growth-focused and it qualifies as a large-cap stock. By choosing this stock for the fund, Andrade has violated Standard III (C) Suitability as it does not fit within the investment mandate.

89. B is correct. Including terminated accounts with a disclaimer is not in accordance with GIPS, but it complies with Standard III(D).

90. A is correct. The assets managed by a firm is presented to clients, and is not confidential. Since no names or confidential details of the clients were disclosed, Standard III(E) is not violated.

91. B is correct. Since it does not interfere with his responsibilities at work, there is no violation.

92. A is correct. Since Fabnish is a client covered as part of their research analysis, there is a conflict of interest. She was paid for her engagement which she should have disclosed to her employer.

93. B is correct. By not educating Ackermann of the compliance procedures for social media, and not supervising what was being posted online, Wohlers has violated Standard IV(C) Responsibilities of Supervisors. Ackermann violated Standard III(B) Fair Dealing.

94. A is correct. He is in violation of Standard V(A) Diligence and Reasonable basis because he did not make reasonable efforts to analyze all aspects such as stock selection process, fees, investment philosophy, assets under management, or experience before selecting an adviser. Belkin is also in violation of Standard III(C) Suitability by not analyzing if the chosen manager's services are appropriate for the firm's clients and if the fee structure is low relative to the services offered.

95. B is correct. The documents related to the screening tool and the tool are a property of Reliable Investments and not that of Kaushal's because they were developed using the resources of the company while employed there.

96. C is correct. Disclosure is fine but the best course of action to avoid any conflict of interest would be to ask his employer to assign the stock to another analyst.

**LO.a: Explain why the GIPS standards were created, what parties the GIPS standards apply to, and who is served by the standards.**

1. Which of the following is *most likely* a misleading practice often encountered in investment firms?
    A. Presenting performance for time periods irrespective of performance in such a way that it enhances comparability with other firm's results.
    B. Selecting all portfolios while presenting the firm's investment results for a specific mandate.
    C. Excluding portfolios with poor performance that no longer exist.

2. Which of the following is *least likely* a misleading practice often encountered in investment firms?
    A. Selecting all portfolios while presenting the firm's investment results for a specific mandate.
    B. Selecting a top-performing portfolio to represent the firm's overall investment results for a specific mandate.
    C. Selecting all portfolios for a selected time period during which the mandate outperformed its benchmark.

3. The objective of creating GIPS standards was:
    A. to increase comparability among investment management firms based on standardized rules within a country.
    B. to establish global, standardized, industry-wide rules for calculating and presenting investment performance.
    C. to communicate all relevant information regarding company and industry forecasts to existing clients.

4. Who can *most likely* claim compliance with GIPS Standards?
    A. CFA charterholders.
    B. Individuals.
    C. Investment management firms.

5. Assume there are three parties who play different roles in the investment industry:
    - Party 1: Calsoft Inc. is an investment management firm that manages assets worth $900 million.
    - Party 2: Stan Inc. sponsors pension plans for its employees and encourages its employees to become participants. The money is professionally managed by an investment company.
    - Party 3: Caltech Corp. is involved in the development of software for performance calculations that aids in achieving GIPS compliance.

    Which of the following parties can claim GIPS compliance?
    A. All the parties.
    B. Party 1 and Party 2.

C. Party 1.

6. IDC Asset Management Company has three funds: Premium Equity, Dynamic Bond Fund, and Small-Cap Growth Opportunities. The company claims GIPS compliance for Dynamic Bond Fund. IDC is defined as the firm. Assuming there is no distinction in the investment process or client type, is the claim for compliance accurate as per GIPS Standards?
   A. Yes, since the requirements for claiming compliance have been met.
   B. No, because claiming partial compliance is not allowed.
   C. No, because the provisions do not apply to fixed income investments.

7. Which of the following statements is *most likely* true? A firm can claim GIPS compliance for:
   A. a single product.
   B. a single fund.
   C. an asset management division defined as firm catering exclusively to institutional investors across geographies managing all types of asset classes.

8. Claiming compliance with GIPS Standards is:
   A. mandatory.
   B. voluntary.
   C. set to become mandatory in order to participate in competitive bids from 2017.

**LO.b: Explain the construction and purpose of composites in performance reporting.**

9. According to the Global Investment Performance Standards (GIPS), the criteria for including portfolios in composites is:
   A. all actual fee-paying, discretionary portfolios must be included in at least one composite.
   B. all discretionary portfolios must be included in a composite.
   C. all actual fee-paying portfolios must be included in a composite.

10. Which of the followings statements *best* describe a composite?
   A. A single portfolio for a specific client type such as a retail or institutional investor.
   B. One or more portfolios managed to a similar investment mandate, objective or strategy.
   C. One or more top-performing portfolios provided it is a pre-established criteria.

11. Which of the following *must* be included in a composite?
   A. Non-fee paying, discretionary portfolios.
   B. Non-fee paying, non-discretionary portfolios.
   C. Fee paying, discretionary portfolios.

12. Assume MA Asset Management Company has a composite called Macro Fixed Income Composite that caters to fixed income portfolios. Which of the following funds will *least likely* be a fit in this composite?
    A. A fund with high liquidity that invests in debt instruments.
    B. A fund that invests in a portfolio of money market instruments.
    C. A fund that generates returns in line with the performance of gold.

**LO.c: Explain the requirements for verification.**

13. The purpose of verification is:
    A. that it ensures the accuracy of any composite presentation.
    B. to increase confidence in the firm's claim of compliance.
    C. to ensure the performance of a specific fund or mandate is as presented.

14. Verification of GIPS compliance is:
    A. done by an independent third-party.
    B. mandatory to claim compliance.
    C. done voluntarily by the firm under the supervision of the CFA Institute.

15. Which of the following statements regarding verification is *least* accurate?
    A. The verification procedures are different for each firm.
    B. Though compliance is firm-wide, verification can be done for a specific fund or composite.
    C. Verification tests whether the composite construction requirements have been complied with on a firm-wide basis.

**Solutions**

1. C is correct. Excluding portfolios with poor performance is known as survivorship bias – an often seen misleading practice.

2. A is correct. Selecting top-performing portfolios is a misleading practice known as representative accounts. Presenting performance for a selected time period when the mandate outperformed the benchmark is also a misleading practice.

3. B is correct. C is incorrect because the objective is to communicate all relevant information of historical results to prospective clients.

4. C is correct. Only investment management firms can claim compliance. Individuals, charterholders, and software to implement the Standards cannot claim compliance.

5. C is correct. Only investment management firms that actually manage assets can claim compliance. The other two cannot.

6. B is correct. Since there is no distinction in the market or client type (institution/retail investors) and the investment process, partial compliance is not allowed. GIPS encourages firms to use the broadest definition of the firm.

7. C is correct. A single product or a single fund cannot claim compliance.

8. B is correct. It is voluntary, but it increases the competitiveness of a GIPS-complaint firm, while competing for bids on a global platform against non-compliant ones. It increases the trust among prospective clients.

9. A is correct. All actual fee-paying, discretionary portfolios must be included in at least one composite. Actual non-fee paying discretionary portfolios may be included in at least one composite with appropriate disclosure.

10. B is correct. A composite is an aggregation of one or more portfolios managed according to a similar investment mandate, objective, or strategy.

11. C is correct.

12. C is correct. A gold ETF will least likely fit in a composite with a fixed income investment strategy.

13. B is correct. Verification does not ensure the accuracy of any composite. It merely tests if all the composite construction requirements have been met, and if policies are in place for the firm to calculate, present performance and claim compliance with the GIPS Standards

14. A is correct. A firm cannot perform its own verification.

15. B is correct. Verification cannot be done for a fund or a composite. It is firm-wide just as claiming compliance is.

**LO.a: Describe the key features of the GIPS standards and the fundamentals of compliance.**

1. Which of the following is *not* a key feature of the GIPS standards?
   A. All actual, discretionary, fee-paying and non-fee paying portfolios must be included in at least one composite.
   B. Firms must use accurate input data, follow certain calculation methodologies and disclose the method used.
   C. Firms must comply with all requirements of the GIPS standards.

2. Which of the following is *least likely* a feature of the GIPS standards?
   A. The GIPS standards rely on the integrity of input data.
   B. Firms must comply with all requirements of the GIPS standards, including any updates, Guidance Statements, interpretations, Questions & Answers (Q&As), and clarifications published by CFA Institute and the GIPS Executive Committee.
   C. The GIPS standards promote the use of accurate and consistent investment performance data.

3. Which of the following statements is *most likely* correct?
   A. All actual, discretionary, fee-paying portfolios must be included in at least one composite defined by investment mandate, objective, or strategy.
   B. Only actual, non-discretionary, non-fee-paying portfolios must be included in at least one composite defined by investment mandate, objective, or strategy.
   C. Only actual, discretionary, non-fee-paying portfolios must be included in at least one composite defined by investment mandate, objective, or strategy.

4. Which of the following is *most likely* a feature of the GIPS standards? GIPS standards:
   A. foster the notion of industry "self-regulation" on a global basis.
   B. encourage fair, global competition among investment firms without creating barriers to entry.
   C. are ethical standards for investment performance presentation to ensure fair representation and full disclosure of investment performance.

5. Which of the following statements is *most likely* a key feature of the GIPS standards? In order to meet the objectives of fair representation and full disclosure and achieve best practice in the calculation and presentation of performance,
   A. firms should adhere to the minimum requirements of the GIPS standards, but adhering to the recommendations is optional.
   B. firms should adhere to the minimum requirements and recommendations of the GIPS standards.
   C. it is enough if firms comply with the standard related to Performance Presentation in the CFA Institute *Standards of Practice Handbook.*

6. The fundamentals of compliance section under GIPS standards has how many requirements?

A. 10.
B. 16.
C. 15.

7. According to the Fundamentals of Compliance section of the GIPS standards, which of the following is *least likely* a requirement for claiming compliance?
   A. Statements referring to the calculation methodology as being “in accordance,” “in compliance,” or “consistent” with the Global Investment Performance Standards, or similar statements, are prohibited.
   B. Firms must provide a complete list of composite descriptions to any prospective client that makes such a request.
   C. For periods beginning on or after 1 January 2010, total firm assets must be the aggregate fair value of all fee-paying portfolios managed by the firm.

8. Which of the following requirements under the Fundamentals of Compliance section is *least likely* correct?
   A. Firm must be defined as an investment firm, subsidiary, or division held out to clients or prospective clients as a distinct business entity.
   B. Total firm assets must exclude assets assigned to a sub-advisor.
   C. Firms must document their policies and procedures used in establishing and maintaining compliance with the GIPS standards.

9. Which of the following is *not* a requirement under the Fundamentals of Compliance section of the GIPS Standards?
   A. A firm must be properly defined.
   B. Firms must provide compliant presentation only to existing clients.
   C. Firms must comply with all applicable laws and regulations regarding the calculation and presentation of performance.

10. Which of the following is *most likely* a requirement under Fundamentals of Compliance section of the GIPS Standards?
    A. The GIPS standards must be applied on a firm wide basis.
    B. The GIPS standards may be applied only to specific clients’ portfolios or selected composites.
    C. Firms must comply with the CFA Institute Code and Standards regarding calculation and presentation of performance.

11. Which of the following is *least likely* a requirement under Fundamentals of Compliance section of the GIPS Standards?
    A. Firms must not present performance or performance-related information that is false or misleading.
    B. Statements referring to the performance of a single, existing client portfolio as being “calculated in accordance with the Global Investment Performance Standards” are

prohibited, except when a GIPS-compliant firm reports the performance of an individual client's portfolio to that client.
   C. Firms are required to provide a compliant presentation for any composite listed on the firm's list of composite descriptions to any existing client only that makes such a request, and not a prospective client.

12. Which of the following is *least likely* a requirement under Fundamentals of Compliance section of the GIPS Standards?
    A. Historical composite performance may be changed to reflect changes in a firm's organization.
    B. When the firm jointly markets with other firms, the firm claiming compliance with the GIPS standards must be sure that it is clearly defined and separate relative to other firms being marketed, and that it is clear which firm is claiming compliance.
    C. If the firm does not meet all the requirements of the GIPS standards, the firm must not represent or state that it is "in compliance with the Global Investment Performance Standards except for . . .".

**LO.b: Describe the scope of the GIPS standards with respect to an investment firm's definition and historical performance record.**

13. Firms claiming compliance with the GIPS standards are required to present and report GIPS-compliant performance for a minimum period of:
    A. five years.
    B. three years.
    C. seven years.

14. According to the Fundamentals of Compliance section, what are firms recommended to provide to each existing client on an annual basis? A compliant presentation of:
    A. all composites of the firm.
    B. the composite in which the client's portfolio is included.
    C. the client's portfolio.

15. If a composite has been in existence for less than five years, then for what period is the firm most likely required to present GIPS-compliant performance?
    A. Two years.
    B. One year.
    C. Since inception date.

16. GP Asset Management Company is defined as a firm according to GIPS standards. The firm's inception date is 1 January 2013, and it has been in existence for less than five years. After it builds up GIPS-compliant performance for five years until 31 December 2017, is the firm required to add additional years of GIPS-complaint performance?
    A. Yes, one more year.

   B. No, as five years is the minimum requirement.
   C. Yes, till the firm builds up to a minimum of 10 years of GIPS-complaint performance.

17. PA Asset Management Company is defined as a firm according to GIPS standards. The firm's inception date is 1 January, 1998. It is now 1 January, 2014. The firm claims compliance with GIPS Standards from 1 January, 2000. Is the firm allowed to link non-GIPS compliant performance to GIPS complaint performance?
    A. Yes, if the firm discloses the periods of non-compliance.
    B. No, since the non-compliant period is before 1 January, 2000.
    C. No, since non-complaint GIPS performance cannot be linked to GIPS-complaint performance.

18. PA Asset Management Company is defined as a firm according to GIPS standards. The firm's inception date is 1 January, 2000. It is now 1 January, 2014. The firm claims compliance with GIPS Standards from 1 January, 2006. Is the firm allowed to link non-GIPS compliant performance to GIPS complaint performance?
    A. Yes, if the firm discloses the periods of non-compliance.
    B. No, since the non-compliant period is on or after 1 January, 2000.
    C. No, since non-complaint GIPS performance cannot be linked to GIPS-complaint performance.

**LO.c: Explain how the GIPS standards are implemented in countries with existing standards for performance reporting and describe the appropriate response when the GIPS standards and local regulations conflict.**

19. Eritba is a small island nation in the Pacific where laws and regulations exist for calculation and presentation of investment performance. According to the GIPS standards, what laws are firms in Eritba encouraged to comply with for the calculation and presentation of investment performance?
    A. GIPS standards only.
    B. Applicable law, regulations, and GIPS standards.
    C. Applicable law and regulations only.

20. Arizu is a land-locked nation where laws and regulations exist for calculation and presentation of investment performance. In some areas relating to real estate and private equity investments, there is a conflict between applicable laws and GIPS Standards. According to the GIPS standards, what laws are the firms in Arizu encouraged to comply with for calculating and presenting investment performance?
    A. GIPS standards.
    B. Either GIPS or applicable law with a disclosure of the standard being followed.
    C. Applicable law and regulations with a disclosure of the conflict in the compliant presentation.

**LO.d: Describe the nine major sections of the GIPS standards.**

21. Which of the following is *least likely* related to the 'input data' section of GIPS?
    A. Input data needs to be compliant.
    B. Input data needs to be consistent.
    C. Portfolios must be valued in accordance with the definition of fair value and the GIPS Valuation Principles.

22. Which of the following is *not* one of the nine sections of the provisions of the Global Investment Performance Standards?
    A. Disclosure.
    B. Processed Data.
    C. Real Estate.

23. The composite return is most likely calculated as the:
    A. Asset-weighted average of the performance of all portfolios in the composite.
    B. Time-weighted return of the performance of all portfolios in the composite.
    C. Mean return of the performance of all portfolios in the composite.

24. A firm does not disclose the use of significant leverage in a particular composite strategy. The firm claims compliance with GIPS standards and includes a footnote in the compliant presentation that the firm has been verified by an independent third party. Has the firm violated the GIPS standards?
    A. Yes.
    B. No, since leverage is not a mandatory disclosure.
    C. No, since disclosure is required only for derivatives and short positions.

**Solutions**

1. A is correct. It is not mandatory for non-fee paying portfolios to be included in at least one composite.

2. C is correct. This is a goal of the GIPS Executive Committee and not a key feature.

3. A is correct. One of the key features of GIPS standards is that all actual, discretionary, fee-paying portfolios must be included in at least one composite defined by investment mandate, objective, or strategy in order to prevent firms from cherry-picking their best performance.

4. C is correct. The other two options are goals of the GIPS Executive Committee.

5. A is correct. To achieve best practice in calculation and presentation of performance, firms should adhere to the minimum requirements and recommendations of GIPS standards.

6. B is correct. There are 16 requirements under Fundamentals of Compliance section.

7. C is correct. The condition for total firm assets is for periods beginning on or after 1 January, 2011, and includes both fee-paying and non-fee-paying portfolios

8. B is correct. They must include assets managed by a sub-advisor.

9. B is correct. Compliant presentation must be provided to prospective clients, as well.

10. A is correct. B is incorrect because the GIPS standards cannot be applied only to certain portfolios or composites. C is incorrect because firms must comply with applicable laws and regulations regarding the calculation and presentation of performance.

11. C is correct. Firms must provide a compliant presentation for any composite listed on the firm's list of composite descriptions to any prospective client that makes such a request.

12. A is correct. Even when there is a change in a firm's organization, the historical composite performance must not be altered.

13. A is correct. GIPS provisions for presentation and reporting require that at least 5 years of compliant performance must initially be shown.

14. B is correct. A compliant presentation must have the composite in which the client's portfolio is included.

15. C is correct. If a firm has been in existence for less than five years, then a firm is required to present compliant presentation since the firm's inception date, or the composite inception date.

16. C is correct. Refer Historical Performance Record section of the GIPS Standards.

17. A is correct. Refer Historical Performance Record section of the GIPS Standards.

18. B is correct. Refer Historical Performance Record section of the GIPS Standards.

19. B is correct. Firms are encouraged to comply with applicable laws, regulatory requirements in addition to the GIPS Standards. This is because compliance with applicable law does not imply compliance with the GIPS Standards.

20. C is correct. Whenever there is a conflict between applicable laws and regulations with the GIPS standards, firms must comply with the applicable laws. The conflict must be disclosed.

21. A is correct. Here is an excerpt from the GIPS input data section: "Consistency of input data used to calculate performance is critical to effective compliance with the GIPS standards and establishes the foundation for full, fair, and comparable investment performance presentations. For periods beginning on or after 1 January 2011, all portfolios must be valued in accordance with the definition of fair value and the GIPS Valuation Principles."

22. B is correct. It is Input Data, not Processed Data.

23. A is correct.

24. A is correct. The extent of leverage for every firm must be disclosed along with the claim of compliance.

**LO.a: Interpret interest rates as required rates of return, discount rates, or opportunity costs.**

1. The minimum rate of return that an investor must receive in order to invest in a project is *most likely* known as the:
   A. required rate of return.
   B. real risk free interest rate.
   C. inflation rate.

2. Which of the following is *least likely* to be an accurate interpretation of interest rates?
   A. The rate needed to calculate present value.
   B. Opportunity cost.
   C. The maximum rate of return an investor must receive to accept an investment.

**LO.b: Explain an interest rate as the sum of a real risk-free rate, and premiums that compensate investors for bearing distinct types of risk.**

3. Given below is information about a security whose nominal interest rate is 15%:
   - The real risk free rate of return is 3.5%
   - The default risk premium is 3%
   - The maturity risk premium 4%
   - The liquidity risk premium is 2%

   An investor wants to determine the inflation premium in the security's return. The inflation premium is *closest* to:
   A. 2.5%.
   B. 4.0%.
   C. 9.0%.

4. Two bonds, a U.S. Treasury bond has a yield to maturity of 5 percent, while a bond issued by an industrial corporation, has a yield to maturity of 7 percent. The two bonds are otherwise identical i.e. they have the same maturity, and are option-free. The *most likely* explanation for the difference in yields of the two bonds is:
   A. Default risk premium.
   B. Inflation premium.
   C. Real risk-free interest rate.

5. The maturity premium can be *best* described as compensation to investors for the:
   A. risk of loss relative to an investment's fair value if the investment needs to be converted to cash quickly.
   B. increased sensitivity of the market value of debt to a change in market interest rates as maturity is extended.
   C. possibility that the borrower will fail to make a promised payment at the contracted time and in the contracted amount.

6. Liquidity premium can be best described as compensation to investors for:
   A. inability to sell a security at its fair market value.
   B. locking funds for longer durations.
   C. a risk that investment's value may change over time.

7. Following information is given about interest rate:
   Nominal rate: 20%
   Real risk free rate: 5%
   Inflation premium: 4%
   If the risk premium incorporates default risk, liquidity risk, and any maturity premium, the risk premium is *closest* to:
   A. 20%.
   B. 15%.
   C. 11%.

8. You are estimating the required rate of return for a particular investment. Which of the following premiums are you *least likely* to consider?
   A. Inflation premium.
   B. Maturity premium.
   C. Nominal premium.

**LO.c: Calculate and interpret the effective annual rate, given the stated annual interest rate and the frequency of compounding.**

9. Camilla wishes to compute the effective annual rate of a financial instrument with stated annual rate of 22% and compounded on a quarterly basis? Which of the following is *most likely* to be closest to the effective annual rate?
   A. 23%.
   B. 24%.
   C. 25%.

10. The nominal annual interest rate on a mortgage is 7%. The effective annual rate on that mortgage is 7.18%. The frequency of compounding is *most likely*:
    A. semi-annual.
    B. quarterly.
    C. monthly.

11. Which of the three alternative one-year certificates of deposit (CD) shown below has the *highest* effective annual rate (EAR)?

| | Compounding frequency | Annual interest rate |
|---|---|---|
| CD1 | Monthly | 8.20% |
| CD2 | Quarterly | 8.25% |
| CD3 | Continuously | 8.00% |

A. CD1.
B. CD2.
C. CD3.

12. If the stated annual interest rate is 11% and the frequency of compounding is daily, the effective annual rate is *closest* to:
    A. 11.00%.
    B. 11.57%.
    C. 11.63%.

13. A fixed income instrument with a stated annual interest rate of 18% and offers monthly compounding has an effective annual rate (EAR) *closest* to:
    A. 18.00%.
    B. 19.56%.
    C. 20.12%.

14. An investment earns an annual interest rate of 12 percent compounded quarterly. What is the effective annual rate?
    A. 3.00%.
    B. 12.00%.
    C. 12.55%.

15. Which of the following continuously compounded rates corresponds to an effective annual rate of 7.45 percent?
    A. 7.19%.
    B. 7.47%.
    C. 7.73%.

16. Canadian Foods recorded an operating profit of $2.568 million and $5.229 million for 2008 and 2012 respectively. What was the compounded annual rate of growth of Canadian Foods' operating profits during the 2008-2012 period?
    A. 16.30%.
    B. 18.50%.
    C. 19.50%.

17. In 2009, Bata had 81 shoe outlets across the country. But, by 2012, the company had to shut down 14 outlets. Which of the following *most likely* represents the growth rate of the number of outlets during this period?
    A. -6.10%.
    B. -4.63%.
    C. 6.53%.

**LO.d: Solve time value of money problems for different frequencies of compounding.**

18. How much amount should an investor deposit in an account earning a continuously compounded interest rate of 8% for a period of 5 years so as to earn $2,238?
    A. $1500.
    B. $1523.
    C. $1541.

19. The present value of $10,000 to be received five years from today, assuming a discount rate of 9% compounded monthly, is *closest* to,:
    A. $6,387.
    B. $6,499.
    C. $6,897.

20. An investor deposits £1,000 into an account that pays continuously compounded interest of 9% (nominal annual rate). The value of the account at the end of six years is *closest* to:
    A. £1,677.
    B. £1,712.
    C. £1,716.

21. Your client invests $2 million in a security that matures in 4 years and pays 7.5 percent annual interest rate compounded annually. Assuming no interim cash flows, which of the following will *most likely* be the value of the investment at maturity?
    A. $2.150 million.
    B. $2.600 million.
    C. $2.671 million.

22. Your client deposits $5 million in a savings account that pays 5 percent per year compounded quarterly. What will be the value of this deposit after 2.5 years?
    A. $5.625 million.
    B. $5.649 million.
    C. $5.661 million.

23. Grim Smith plans to invest ¥12 million, three years from now. The rate of return has been estimated at 8 percent per year. What is the future value of this investment 11 years from now?
    A. ¥22.21 million.
    B. ¥27.98 million.
    C. ¥35.25 million.

24. A three-year CD offers a stated annual interest rate of 10 percent compounded quarterly. Given an initial investment of $80,000, which of the following is *most likely* to be the value of the CD at maturity?
    A. $86,151.
    B. $86,628.
    C. $107,591.

25. Donald Trump invests $3 million in a bank that promises to pay 4 percent annual interest rate compounded daily. Assuming 365 days in a year, what will be the value of Donald's investment at the end of one year?
    A. $3.003 million.
    B. $3.122 million.
    C. $3.562 million.

26. You invest $50,000 for three years that will earn 3.6 percent compounded continuously. What will be the value of your investment after three years?
    A. $51,832.
    B. $55,702.
    C. $55,596.

27. Which of the following is *most likely* to increase as the frequency of compounding increases?
    A. Interest rate.
    B. Present value.
    C. Future value.

28. How long will it take an investment of $2,500 to grow three times in value to $7,500? Assume that the interest rate is 6 percent per year compounded annually.
    A. 11.9 years.
    B. 18.9 years.
    C. 21.3 years.

29. Evan Hubbard estimates he needs $100,000 to travel around the world. He plans to deposit $800 every month starting one month from today to meet this goal. The interest rate is 7 percent compounded monthly. How many months will it take for Hubbard to achieve his goal?
    A. 95 months.
    B. 225 months.
    C. 250 months.

**LO.e: Calculate and interpret the future value (FV) and present value (PV) of a single sum of money, an ordinary annuity, an annuity due, a perpetuity (PV only), and a series of unequal cash flows.**

30. A security pays $2500 at the start of each quarter for 3 years. Given that the annual discount rate compounded quarterly is 8%, which of the following is *most likely* to be the worth of the security today?
    A. $18,840.
    B. $26,438.
    C. $26,967.

31. Ms. Clara Johnson is buying a house. She expects her budget to allow a monthly payment of $1500 on a 25-year mortgage with an annual interest rate of 6.8 percent. If Johnson makes a 10 percent down payment, the most she can pay for the house is *closest* to:
    A. $216,116.
    B. $240,129.
    C. $264,706.

32. A paper supplier forecasts outgoing payments of amount $360, $550, and $400 at the end of months January, February, and March respectively. Assuming today is 1st January, and the annual interest rate is 2.4 percent, the minimum amount of money needed in an account today to satisfy these future payments is *closest* to:
    A. $1,287.
    B. $1,305.
    C. $1,396.

33. A tenant pays rent of $1,200 monthly due on the first day of every month. If the annual interest rate is 8 percent, the present value of a full year's rent is *closest* to:
    A. $13,333.
    B. $13,795.
    C. $13,887.

34. Chen Xiu wants to buy a house for which he needs to borrow $200,000. If he takes out a 30-year fixed rate 6% mortgage, his scheduled monthly payments will be *closest* to:
    A. $556.
    B. $1,000.
    C. $1,199.

35. Ms. Ling purchases an automobile using a loan. The amount borrowed is €44,000 and the terms of the loan call for the loan to be repaid over seven years using equal monthly payments with an annual nominal interest rate of 12% and monthly compounding. The monthly payment is *closest* to:
    A. €776.72.
    B. €803.43.
    C. €923.13.

36. A consumer takes out a loan with monthly payments of €500 for a period of four years with first payment made today. Assuming an annual discount rate of 3.5%, compounded monthly, the present value of the loan is *closest* to:
    A. €22,038.74.
    B. €22,365.36.
    C. €22,430.59.

37. Andy Roberts is planning for his retirement and hopes to spend €70,000 per year for an anticipated 30 years in retirement. If he deposits €8,000 at the end of his working years and

the interest rate is assumed to be 5% compounded annually, what is the *minimum* number of deposits he will need to make to fund his desired retirement?
A. 29.
B. 42.
C. 50.

38. Haley Hopkins plans to deposit $24,000 into her retirement account at the end of every year for the next 15 years. The account will earn 12 percent every year. Assuming she does not make any withdrawals, how much money will she have at the end of 15 years after the last deposit?
A. $894,713.
B. $1,094,713.
C. $1,294,713.

39. You are computing the future value of an annuity. Assume that the annuity payment is $120,000, the future value annuity factor is 21.664 and the interest rate is 4.50 percent per year. Which of the following are you *least likely* to use for computing the future value?
A. Annuity amount.
B. Future value annuity factor.
C. Interest rate.

40. You have been making the following deposits on the last day of every month.

| Month | Amount |
|---|---|
| January | $1,500 |
| February | $2,000 |
| March | $2,000 |
| April | $2,500 |
| May | $3,000 |
| June | $1,000 |

If the interest rate is 6 percent compounded monthly, how much money will you have on the 1st of July?
A. $12,000.
B. $12,148.
C. $13,903.

41. Liam Punter purchases a contract from an insurance company that promises to pay $600,000 after 8 years with a 5 percent annual return. How much money should Punter *most likely* invest today?
A. $406,104.

B. $408,350.
C. $886,473.

42. Your client is evaluating between the following two retirement options:
    - Option 1: Pays a lump sum of $2.5 million today.
    - Option 2: A 25-year annuity at $180,000 per year starting today.

    If your client's required rate of return is 6 percent per year, which option must he choose based on a higher present value?
    A. Option 1 as it has a greater present value.
    B. Option 2 as it has a greater present value.
    C. Either of the two options as they have an equal present value.

43. A security pays $150 per year in perpetuity. What is its present value today, given that the required rate of return is 4.75 percent?
    A. $316.
    B. $3158.
    C. $3185.

44. A security will make the following payments:

| **Time Period** | **Dividend Amount ($)** |
|---|---|
| 1 | 50 |
| 2 | 100 |
| 3 | 150 |
| 4 | 200 |
| 5 | 250 |

Given a discount rate of 9 per cent, the present value of the security is *closest* to:
A. $487.
B. $550.
C. $616.

45. Wak O'Neal plans to buy a car worth $42,000 today. He is required to pay 15 percent as a down payment and the remainder is to be paid as a monthly payment over the next 12 months with the first payment due at t = 1. Given that the interest rate is 8% per annum compounded monthly, which of the following is *most likely* to be the approximate monthly payment?
    A. $3,105.
    B. $3,654.
    C. $3,921.

46. Hank plans to purchase a $100,000 house by making a down payment of $15,000. For the remainder, he intends to take a 20-year fixed rate mortgage with quarterly payments. The first payment is due at t = 1. The current mortgage interest rate is 10 per cent compounded quarterly. Which of the following is *most likely* to be Hank's quarterly mortgage payment?
    A. $2,337.

B. $2,467.
C. $2,726.

47. An investor plans to buy a property worth $200,000 for which he has agreed to 20 percent today as down payment. The remainder will be in the form of monthly payments over the next 15 years at 9 percent per year compounded monthly. Which of the following is *most likely* to be the monthly payment?
A. $1,137.
B. $1,440.
C. $1,623.

**LO.f: Demonstrate the use of a time line in modeling and solving time value of money problems.**

48. John Anderson wants to save for his daughter's college tuition. He will have to pay $50,000 at the end of each year for the four years that her daughter attends college. He has 8 years until his daughter starts college to save up for her tuition. Using a 7% interest rate compounded annually, the amount Anderson would have to save each year for 8 years is *closest* to:
A. $22,000.
B. $18,500.
C. $16,500.

49. A 26 year old is using the following information to plan his retirement:

| | |
|---|---|
| Current age | 26 |
| Expected retirement age | 65 |
| Life expectancy | 90 |
| Current annual expenditures | $40,000 |
| Expected inflation rate of current expenditures until retirement | 2% |
| Expected return on investment | 7% |

He assumes his consumption expenditure will increase at a rate of 2%, the rate of inflation, until he retires. Upon retiring, he will have end-of-year expenditures equal to his consumption expenditure at age 65. The minimum amount that he must accumulate by age 65 in order to fund his retirement is *closest* to:
A. $989,300.
B. $1,009,080.
C. $1,220,390.

50. Sandra Archer is planning for her retirement. She is 35 years old and expects to retire in the next 40 years. She expects to live for another 25 years after her retirement. Her current annual expenditures are $54,000 and she expects them to increase at a rate of 3%, the rate of inflation, until she retires. Upon retiring, her end-of-year expenditures will be equal to her consumption expenditure at age 75. If the minimum amount that she can accumulate by age

75 is $2 million, what is the *minimum* expected rate of return she must earn on her investment to maintain her consumption expenditure throughout her expected life after retirement?
A. 7.29%.
B. 7.58%.
C. 7.87%.

51. Mr. Das Gupta is planning to save for his daughter's college tuition fund. His daughter is currently 11 years old and is expected to start college after 6 years. The expected annual fee for a four-year program is $45,000. Assuming an expected rate of return on investment of 5%, the minimum amount that he must accumulate over the next 6 years in order to fund his daughter's college tuition fund is *closest* to:
A. $160,000.
B. $170,000.
C. $180,000.

52. Mathew Jones plans to pay for his son's college education for 4 years starting 8 years from today. He estimates the annual tuition cost at $40,000 per year, when his son starts college. The tuition fees are payable at the beginning of each year. How much money must Jones invest every year, starting one year from today, for the next seven years? Assume the investment earns 10 percent annually.
A. $13,365.
B. $11,087.
C. $22,857.

53. Sally Smith is a pension fund manager. According to her estimates, retirees will be paid benefits worth $0.75 million per year, starting 12 years from now. There will be a total of 20 payments. Given a discount rate of 8 percent, the present value of the payments today is *closest* to:
A. $2,924,191.
B. $3,158,126.
C. $7,363,610.

54. Bill Graham is planning to buy a security which pays a dividend of $100 per year indefinitely, with the first payment to be received at t = 4. Given that the required rate of return is 10 percent per year compounded annually, how much should Graham pay today for the security?
A. $683.
B. $751.
C. $1,000.

55. Gerard Jones plans to save for his 5-year doctorate degree, which starts 6 years from now. The current annual expenditure is $7,200 and it is expected to grow by 7 percent annually. Gerard will need to make the first payment 6 years from today. He identifies a savings plan

that allows him to earn an interest of 8 percent annually. How much should Gerard deposit each year, starting one year from today? Assume that he plans to make 5 payments.

A. $8,370.
B. $8,539.
C. $8,730.

**Solutions**

1. A is correct. The required rate of return is the minimum rate of return an investor must receive to accept an investment.

2. C is correct. Interest rates can be interpreted as required rates of return, i.e. the minimum (not the maximum) rate of return an investor must receive in order to accept the investment.

3. A is correct. Nominal interest rate = real risk-free rate of return + inflation premium + risk premiums (default, liquidity, maturity premiums). Therefore, inflation premium = 15% - 3.5% - 3% - 4% - 2% = 2.5%.

4. A is correct. The difference in yield on otherwise identical U.S Treasury and corporate bonds is attributed to default risk.

5. B is correct. The maturity premium compensates investors for the increased sensitivity of the market value of debt to a change in market interest rates as maturity is extended. Option A describes liquidity risk. Option C describes credit risk.

6. A is correct. Liquidity premium can be best described as compensation to investors for the inability of selling a security at its fair market value.

7. C is correct. The nominal rate = real risk-free rate of return + an inflation premium + risk premiums (default, liquidity, maturity preference).
   In this case, 20 = 5 + 4 + X. Solve for X. X = 11.

8. C is correct. To calculate the required rate of return, we consider inflation premium, maturity premium, default risk premium, and liquidity premium. These are compensations for the different types of risk. There is nothing called nominal premium.

9. B is correct.

$$\text{Effective annual rate} = \left(1 + \frac{\text{stated annual interest}}{\text{number of periods}}\right)^{\text{number of periods}} - 1$$

$$\text{Effective annual rate} = \left(1 + \frac{0.22}{4}\right)^{4} - 1$$

$$\text{Effective Annual Rate} \approx 24\%.$$

10. B is correct.

$$\text{Effective Annual Rate} = \left(1 + \frac{\text{Annual Interest Rate}}{\text{m}}\right)^{\text{m}} - 1$$

$= (1+ 0.07/4)^4 – 1$
$= 7.18\%$

An intuitive approach to this type of a question would be to find out the EAR using the quarterly compounding, and if the EAR in the question is smaller/bigger, the frequency of compounding would be less/more.

11. A is correct. Use the EAR (effective annual rate) to compare the investments:

| Investment | Formula | EAR |
|---|---|---|
| **CD1** | **(1 + .082/12)^12 – 1** | **8.515%** |
| CD2 | (1 + .0825/4)^4 – 1 | 8.509% |
| CD3 | *e*^(0.080 × 1) – 1 | 8.328% |

12. C is correct. Solve for effective annual rate using: $\left(1+\frac{0.11}{365}\right)^{365} - 1$ = 0.11625 ~ 11.63%.

13. B is correct. The effective annual rate (EAR) is (1 + Periodic interest rate)$^n$ – 1. In this case, the periodic interest rate is 0.18/12 = 0.015 and the EAR is $(1.015)^{12}$ – 1 = 0.1956 = 19.56%.

14. C is correct. For discrete compounding, use the formula for calculating effective annual rate:
$\text{EAR} = (1 + \text{Periodic Rate})^{\text{m}} - 1.$
$\text{EAR} = \left(1+\frac{0.12}{4}\right)^{4} - 1 = 0.1255 = 12.55\%.$

15. A is correct. Use the formula for the effective annual rate with continuous compounding.
$\text{EAR} = \text{e}^{\text{Continuously compounded rate}} - 1.$
$0.0745 = \text{e}^{\text{Continuously compounded rate}} - 1$
$1.0745 = \text{e}^{\text{Continuously compounded rate}}$
$\text{Continuously compounded rate} = \ln 1.0745 = 7.19\%.$

16. C is correct. Rearranging the formula for future value, we can calculate the growth rate as:
$\text{FV} = \text{PV}(1+\text{r})^{\text{n}}$
$\text{r} = (\text{FV/PV})^{1/\text{n}} - 1$
$$\text{g} = \left(\frac{5.229}{2.568}\right)^{\frac{1}{4}} - 1 = 19.5\%$$
Notice that N = 4 because we assume that operating profits are at the end of the year. From the end of 2008 to the end of 2012, we have 4 years. Some students incorrectly use N = 5.

17. A is correct.
$$\text{g} = \left(\frac{81-14}{81}\right)^{\frac{1}{3}} - 1 = -6.1\%$$
The rate of growth in stores was around -6.1 percent during the period 2009-2012.

18. A is correct. The future value of an amount calculated using continuous compounding is:
$\text{FV} = \text{PV} * \text{e}^{\text{rt}}$
$2238 = \text{PV} * \text{e}^{0.08\times 5}$

$PV = \$1500.$

19. A is correct. Using a financial calculator, compute PV:
N=60, %i =9/12, PMT=0, FV=10,000. CPT PV. PV = 6,386.9.

20. C is correct. The future value of a given lump sum, calculated using continuous compounding, is $\text{FV} = \text{PV} * e^{\text{rt}}$. In this case, $1000 \times e^{.09\times6}$ = 1,716.

21. C is correct. Using a financial calculator, compute FV of $2 million after 4 years:
N = 4, %i = 7.5, PV = - 2,000,000, PMT = 0, CPT FV. FV = 2.671 million.

22. C is correct. Since the compounding is quarterly, the number of periods are 2.5*4 = 10.
N = 2.5*4=10, %i = 5/4=1.25, PV = - 5,000,000, PMT = 0, CPT FV. FV = 5.661.

23. A is correct. Using a financial calculator, compute the future value of 12 million for a period of 8 years (or 11 years from now):
N = 11 - 3 = 8, %i = 8%, PV = - 12,000,000, PMT= 0, CPT FV. FV = 22.21 million.

24. C is correct. This is a future value problem that can be solved with these keystrokes:
N= 3 * 4 =12, I / Y= 10 / 4 = 2.5, PV = - 80,000, PMT = 0, CPT FV. FV = 107,591.

25. B is correct. The compounding frequency is daily, so there are 365 periods. Remember that this is still a discrete compounding problem.
N = 365, I / Y = 0.1095 (4 / 365), PV = - 3,000,000, PMT = 0, CPT FV. FV = 3.122 million.

26. B is correct. This is a continuous compounding problem. To calculate the future value, use the formula $\text{FV} = \text{PV}e^{\text{rN}}$.
$\text{FV} = 50,000\ e^{0.036 * 3} = 55{,}702.$

27. C is correct. More frequent compounding results in a larger future value.

28. B is correct. Solve for N in the equation FV = PV $(1+r)^{N.}$
I / Y = 6, FV = 7500 (2500 * 3), PMT = 0, PV = -2500, compute N.
N = 18.9
It will take 18.9 years approximately for an investment of $2,500 to grow to $7,500 at an interest rate of 6 percent.

29. A is correct.
%i = 0.583 (7 / 12), PV = 0, PMT = - 800, FV = 100,000. Compute N.
N = 94.17
Note: it is important to use a -800 for PMT, not +800. If +800 is used the answer will be incorrect.

30. C is correct. Since the payment is made at the beginning of each quarter, this is an annuity due. Set the calculator to BGN mode for annuity due calculations.
N = 4 x 3 = 12, I = 8/4 = 2%, PMT = 2500, FV = 0, CPT PV. PV = $26,967.

31. B is correct. The consumer's budget will support a monthly payment of $1,500. Given a 25-year mortgage at 6.8 percent, the loan amount will be $216,115.8. This is obtained by entering the following values:
N = 300, I = 6.8/12, PMT = 1,500, CPT PV. If she makes a 10% down payment, then the most she can pay for the new house = $\frac{\$216,116}{1 - 0.10}$ = $240,129.

32. B is correct. The monthly interest rate is 2.4/12 = 0.2. Using a financial calculator, compute PV. $CF_0$=0, $CF_1$ = 360, $CF_2$ = 550, $CF_3$= 400, %i= 0.2 CPT NPV, PV = 1,304.70.

33. C is correct. Set the calculator to BGN mode for annuity due calculations and compute PV.
N=12, %i=8/12 =0.667, PMT = 1200. Compute annuity due PV, CPT PV = 13,887.

34. C is correct. The monthly rate is: 6%/12 = 0.5%. The number of monthly periods is 30 x 12 = 360. Using a financial calculator, compute PMT.
N = 360, %i = 0.5, PV = 200,000, FV = 0. CPT PMT = 1,199.

35. A is correct. Using a financial calculator:
N = 7 x 12 = 84, %i = 12/12 = 1, PV = 44,000, FV = 0; calculate PMT to be -776.72.

36. C is correct. Using a financial calculator:
First, get into begin mode.
N = 4 x 12 = 48, %i = 3.5/12, PMT = 500, FV = 0, CPT PV = - 22,430.59

37. B is correct. First we need to calculate the present value of the expenditures. Using a financial calculator: N = 30, %i = 5, PMT = 70,000, FV = 0, CPT PV = - 1,076,071. Hence Roberts needs 1,076,071 to fund his retirement. Next we need to determine the number of years for which he must deposit 8,000 in order accumulate 1,076,071. Using a financial calculator: %i = 5, PV = 0, PMT = 8,000 FV = - 1,076,071. CPT N = 41.9.

38. A is correct. This problem is to calculate the future value of an annuity. Using a financial calculator, compute FV.
N = 15, I / Y = 12, PV = 0, PMT = - 24,000, CPT FV. FV = 894,713.

39. C is correct because $\text{FV} = \text{PV} * \text{FV annuity factor}$. Therefore, the interest rate is least likely to be used for computation purposes.

40. B is correct. The stated annual rate is 6% with monthly compounding. The monthly rate is 0.5% = 0.005. Since the payment in January takes place on the last day of the month, there are 5 periods between 31st January and 1st July. The first payment compounds for 5 periods.

Similarly compute the future value for the remaining 5 payments with the last one happening on 30th June.

| **Month** | **Amount** | **Periods** | **Future Value** |
|---|---|---|---|
| Jan | $1,500 | 5 | 1,537.88 |
| Feb | $2,000 | 4 | 2,040.30 |
| Mar | $2,000 | 3 | 2,030.15 |
| Apr | $2,500 | 2 | 2,525.06 |
| May | $3,000 | 1 | 3,015.00 |
| Jun | $1,000 | 0 | 1,000.00 |
| **Sum** | | | **12,148.39** |

41. A is correct. We are required to calculate the present value of a lump sum here.
    N = 8, I / Y = 5, PMT = 0, FV = 600,000, CPT PV. PV = 406,104
    This implies that Liam must invest $406,104 today in order to have 600,000 after 8 years, if the investment earns 5 percent annually.

42. A is correct. Compare the present value of the annuity with the lump sum to determine which has a higher present value. The present value of Option 1 is $2.5 million. For option 2, use the formula for the present value of an annuity.
    N = 24 (As 1 payment has been received), PMT = 180,000, %i = 6, FV=0, CPT PV. PV = 2,259,064 + 180,000 (Received today) = 2,439,064.
    The lump sum option (option 1) is better as it has a higher present value.

43. B is correct. The formula for the present value of a perpetuity is:

$$PV = \frac{A}{r}$$

$$PV = \frac{150}{0.0475} = \$3158$$

44. B is correct. Enter the following cash flows into the calculator, use an interest rate of 9% and compute the NPV.

| **Keystrokes** | **Explanation** | **Display** |
|---|---|---|
| [2nd] [QUIT] | Return to standard mode | 0 |
| [CF] [2nd] [CLR WRK] | Clear CF Register | CF = 0 |
| 0 [ENTER] | No cash flow at T = 0 | CF0 = 0 |
| [↓] 50 [ENTER] | Enter CF at T = 1 | C01 = 50 |
| [↓] [↓] 100 [ENTER] | Enter CF at T = 2 | C02 = 100 |
| [↓] [↓] 150 [ENTER] | Enter CF at T = 3 | C03 = 150 |

| | | |
|---|---|---|
| [↓] [↓] 200 [ENTER] | Enter CF at T = 4 | C04 = 200 |
| [↓] [↓] 250 [ENTER] | Enter CF at T = 5 | C03 = 250 |
| [↓] [NPV] [9] [ENTER] | Enter discount rate | I = 9 |
| [↓] [CPT] | Compute NPV | 550.03 |

45. A is correct. Remainder after down payment for which mortgage should be taken:
42,000 * 0.85 = 35,700
N = 12, I / Y = 8/12 = 0.666, PV = - 35,700, FV = 0, CPT PMT
PMT = 3,105.

46. B is correct. Remainder funded through mortgage= $\$100{,}000 - \$15{,}000 = \$85{,}000$
The present value of all the quarterly mortgage payments for 20 years must be equal to the amount borrowed. We are required to solve for the annuity amount. The keystrokes are as follows:
N = 80 (20 * 4) (4 payments, one each quarter, for 20 years), I / Y = 10/4 = 2.5, PV = -85,000, FV = 0, CPT PMT
PMT = 2,467.

47. C is correct. $\text{Downpayment} = \$200{,}000 * 0.20 = \$40{,}000$
Remainder funded through mortgage $= \$200{,}000 - \$40{,}000 = \$160{,}000$
Present value of the payments must be equal to the amount borrowed. We are required to solve for the annuity amount. The keystrokes are as follows:
N= 180 (15 * 12) (12 payments in a year for 15 years), I / Y = 9/12 =0.75%, PV = -160,000, FV = 0, CPT PMT.
PMT = 1,623
This implies that $160,000 is equal to 180 equal monthly payments of 1,623 at an interest rate of 9 per cent. Remember that calculating the mortgage payment is equivalent to determining a level annuity payment.

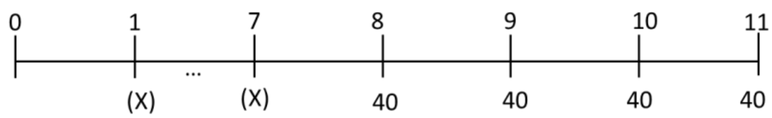
48. C is correct. A payment of 50,000 has to be made at the end of every year for 4 years of college. The present value of these four payments at the start of college (one year before the first payment) can be calculated as follows: N = 4; %i = 7, PMT = 50,000, FV = 0. CPT PV = -169,360. Next we need to compute how much Anderson must deposit every year in order to accumulate 169,360 at the end of 8 years. This can be calculated as follows: N = 8, %i = 7, PV = 0, FV = 169,360. CPT PMT = 16,507. Option C is the closest answer.

49. B is correct. First we need to calculate the expenditure at age 65 given 2% inflation. Since he is currently 26 we need to compound over 39 years (65 – 26 = 39). Using a calculator: N = 39, %i = 2, PV = 40,000, PMT = 0. CPT FV = 86,590. This expenditure is expected to continue till age 90. From age 65 to age 90 is 25 years. In other words to fund his retirement he needs a 25 year, $86,590 annuity. The present value of this annuity at age 65 can be calculated as follows: N = 25, %i = 7, PMT = 86,590, FV = 0, CPT PV = 1,009,084.

50. A is correct. Her consumption spending (currently $54,000 annually) increases at the rate of inflation (3%) over the next 40 years until she retires. Her annual consumption spending at the time she retires will be $176,150.04: N = 40, %i = 3, PV = 54,000, CPT FV. To support that level of spending for 25 years of retirement, assuming she has accumulated $2 million by her retirement age, she must earn a 7.29% return on her retirement account:
N = 25, PMT = 176,150.04, PV = -2,000,000, CPT %i.

51. A is correct. To fund the tuition fees assuming a 5% return on his daughter's fund, he must accumulate $159,568 ≈ 160,000 by the time his daughter starts college:
N=4, %i = 5, PMT = 45,000, CPT PV.

52. B is correct. First draw a timeline:




There are two steps to this problem:

1. First, calculate the present value of the four $40,000 payments at t = 7. The four college payments represent an annuity. So, this is equivalent to calculating the present value of an annuity.

   N = 4, %i = 10, PMT = 40000, FV = 0, CPT PV.
   PV at the end of year 7 = 126,794.62.
2. Next, calculate the value of the payment to be made every year from year 1 to year 7. To do this, equate the value at end of year 7 calculated in the previous step to the future value of 7 investments of X at year 7. This uses the formula for the future value of an annuity.

   N = 7, %i = 10, PV = 0, FV = 126,794.62, CPT PMT.
   PMT = 13,364.85.

Jones must invest 13,364.85 each year for 7 years, starting next year, towards his son's tuition fees.

53. B is correct. Given that the first annuity payment will be at the end of Year 12, we should compute the present value at the end of Year 11.
N = 20, %i = 8, PMT = 750,000, FV = 0, CPT PV.
The present value of 20 $0.75 million payments at the end of Year 11 is 7,363,610.56.
Next, discount it back to t = 0 to determine its present value today:

$$PV_{\text{today}} = \frac{7{,}363{,}610}{(1+0.08)^{11}} = \$3{,}158{,}126.$$

54. B is correct. We are required to calculate the present value of a perpetuity at t=3 and then discount it back to t=0.

$$PV_{t=3} = \frac{100}{0.1} = \$1{,}000$$
$$PV_{today} = \frac{1{,}000}{(1 + 0.10)^3} = \$751$$
Graham must pay $751 to receive $100 per year indefinitely after four years.

55. A is correct. This problem can be solved in two steps.
Step 1: Find the annual expenditures
$\text{Annual Expenditure}_{t=6} = 7{,}200\ (1 + 0.07)^6 = \$10{,}805$
$\text{Annual Expenditure}_{t=7} = 7{,}200\ (1 + 0.07)^7 = \$11{,}562$
$\text{Annual Expenditure}_{t=8} = 7{,}200\ (1 + 0.07)^8 = \$12{,}371$
$\text{Annual Expenditure}_{t=9} = 7{,}200\ (1 + 0.07)^9 = \$13{,}237$
$\text{Annual Expenditure}_{t=10} = 7{,}200\ (1 + 0.07)^{10} = \$14{,}163$

Step 2: Find the present value of annual expenditures at t = 5

| **Time Period** | **Annual Expenditure ($)** | **Present Value** |
|---|---|---|
| 6 | 10,805 | $10{,}805\ (1.08)^{-1} = 10{,}004$ |
| 7 | 11,562 | $11{,}562\ (1.08)^{-2} = 9{,}912.5$ |
| 8 | 12,371 | $12{,}371\ (1.08)^{-3} = 9{,}820.5$ |
| 9 | 13,237 | $13{,}237\ (1.08)^{-4} = 9{,}729.6$ |
| 10 | 14,163 | $14{,}163\ (1.08)^{-5} = 9{,}639$ |
| | | SUM = $49,106 |

Step 3: Find the annuity payment
N = 5, %i = 8, PV = 0, FV = 49,106, CPT PMT.
PMT = 8,370.

**LO.a: Calculate and interpret the net present value (NPV) and the internal rate of return (IRR) of an investment.**

1. The Chinese government wishes to invest in a project that requires an initial investment of $18 million. The project is expected to produce positive cash flows of $5 million for the first three years, and $3 million for the next two years. Given that the required rate of return is 10 percent, the approximate internal rate of return (IRR) of this project is *closest* to:
   A. 2%.
   B. 6%.
   C. 10%.

2. A company is planning to invest $25,000 in a new project. The project is expected to generate annual after-tax cash flows of $5000 for the next 3 years and $15,000 in its fourth year. Given that the appropriate discount rate for this project is 5.5 percent, the NPV of the project is *closest* to:
   A. $598.
   B. $567.
   C. $1,519.

3. The expected cash flows of a project are given below:

| Time | Cash Flow ($) |
|---|---|
| 0 | (180,000) |
| 1 | 100,000 |
| 2 | 200,000 |
| 3 | 250,000 |

   Given that the risk-free rate is assumed to be 3 percent, the market risk premium is 6 percent, the beta for the project is 1.2 and the expected inflation is 2 percent, the investment's net present value (NPV) is *closest to*:
   A. $237,000.
   B. $255,000.
   C. $262,000.

4. Lee Kwan Group is about to invest in a 2-year project that requires an initial outlay of $5 million. The expected cash flows in years 1 and 2 are $3 million and $3.5 million respectively. The internal rate of return of this project is *closest to*:
   A. 18%.
   B. 19%.
   C. 20%.

5. The table below shows the after-tax cash flows of a project:

| **Year** | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| **Cash flow** (€) | -50,000 | 35,000 | 25,000 | 10,000 | 2,000 | 2,000 | 3,000 |

   The IRR of the project is *closest* to:
   A. 27%.

B. 29%.
C. 30%.

6. The incremental after-tax cash flows of a project are given below:

| **Year** | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| **Cash flow** (€) | -50,000 | 25,000 | 20,000 | 10,000 | 3,000 |

Using 12 percent as the discount rate, the NPV (in €) of the project is *closest* to:
A. -2,710.
B. 1,535.
C. 3,804.

7. Alexander Stan plans to invest $1.5 million in a project today. The project is expected to pay $200,000 per year in perpetuity. The cost of capital is 8 percent. Will Stan benefit by investing in the project, as judged by the NPV rule?
A. No, the project is not worth the investment.
B. Yes, the project is worth the investment.
C. Additional information is required to make the decision.

8. A project requires an initial outlay of $750,000. It is expected to produce $200,000 in the first year, $300,000 in the second year, and $400,000 in the third year. The project's opportunity cost of capital is 10 percent. Which of the following is *most likely* the net present value of the project?
A. $11,833.
B. -$19,722.
C. $769,722.

9. Billy Bowden intends to invest $1.5 million in a project today. The project's expected cash flows are $200,000 per year in perpetuity. The cost of capital is 8 percent. Should Bowden invest in the project based on the IRR rule?
A. No, the project is not worth the investment.
B. Yes, the project is worth the investment.
C. Additional information is required to make the decision.

10. A project requires an initial outlay of $750,000. It is expected to produce cash flows of $200,000 in the first year, $300,000 in the second year, and $400,000 in the third year. The cost of capital for this project is 10%. What is the internal rate of return of the project?
A. 8.65%.
B. 10.00%.
C. 11.00%.

**LO.b: Contrast the NPV rule to the IRR rule, and identify problems associated with the IRR rule.**

11. As a project manager, Alan Smith has to choose between three mutually exclusive projects: A, B and C. He uses the information given below to evaluate the three projects:

| | NPV | IRR | Payback Period |
|---|---|---|---|
| A | $22,000 | 7.5% | 4 years |
| B | $30,000 | 8% | 4.5 years |
| C | $25,000 | 12% | 6 years |

Based on the information given, the *most* appropriate project for Smith's department is:
A. Project A.
B. Project B.
C. Project C.

12. Ms. Silvio, a corporate finance analyst is considering two mutually exclusive capital budgeting projects with conflicting rankings (one has the higher positive NPV, while the other has a higher IRR). The *most* appropriate project she can choose is the one with the:
A. higher IRR.
B. higher NPV.
C. shorter payback period.

13. Emad Gohar plans to invest in a project that requires an initial investment of $3 million. The project is expected to generate the following cash flows.

| Time | Cash flow |
|---|---|
| 1 | 1.20 million |
| 2 | 1.05 million |
| 3 | 0.90 million |
| 4 | 0.75 million |

The cost of capital is 10 percent. Which of the following statements *best* describes the decision Gohar should take based on the NPV and IRR rules?
A. Accept based on the NPV rule, but reject based on the IRR rule.
B. Accept based on the IRR rule, but reject based on the NPV rule.
C. Accept based on either rule.

14. Which of the following reasons will *least likely* lead to a conflicting decision between the IRR rule and the NPV rule for mutually exclusive projects?
A. The size of the projects differs.
B. The timing of the project's cash flows differs.
C. The cost of capital differs.

**LO.c: Calculate and interpret a holding period return (total return).**

15. Information about a common stock investment is given below:

| | **Date** | **Amount €** |
|---|---|---|
| Stock purchase | 15 January 2013 | 62.00 |
| Cash dividend received | 14 July 2013 | 5.00 |
| Stock sale | 15 July 2013 | 78.00 |

The holding period return on the common stock investment is *closest to*:
A. 25.80%.
B. 33.87%.
C. 67.74%.

16. Ms. Brown purchased 500 shares of a stock at a price of $20 per share on 1 January. She sold all the stocks on 30 June of the same year at a price of $ 22 per share. She also received dividends totaling $500 on 30 June. The holding period return on the investment is *closest* to:
A. 10%.
B. 15%.
C. 20%.

**LO.d: Calculate and compare the money-weighted and time-weighted rates of return of a portfolio and evaluate the performance of portfolios based on these measures.**

17. An investor buys two shares of Heather Corporation for $53 per share. He receives an annual dividend of $3 per share at the end of every year for four years. At the end of fourth year, just after receiving his final dividend, he sells both shares of Heather Corporation for $45 per share. The investor's money weighted rate of return is *closest* to :
A. 2.0%.
B. 5.2%.
C. 1.6%.

18. The table below shows information about a common stock:

| | **Date** | **Amount €** |
|---|---|---|
| Stock purchase (1 share) | 1 July 2012 | 54.00 |
| Stock purchase (1 share) | 1 July 2013 | 49.00 |
| Stock sale (2 shares @ 61.00 per share) | 1 July 2014 | 122.00 |

The stock does not pay a dividend. The money-weighted rate of return on the investment is *closest* to:
A. 11.64%.
B. 11.87%.
C. 12.05%.

19. An investor purchases one share of a stock for $44. Exactly one year later, the company pays a dividend of $4.00 per share. This is followed by two more annual dividends of $5.00 and

$4.50 in successive years. Upon receiving the third dividend, the investor sells the share for $45.0 .The money-weighted rate of return on this investment is *closest* to:
A. 8.45%.
B. 10.87%.
C. 32.95%.

20. An investor purchases 100 shares of a stock. The history of this investment is outlined below:

| **Time** | **Activity** | **Price per Share** | **Dividend per Share** |
|---|---|---|---|
| Begining of Year 1 | Buy 100 shares | $20.00 | |
| End of Year 1 | Buy 20 shares | $22.00 | $2.00 |
| End of Year 2 | | $25.00 | $2.50 |
| End of Year 3 | Sell 120 shares | $24.00 | |

Assuming that the investor does not reinvest his dividends, which are tax-free, the time-weighted rate of return on the investment is *closest* to:
A. 12.92%.
B. 14.71%.
C. 16.50%.

21. Donna Dewberry buys 120 shares of EFL at a price of $75 per share on January 1, 2011. On January 1, 2012, after receiving a dividend of $5 per share, Dewberry sells 60 shares at a price of $80 each. On January 1, 2013, Dewberry receives a dividend of $5 per share on the remaining shares and then sells all of them at $82 each. Which of the following is *most likely* the money weighted return on Dewberry's portfolio?
A. 11.85%.
B. 33.80%.
C. 35.89%.

22. An investor buys one share of a stock at $85 at t = 0. He buys an additional share for $90 at t = 1. The stock pays a dividend of $5 per share at t = 1 and t = 2. The investor sells both the shares at t = 2 for $100 each. Which of the following is *most likely* the money weighted rate of return?
A. 11.34%.
B. 14.18%.
C. 14.94%.

23. An investor buys one share of a stock at $85 at t = 0. He buys an additional share for $90 at t = 1. The stock pays a dividend of $5 per share at t = 1 and t = 2. The investor sells both the shares at t = 2 for $100 each. Which of the following is *most likely* the time weighted rate of return?
A. 11.34%.
B. 14.18%.

C. 14.94%.

24. The following table shows the cash flows for a particular portfolio:

| **Amounts in $** | **Quarter 1** | **Quarter 2** | **Quarter 3** | **Quarter 4** |
|---|---|---|---|---|
| Beginning balance | 2,000,000 | 3,100,000 | 3,800,000 | 4,500,000 |
| Beginning periodic inflow/(outflow) | 500,000 | 450,000 | 200,0000 | (350,000) |
| Amount invested | 2,500,000 | 3,550,000 | 4,000,000 | 4,150,000 |
| Ending balance | 3,100,000 | 3,800,000 | 4,500,000 | 4,000,000 |

Which of the following is *most likely* the annualized time weighted return of the portfolio?

A. 43.93%.
B. 8.47%.
C. 9.50%.

25. Which of the following statements is inaccurate about a time weighted return?

A. It is unaffected by the timing of cash withdrawals.
B. It is the internal rate of return.
C. Its calculation is similar to the calculation of a geometric mean.

26. Mariah Hill buys one share of a stock for $50 on January 1, 2011. She buys an additional share on January 1, 2012 at $60. The stock paid a dividend of $3 per share at the end of each year. On January 1, 2013, she receives $150 for selling the two shares. Which of the following options *most likely* represent the time weighted and money weighted returns?

| | **Time weighted return** | **Money weighted return** |
|---|---|---|
| A. | 28.60% | 27.98% |
| B. | 27.98% | 28.60% |
| C. | 26.80% | 29.78% |

**LO.e: Calculate and interpret the bank discount yield, holding period yield, effective annual yield, and money market yield for US Treasury bills and other money market instruments.**

27. A T-Bill with a par value of $100,000 and 120 days to maturity has a bank discount yield of 5.2 percent. The current price of the T-Bill is *closest to*:

A. $97,490.33.
B. $98,266.67.
C. $99,480.00.

28. A 210-day U.S. Treasury bill with a face value of $100,000 sells for $98,000 when issued. Assuming an investor holds the bill to maturity, the investor's money market yield is *closest to*:

A. 1.19%.

B. 2.04%.
C. 3.50%.

29. The dollar discount on a U.S. Treasury bill with 121 days until maturity is $3,050. The face value of the bill is $100,000. The bank discount yield of the bill is *closest* to:
    A. 9.07%.
    B. 9.20%.
    C. 9.43%.

30. Bill Adams wants to compute the bank discount yield of a T-bill. A T-bill with a face value of $100,000 is selling for $96,500. If there are 120 days until maturity, what is its bank discount yield?
    A. 3.50%.
    B. 10.50%.
    C. 10.64%.

31. A Treasury bill with a face value of PKR 100,000 is selling for PKR 97,000. There are 140 days until maturity. Which of the following is *most likely* the money market yield?
    A. 7.71%.
    B. 7.95%.
    C. 8.06%.

32. A Treasury bill with a face value of PKR 100,000 is selling for PKR 97,000. There are 150 days until maturity. Which of the following is *most likely* the effective annual yield?
    A. 7.20%.
    B. 7.42%.
    C. 7.69%.

**LO.f: Convert among holding period yields, money market yields, effective annual yields, and bond equivalent yields.**

33. A fixed-income analyst is analyzing a T-bill which has 180 days to maturity and a bank discount yield of 2.35 percent. The effective annual yield of the bond would be *closest* to:
    A. 2.37%.
    B. 2.40%.
    C. 2.43%.

34. A T-Bill with a par value of $100,000 and 90 days to maturity has a bank discount yield of 4.70 percent. The money market yield of the instrument is *closest* to:
    A. 4.76%.
    B. 4.84%.
    C. 4.90%.

35. A Treasury bill offers a bank discount yield of 4.5 percent and has 180 days to maturity. The effective annual yield for the instrument is *closest* to:

A. 4.39%.
B. 4.72%.
C. 4.80%.

**Solutions**

1. B is correct. Enter the given cash flows in a financial calculator:
   $CF_0$ = -18 million
   $CF_1$ = 5 million
   $CF_2$ = 5 million
   $CF_3$ = 5 million
   $CF_4$ = 3 million
   $CF_5$ = 3 million
   IRR Compute = 6%.

2. A is correct. Enter the given cash flows and discount rate in a financial calculator to calculate NPV:
   $CF_0$ = -25,000, $CF_1$ = 5000, $CF_2$ = 5000, $CF_3$ = 5,000, $CF_4$ = 15000, i = 5.5%, CPT NPV.
   NPV = $597.92.

   Alternatively, solve the following equation to calculate NPV
   NPV
   $= -25{,}000 + (5{,}000 \div 1.055) + (5{,}000 \div 1.055^2) + (5{,}000 \div 1.055^3) + (15000 \div 1.055^4)$
   = $ 597.92 ~ $598.

3. C is correct.
   Opportunity cost of capital for the investment =
   $\text{risk free rate} + \text{the market risk premium} * \text{beta}.$

   Opportunity cost = 3% + (6% x 1.2) = 10.2%.

   The NPV equals the present value (at time = 0) of the future cash flows discounted at the opportunity cost of capital (10.2%) minus the initial investment, or $123,725. Using a financial calculator, solve for NPV.
   $CF_0$= –180,000, $CF_1$= 100,000, $CF_2$= 200,000, $CF_3$= 250,000, %i = 10.2, CPT NPV = 262,241.84 ≈ 262,000.

4. B is correct. Using a financial calculator, compute IRR:
   $CF_0$ = -5,000,000, $CF_1$ = 3,000,000, $CF_2$ = 3,500,000; CPT IRR = 18.88% ≈ 19%..

5. A is correct. Using a financial calculator, compute IRR:
   $CF_0$ = –50,000, $CF_1$ = 35,000, $CF_2$ = 25,000, $CF_3$ = 10,000, $CF_4$ = 2,000, $CF_5$ = 2,000, and $CF_6$ = 3,000, CPT IRR.
   The IRR is 27.05%.

6. A is correct. Enter the given cash flows and the given discount rate into a financial calculator and solve for NPV.

$CF_0$ = –50,000, $CF_1$ = 25,000, $CF_2$ = 20,000, $CF_3$ = 10,000, $CF_4$ = 3,000, i = 12%. Compute PV. The NPV is –2,710.

7. B is correct. $\text{NPV} = -\text{CF}_0 + \frac{\overline{\text{CF}}}{\text{r}}$
   $\text{NPV} = -1{,}500{,}000 + \frac{\overline{200{,}000}}{0.08} = 1{,}000{,}000$
   Since the NPV is positive, the project should be accepted.

8. B is correct. Using a financial calculator, enter the following cash flows to compute NPV.
   $\text{CF}_0 = -750{,}000$; $\text{CF}_1 = 200{,}000$; $\text{CF}_2 = 300{,}000$; $\text{CF}_3 = 400{,}000$; I = 10; CPT NPV = $-19{,}722$

9. B is correct.
   $$\text{NPV} = -\text{CF}_0 + \frac{\overline{\text{CF}}}{\text{IRR}} = 0$$
   $$0 = -1{,}500{,}000 + \frac{\overline{200{,}000}}{\text{IRR}}$$
   IRR = 13.33%
   Since the IRR is greater than the cost of capital, which is also the opportunity cost, Bowden should invest the project.

10. A is correct. Using a financial calculator, enter the following cash flows to compute IRR.
    $\text{CF}_0 = -750{,}000$, $\text{CF}_1 = 200{,}000$, $\text{CF}_2 = 300{,}000$, $\text{CF}_3 = 400{,}000$, CPT IRR = 8.65%.

11. B is correct. Project B has the highest NPV among the three projects and thus results in the greatest addition to shareholder wealth. While there is a conflict among the NPV and IRR rules for projects B and C, NPV rule is to be given preference for its superiority over IRR and hence B would be the most appropriate choice. Payback period should be given the least consideration as it does not affect the decision due to its various drawbacks.

12. B is correct. When the IRR and NPV rules conflict in ranking projects, consider the NPV rule. The NPV of an investment represents the expected addition to shareholder wealth from an investment, and we take the maximization of shareholder wealth to be a basic financial objective of a company.

13. C is correct. Using a financial calculator, enter the following cash flows to compute NPV and IRR.
    $\text{CF}_0 = -3.0$ million, $\text{CF}_1 = 1.2$ million, $\text{CF}_2 = 1.05$ million, $\text{CF}_3 = 0.90$ million, $\text{CF}_4 = 0.75$ million, I = 10%, CPT NPV = 0.147 million, CPT IRR = 12.44%
    Since the NPV is positive and the IRR is greater than the cost of capital, both rules indicate that the project should be accepted.

14. C is correct. The size of the project and the timing of the cash flows impact the NPV and the IRR of the projects.

15. B is correct. Holding period return is calculated as follows: HPR = $\frac{(78 - 62 + 5)}{62}$ = 33.87%. The HPR is not annualized for holding periods shorter than a year.

16. B is correct. HPR $= \frac{(P1 - P0 + D1)}{P0} = \frac{(22 - 20 + 1)}{20}$ = .15 = 15%

17. A is correct. Money-weighted rate of return is the internal rate of return (IRR) of the cash flows resulting from the investment activity.
    To calculate the money weighted rate of return for the investor, using financial calculator enter the following cash flows:
    $CF_0$ = (-53 x 2) = -106, $CF_1$ = 6, $CF_2$ = 6, $CF_3$ = 6, $CF_4$= $6 + (45 * 2)$ = 96, Compute IRR: IRR =1.998% ~ 2.0%.

18. A is correct. The money-weighted rate of return is the IRR based on the cash flows related to the investment. In this case, a cash outflow of €54 occurs at t = 0, another outflow of €49 occurs at t = 1, and an inflow of €122 occurs at t = 2. Using a financial calculator, the IRR of these cash flows is 11.64%.

19. B is correct. The money-weighted rate of return is the internal rate of return (IRR) of the cash flows associated with the investment. Using a financial calculator, compute IRR.
    $CF_0$ = –44, $CF_1$ = 4, $CF_2$ = 5, $CF_3$ = 49.50, compute IRR. IRR = 10.87%.

20. A is correct. TWR = $\sqrt[3]{\{[(22 + 2)/20] * [(25 + 2.5)/22] * [(24/25)]\}} - 1 = 0.1292$.

21. A is correct. Calculate the outflows and inflows on every significant date:

    Outflows:
    On January 1, 2011: 120 shares * $75 per share = $9000
    Inflows:
    On January 1, 2012:
    Dividend on 120 shares: 120 * $5 per share = $600
    Sale of 60 shares: 60 * $80 per share = $4800, Total = $5400
    On January 1, 2013
    Dividend on remaining 60 shares: 60 * $5 per share = $300
    Sale of 60 shares: 60 * $82 per share = $4920
    Total = $5220
    IRR is the money weighted return which can be calculated using the cash flows:
    $CF_0 = -9000$; $CF_1 = 5400$; $CF_2 = 5220$, CPT IRR = 11.85%
    The money weighted return is equal to 11.85%.

22. C is correct. Calculate the outflows and inflows at t = 0, t = 1 and t = 2.
    Outflows:
    At t = 0: $85
    At t = 1: $90

Inflows:
At t = 1: \$5 * 1 = \$5
At t = 2: \$5 * 2 = \$10
At t = 2: \$100 * 2 = \$200
Using a financial calculator, calculate the IRR.
$CF_0 = -85$, $CF_1 = -85$, $CF_2 = 210$, CPT IRR = 14.94%.

23. B is correct.
Value of the stock at various time periods:
At t = 0, \$85
At t = 1, \$90 + \$5 = \$95
At t = 2, \$200 + \$10 = \$210
HPR:
$$HPR_1 = \frac{90 + 5}{85} - 1 = 11.76\%$$
$$HPR_2 = \frac{200 + 10}{90 * 2} - 1 = 16.67\%$$
Time weighted return = $[(1 + r_1)(1 + r_2)(1 + r_3) \ldots\ldots (1 + r_N)]^{\frac{1}{N}} - 1$
$[(1.1176)(1.1667)]^{0.5} - 1 = 14.18\%$
The time weighted return is equal to 14.18%.

24. A is correct. Calculate the holding period return for every period:
HPR:
$$HPR_1 = \frac{3{,}100{,}000 - 2{,}500{,}000}{2{,}500{,}000} = 24.00\%$$
$$HPR_2 = \frac{3{,}800{,}000 - 3{,}550{,}000}{3{,}550{,}000} = 7.04\%$$
$$HPR_3 = \frac{4{,}500{,}000 - 4{,}000{,}000}{4{,}000{,}000} = 12.50\%$$
$$HPR_4 = \frac{4{,}000{,}000 - 4{,}150{,}000}{4{,}150{,}000} = -3.61\%$$
Since the returns are for each quarter, we simply need to link the returns:
1.24 * .10704 * 1.1250 * 0.9639 = 1.4393. The annualized time weighted return is equal to 43.93%.

25. B is correct. The time weighted rate of return is not the internal rate of return. Statements A and C are correct.

26. B is correct. To determine the time-weighted return, calculate the holding period return.
HPR:
$$HPR_1 = \frac{60 + 3}{50} - 1 = 26\%$$
$$HPR_2 = \frac{150+6}{60*2} - 1 = 30\%$$
Time weighted return = $[(1 + r_1)(1 + r_2)(1 + r_3) \ldots\ldots (1 + r_N)]^{\frac{1}{N}} - 1$

$[(1.26)(1.30)]^{0..5} - 1 = 27.98\%$
The time weighted return is equal to 27.98%
Outflows:
At t = 0, \$50
At t = 1, \$60
Inflows:
At t = 1: \$3 * 1 = \$3
At t = 2: \$3 * 2 = \$6
At t = 2: \$150
Using a financial calculator, compute IRR.
$CF_0 = -50$, $CF_1 = -57$, $CF_2 = 156$, CPT IRR = 28.60 %.
The money weighted return is equal to 28.60%.

27. B is correct. The dollar discount is: 1,733.33 = $0.052 * 100{,}000 * \left(\frac{120}{360}\right)$. The price would be 98,266.67 = 100,000 – 1,733.33.

28. C is correct. The money market yield is: 3.50% = $\left[\left(\frac{100{,}000}{98{,}000}\right) - 1\right] * \left(\frac{360}{210}\right)$.

29. A is correct. Solve for bank discount yield using:
$r_{BD} = \frac{D}{F} * \frac{360}{t}$; $= \frac{3050}{100000} * \frac{360}{121}$ = 0.09074 or 9.07%

30. B is correct.

$$\text{Bank Discount Yield} = \left(\frac{\text{Discount}}{\text{Face Value}}\right) * \left(\frac{360}{\text{Days to maturity}}\right)$$

$$\text{Bank Discount Yield} = \left(\frac{3500}{100{,}000}\right) * \left(\frac{360}{120}\right) = 10.50\%$$

31. B is correct. $r_{MM} = \text{HPR} * \frac{360}{t} = \left(\frac{100{,}000}{97000} - 1\right) * \frac{360}{140} = 7.95\%$.
32. C is correct.

$$\text{EAY} = (1 + \text{HPY})^{\frac{365}{t}} - 1$$

$$\text{HPY} = \frac{P_1 - P_0 + D_1}{P_0}$$

$$\text{HPY} = \frac{100{,}000 - 97{,}000 + 0}{97{,}000} = 3.092\%$$

$$\text{EAY} = (1 + 0.03092)^{\frac{365}{150}} - 1 = 7.69\%.$$

33. C is correct.
$r_{BD} = \frac{D}{F} * \frac{360}{t}$; $0.0235 = \frac{D}{100} * \frac{360}{180}$; D = 1.175
$P_0$ = 100 – 1.175 = 98.825
HPY = $\frac{P_t - P_0}{P_0} = \frac{100 - 98.825}{98.825}$ = 0.0118897

EAY = $(1+HPY)^{365/t} - 1 = (1+0.0118)^{365/180} - 1 = 2.4257\%$.

34. A is correct. The money market yield is: $4.76\% = \frac{360*0.047}{[360 - (90)*(0.047)]}$.

The more intuitive method is to first calculate the HPY and then use the HPY to calculate the money market yield. To calculate the HPY, we need the discount, D: 0.047 = (D/100,000) * 360/90. D = 1,175. P = 98,825. HPY = 1,175/98,825 = 0.01189.

Money market yield = $0.01189 * \frac{360}{90} = 0.0476$.

35. B is correct. First, calculate the initial price ($P_0$) of the T-bill:

$0.045 = \frac{D}{100} * \frac{360}{180}$

D = 2.25

$P_0 = 100 - 2.25 = 97.75$

Then, calculate the holding period yield (HPY) (recall that T-bills are pure discount instruments and do not pay coupons):

$HPY = (P_t - P_0) \div P_0$

$HPY = \frac{100 - 97.75}{97.75} = 0.023$

Finally, convert the HPY into effective annual yield:

$EAY = (1+ HPY)^{365/t} - 1$

$EAY = (1+ 0.023)^{365/180} - 1 = 0.04719 = 4.72\%$.

**LO.a: Distinguish between descriptive statistics and inferential statistics, between a population and a sample, and among the types of measurement scales.**

1. An analyst gathers the market capitalization figures of firms comprising the S&P 500 and then ranks them from highest to lowest market capitalization. She then assigns the number 1 to the group with the lowest market capitalization value, number 2 to the group with the second lowest market capitalization, and so on. The measurement scale used by the analyst is *best* described as:
   A. interval.
   B. nominal.
   C. ordinal.

2. Statistical inference *least likely* involves which of the following steps?
   A. Forecasting.
   B. Estimation and judgment.
   C. Description of a data set.

3. Which type of measurement scale will *most likely* be used to measure the height of the players in a basketball team?
   A. Nominal scale.
   B. Ordinal scale.
   C. Ratio scale.

**LO.b: Define a parameter, a sample statistic, and a frequency distribution.**

4. A parameter describes the characteristic of a:
   A. population.
   B. sample.
   C. population and a sample.

5. A subset of a population is *best* known as:
   A. parameter.
   B. sample.
   C. sample statistic.

**LO.c: Calculate and interpret relative frequencies and cumulative relative frequencies, given a frequency distribution.**

6. The actual number of observations in a given interval is known as the:
   A. absolute frequency.
   B. relative frequency.
   C. cumulative absolute frequency.

7. Which of the following statements about frequency distribution is *most* accurate?

A. An observation can fall in more than one interval.
B. The data is sorted in a descending order for the construction of a frequency distribution.
C. The cumulative relative frequency tells the observer the fraction of the observations that are less than the upper limit of each interval.

**LO.d: Describe the properties of a data set presented as a histogram or a frequency polygon.**

8. Which of the following statements about histograms is *least likely* accurate?
   A. A histogram is the graphical equivalent of a frequency distribution.
   B. A histogram is a form of a bar chart.
   C. In the histogram, the height represents the relative frequency for each interval.

9. Which of the following graphical tools for displaying data require the mid points to be plotted for each interval?
   A. Frequency polygon.
   B. Histogram.
   C. Cumulative frequency curve.

10. The following table shows the average monthly returns of a portfolio over the past one year:

| **Month** | **Return (%)** | **Month** | **Return (%)** |
|---|---|---|---|
| January | 10% | July | 5% |
| February | 15% | August | 6% |
| March | 14% | September | 7.5% |
| April | 11% | October | 9% |
| May | 8% | November | 12% |
| June | 3% | December | 11% |

The following intervals are used for the construction of the frequency polygon:

| **Interval** |
|---|
| $1 \leq r \leq 3$ |
| $4 \leq r \leq 6$ |
| $7 \leq r \leq 9$ |
| $10 \leq r \leq 12$ |
| $13 \leq r \leq 15$ |

The cumulative relative frequency for the interval ‘$10 \leq r \leq 12$’ is *equal to*:
A. 16.67%.
B. 33.33%.
C. 83.33%.

**LO.e: Calculate and interpret measures of central tendency, including the population mean, sample mean, arithmetic mean, weighted average or mean, geometric mean, harmonic mean, median, and mode.**

11. An analyst computes the geometric mean of a portfolio that has yearly returns of: -8%, 2%, -4%, 7%, and 12%. The geometric mean computed by the analyst is *closest* to:
    A. 1.50%.
    B. 1.80%.
    C. 2.10%.

12. Considering the following set of numbers.

| | | | | | |
|---|---|---|---|---|---|
| 40 | 47 | 51 | 69 | 39 | 47 |
| 48 | 44 | 41 | 53 | 55 | 45 |
| 37 | 41 | 40 | 42 | 41 | 57 |

    Which of the following statements is *least likely* accurate?
    A. The mode is larger than the mean.
    B. The median is smaller than the mean but larger than the mode.
    C. The mean is larger than both the mode and the median.

13. The following ten observations are a sample drawn from a normal population: 24, 5, 12, 6, -3, 11, 18, 15, -4, and 29. The mean of the sample is *closest* to:
    A. 11.30.
    B. 12.90.
    C. 14.00.

14. Over the past five years, a portfolio gave returns of 18%, 12% -5%, -10% and 7%. The geometric mean return of the portfolio over the five year period is *closest* to:
    A. 3.87%.
    B. 4.40%.
    C. 10.31%.

15. A portfolio has the following annual returns: 5%, 11%, -6%, 0%. The geometric mean across the four-year period is *closest* to:
    A. 2.3%.
    B. 2.5%.
    C. 2.6%.

16. The table below shows some sample figures:

| | | | | |
|---|---|---|---|---|
| -25 | -12 | -2 | 0 | 1 |
| 2 | 6 | 7 | 9 | 11 |
| 13 | 19 | 20 | 21 | 25 |

| | | | | |
|---|---|---|---|---|
| 29 | 39 | 41 | 55 | 65 |

The median value of the above items is *closest* to:
A. 11.
B. 12.
C. 13.

17. The discount rate set by the central bank of country XYZ for the past 6 quarters is shown below:

| **Quarter** | **Discount Rate** | **Quarter** | **Discount Rate** |
|---|---|---|---|
| 1 | 10.0% | 4 | 8.5% |
| 2 | 10.5% | 5 | 9.6% |
| 3 | 11.4% | 6 | 11.5% |

The sample mean rate for the 6 quarters is *closest to*:
A. 10.25%.
B. 11.24%.
C. 12.3%.

18. Which of the following statements about arithmetic mean is *most* accurate?
A. Deviations from the arithmetic mean indicate risk.
B. The product of the deviations around the mean is equal to 0.
C. The disadvantage of an arithmetic mean is it fails to make use of all data.

19. The discount rate set by the central bank of Romulus for the past 6 quarters is shown below:

| **Quarter** | **Discount Rate** | **Quarter** | **Discount Rate** |
|---|---|---|---|
| 1 | 10.0% | 4 | 8.5% |
| 2 | 10.5% | 5 | 9.6% |
| 3 | 11.4% | 6 | 11.5% |

The median is *closest* to:
A. 10.25%.
B. 10.50%.
C. 11.25%.

20. The following table shows the intervals for temperatures recorded at different places all over the country. The respective frequency for each interval represents the number of towns and cities.

| **Interval** | **Frequency** |
|---|---|
| $0 \leq r \leq 10$ | 29 |
| $10 < r \leq 20$ | 37 |

| | |
|---|---|
| 20 < r ≤ 30 | 31 |
| 30 < r ≤ 40 | 35 |
| 40 < r ≤ 50 | 33 |

The modal interval of this distribution is *most likely*:
A. 0 ≤ r ≤ 10.
B. 10 < r ≤ 20.
C. 30 < r ≤ 40.

21. A portfolio manager is computing the weighted mean of a portfolio, whose asset allocation as of 31 December, 2012, is given below:

| | |
|---|---|
| Local Equities: | 25% |
| International Equities: | 13% |
| Bonds: | 27% |
| Mortgage: | 18% |
| Gold: | 17% |

The returns on the above assets on 31 December, 2012, were 5.4%, 8.9%, -2.5%, -7%, and 11% respectively. The mean return earned by the portfolio is *closest* to:
A. 2.44%.
B. 3.16%.
C. 4.88%.

22. Judith Owen buys a share for $45 on January 1, 2011. The price of the share is $54 on January 1, 2012 and $63 on January 1, 2013. Assuming no dividends were paid, which of the following *best* represent the geometric mean annual return earned by Owen over the two year period?
A. 18.32%.
B. 18.34%.
C. 30.21%.

23. Sam Pepper is an investor, who buys $2,000 of a stock every quarter. The price of the stock over the last three quarters was $20, $22, and $25 per share. The harmonic mean of the stock's price is *closest* to:
A. $22.33.
B. $22.15.
C. $22.06.

24. If all the observations in a data set have different values, then which of the following relationships is most accurate?
A. Arithmetic Mean < Geometric Mean < Harmonic Mean.
B. Geometric Mean < Harmonic Mean < Arithmetic Mean.
C. Harmonic Mean < Geometric Mean < Arithmetic Mean.

**LO.f: Calculate and interpret quartiles, quintiles, deciles, and percentiles.**

25. The following table shows the returns of various stocks of a portfolio, ranked in ascending order:

| Stock | Return (%) | Stock | Return (%) |
|---|---|---|---|
| Stock 1 | 10.50 | Stock 6 | 14.24 |
| Stock 2 | 11.25 | Stock 7 | 14.75 |
| Stock 3 | 12.05 | Stock 8 | 15.30 |
| Stock 4 | 12.65 | Stock 9 | 16.00 |
| Stock 5 | 13.55 | Stock 10 | 17.45 |

The value of the third quintile is *closest* to:
A. 15.475%.
B. 14.55%.
C. 15.30%.

26. The table below shows data on volatility of a series of funds:

| | Volatility (%) |
|---|---|
| Fund 1 | 5.05% |
| Fund 2 | 6.20% |
| Fund 3 | 6.93% |
| Fund 4 | 7.56% |
| Fund 5 | 8.25% |
| Fund 6 | 10.11% |
| Fund 7 | 11.36% |
| Fund 8 | 14.52% |
| Fund 9 | 15.02% |
| Fund 10 | 15.66% |
| Fund 11 | 15.98% |
| Fund 12 | 16.01% |
| Fund 13 | 19.25% |

The value of the second quintile is *closest* to:
A. 7.56%.
B. 9.37%.
C. 10.11%.

27. Which of the following statements is *least accurate*?
A. The first quintile generally exceeds the first decile.
B. The first quintile generally exceeds the first quartile.
C. The third quintile generally exceeds the median.

28. The following ten observations are a sample drawn from a normal population: 6, 12, 32, -12, 10, 3, -21, 15, 8, and 11. The third quintile (60th percentile) of the sample is *closest* to:
    A. 3.0.
    B. 10.6.
    C. 11.0.

29. Which of the following statements is *least likely* accurate?
    A. The median is the $50^{th}$ percentile.
    B. Quintiles divide the distribution into fifths.
    C. Linear interpolation is used when the location, L, is a whole number.

30. The following table shows the earnings per share (EPS) of 20 hypothetical companies.

| **Company** | **EPS** | **Company** | **EPS** |
|---|---|---|---|
| AB | $4.50 | AAA | $13.22 |
| CDE | $14.50 | BBB | $13.25 |
| FG | $9.33 | CCC | $12.98 |
| HIJ | $7.21 | DDD | $11.54 |
| KLM | $6.44 | EEE | $11.73 |
| NO | $6.99 | FFF | $15.00 |
| PQR | $6.27 | GGG | $10.49 |
| STU | $8.11 | HHH | $5.78 |
| VWX | $5.25 | III | $6.50 |
| YZ | $12.15 | JJJ | $4.75 |

    The $30^{th}$ percentile is *closest* to:
    A. 6.44.
    B. 6.29.
    C. 6.99.

31. For a data set of 100 observations, which of the following *best* represents a quintile?
    A. $P_{25}$.
    B. $P_{40}$.
    C. $P_{50}$.

32. The second quartile represents which of the following?
    I. Median
    II. $50^{th}$ percentile
    III. $2^{nd}$ quintile
    IV. $5^{th}$ decile
    A. I and II only.
    B. I, II, and IV only.
    C. II, III, and IV only.

**LO.g: Calculate and interpret 1) a range and a mean absolute deviation and 2) the variance and standard deviation of a population and of a sample.**

33. Which of the following is *closest* to the sample variance of the observations given below?

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **-5** | **4** | **7** | **11** | **4** | **-8** | **-1** | **3** | **5** |

A. 31.3.
B. 33.7.
C. 35.2.

34. The following observations are drawn from an approximately normal population:

| Observation | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Value | 13 | -5 | 1 | 3 | -8 |

The sample standard deviation is *closest* to:
A. 7.22.
B. 7.86.
C. 8.13.

35. UBL Fund's return for the last five years are as follow:

| Year | Return (%) |
|---|---|
| 2009 | -12 |
| 2010 | 10 |
| 2011 | 15 |
| 2012 | 17 |
| 2013 | 19 |

The mean absolute deviation of returns for this fund is *closest* to:
A. 8.72%.
B. 9.00%.
C. 9.50%.

36. The annual returns of a stock portfolio since its inception on 1 January 2008 is given below:

| **Year** | **Portfolio return** |
|---|---|
| 2008 | 7.5% |
| 2009 | 9.0% |

| | |
|---|---|
| 2010 | 11.5% |
| 2011 | -5.3% |
| 2012 | 9.7% |

The portfolio's mean absolute deviation for the five-year period is *closest* to:
A. 3.42%.
B. 4.71%.
C. 6.50%.

37. The returns of a fund are given below:

| Year | Return % |
|---|---|
| 2009 | 5.0 |
| 2010 | -3.2 |
| 2011 | 6.1 |
| 2012 | 4.5 |
| 2013 | 1.3 |

The mean absolute deviation of returns for this fund is *closest* to:
A. 3.55.
B. 2.95.
C. 3.95.

38. The table below shows the temperatures recorded at different places:

| **Place** | **Temperature (degree Celsius)** | **Place** | **Temperature (degree Celsius)** |
|---|---|---|---|
| A | 48 | E | 51 |
| B | 21 | F | 35 |
| C | 10 | G | 16 |
| D | -8 | H | -15 |

The range for this data is *closest* to:

A. 26.
B. 36.
C. 66.

39. The weekly rainfall received by some areas in Australia during June 2013 is tabulated below:

| | | | |
|---|---|---|---|
| Port Hedland | 100 mm | Falls Creek | 176 mm |
| Gove | 15 mm | Esperance | 66 mm |
| Millbrook | 107 mm | Mt Read | 74 mm |
| Tree House Creek | 120 mm | Samuel Hill | 113 mm |
| Thredbo | 178 mm | Hunters Hill | 132 mm |

The range for this data set is *closest* to:
A. 108 mm.
B. 163 mm.

C. 178 mm.

40. The number of pages read by a group of students per day is given below:

| | | | |
|---|---|---|---|
| Patrick | 100 | Fiona | 175 |
| Salis | 65 | James | 50 |
| Melisa | 27 | Nelson | 20 |
| Tina | 120 | Samuel | 75 |
| Thomas | 34 | Gordon | 90 |

The mean absolute deviation (MAD) is *closest* to:
A. 36.5.
B. 55.6.
C. 75.6.

41. The dividend yield for five hypothetical companies is given below:

| | |
|---|---|
| Paknama | 10.5% |
| Genie Ltd. | 16.25% |
| Mirinda Corp. | 27.0% |
| Tina Travels Ltd. | 12.0% |
| Thomas Press Ltd. | 7.8% |

The population variance is *closest* to:
A. 36.89.
B. 45.20.
C. 56.49.

42. The return on equity for four hypothetical companies is given below:

| | |
|---|---|
| Little Wonder | 10.5% |
| Genesis Ltd. | 16.25% |
| Moral Corp. | 9.81% |
| Travis Ltd. | 12.0% |

The population standard deviation is *closest* to:
A. 2.50.
B. 2.88.
C. 6.25.

43. The dividend yield for five hypothetical companies from a list of 100 companies is given below:

| | |
|---|---|
| Paknama | 10.5% |
| Genie Ltd. | 16.25% |
| Mirinda Corp. | 27.0% |

| | |
|---|---|
| Tina Travels Ltd. | 12.0% |
| Thomas Press Ltd. | 7.8% |

The sample variance is *closest* to:
A. 36.89.
B. 45.20.
C. 56.49.

44. The return on equity for four hypothetical companies from a list of 100 companies is given below:

| | |
|---|---|
| Little Wonder | 10.5% |
| Genesis Ltd. | 16.25% |
| Moral Corp. | 9.81% |
| Travis Ltd. | 12.0% |

The sample standard deviation is *closest* to:
A. 2.50.
B. 2.88.
C. 6.25.

45. Semivariance is defined as the average squared deviation:
A. below the mean.
B. equivalent to the mean.
C. above the mean.

**LO.h: Calculate and interpret the proportion of observations falling within a specified number of standard deviations of the mean using Chebyshev's inequality.**

46. According to Chebyshev's inequality, in a population of 1000 what is the *minimum* proportion of observation that must lie within three standard deviations of the mean, regardless of the shape of the distribution?
A. 75%.
B. 89%.
C. 99%.

47. A sample of 320 observations is randomly selected from a population. The mean of the sample is 144 and the standard deviation is 12. Based on Chebyshev's inequality, the endpoints of the interval that must contain at least 75% of the observations are *closest* to:
A. 108 and 180.
B. 120 and 168.
C. 135 and 153.

48. According to Chebyshev's inequality, at least 88.89 percent of the observations for any distribution must lie within:
A. 1 standard deviation of the mean.

B. 2 standard deviations of the mean.
C. 3 standard deviations of the mean.

**LO.i: Calculate and interpret the coefficient of variation and the Sharpe ratio.**

49. A portfolio of large-cap companies' stocks generated a mean portfolio return of 20% when the risk free rate was 6% in the economy. The variance of portfolio returns was found to be 0.025. The Sharpe ratio of the portfolio is *closest* to:
A. 0.26.
B. 0.89.
C. 0.92.

50. Diana Sorenson, an equity fund manager has the following information about a common stock portfolio:

| | |
|---|---|
| Arithmetic mean return | 12.9% |
| Geometric mean return | 10.3% |
| Portfolio beta | 1.6 |
| Risk-free rate of return | 3.50% |
| Variance of returns | 212 |

From the given information, the coefficient of variation is *closest to*:
A. 1.13.
B. 1.41.
C. 1.55.

51. An analyst gathered following information on a common stock portfolio:

| | |
|---|---|
| Arithmetic mean return | 15.0% |
| Geometric mean return | 13.2% |
| Portfolio beta | 1.22 |
| Risk-free rate of return | 5.0% |
| Variance of returns | 520 |

From the given information, the Sharpe Ratio is *closest to*:
A. 0.36.
B. 0.44.
C. 0.66.

52. The table below shows information about three portfolios:

| **Portfolio** | **Mean return on portfolio (%)** | **Standard deviation of the return on the portfolio (%)** |
|---|---|---|

| | | |
|---|---|---|
| A | 16 | 32 |
| B | 11 | 15 |
| C | 9 | 8 |

If the risk-free rate is 3%, which portfolio has the *highest* Sharpe ratio?
A. A.
B. B.
C. C.

53. The table below provides data on annual mean returns and standard deviations for three bonds:

| **Asset Class** | **Arithmetic mean return (%)** | **Standard deviation of return (%)** |
|---|---|---|
| Bond A | 16.4% | 4.9% |
| Bond B | 12.6% | 3.5% |
| Bond C | 14.8% | 4.2% |

Which of the above bonds is *least* risky using a relative measure?
A. Commercial Bond A.
B. Corporate Bond B.
C. Government Bond C.

54. The table below summarizes the performance data for three portfolios:

| **Portfolio** | **Arithmetic mean return (%)** | **Variance of (%)** |
|---|---|---|
| Portfolio A | 16.4% | 4.9% |
| Portfolio B | 12.6% | 3.5% |
| Portfolio C | 14.8% | 4.2% |

Given that the mean return on the risk-free asset is 10.5 percent, which portfolio is *most likely* to have the highest Sharpe ratio?
A. Portfolio A.
B. Portfolio B.
C. Portfolio C.

**LO.j: Explain skewness and the meaning of a positively or negatively skewed return distribution.**

55. A distribution more peaked than the normal distribution is *best* described as being:
A. platykurtic.
B. mesokurtic.
C. leptokurtic.

56. In a continuous distribution where the graph shows the right tail of the curve to be longer than the left tail is *best* described as having:

A. lepto-kurtosis.
B. negative skewness.
C. positive skewness.

57. Which of the following return distribution is *most likely* characterized by frequent small losses and a few large gains?
    A. Normal distribution.
    B. Negatively skewed.
    C. Positively skewed.

58. Which of the following relationships *best* characterize a negatively skewed distribution?
    A. Mean < median < mode.
    B. Mode < median < mean.
    C. Median < mean < mode.

59. Which of the following statements *best* describe a positively skewed distribution?
    A. A distribution skewed to the right.
    B. A distribution skewed to the left.
    C. A distribution skewed upward.

**LO.k: Describe the relative locations of the mean, median, and mode for a unimodal, nonsymmetrical distribution.**

60. If a distribution exhibits negative skewness, then the mean *most likely* is located to the:
    A. left of both the median and mode.
    B. right of both the median and mode.
    C. left of the mode and right of the median.

61. Which of the following is *most likely* to be the largest in a positively skewed unimodal distribution?
    A. Mean.
    B. Median.
    C. Mode.

**LO.l: Explain measures of sample skewness and kurtosis.**

62. Equity return series are *best* described as:
    A. mesokurtotic.
    B. platykurtotic.
    C. leptokurtotic.

63. A distribution that is less peaked than normal is *most* accurately described as:
    A. leptokurtotic.

B. mesokurtotic.
C. platykurtotic.

64. Which of the following statistical measures *most likely* measure the peakedness of a distribution such as more or less peaked than a normal distribution?
    A. Skewness.
    B. Chebyshev's inequality.
    C. Kurtosis.

65. A distribution identical to a normal distribution is:
    A. Leptokurtic.
    B. Mesokurtic.
    C. Platykurtic.

**LO.m: Compare the use of arithmetic and geometric means when analyzing investment returns.**

66. An analyst calculates the geometric and arithmetic means for the same set of data which has variability in the observations. In this case, the geometric mean will *most likely* be:
    A. equal to the arithmetic mean.
    B. greater than the arithmetic mean.
    C. less than the arithmetic mean.

**Solutions**

1. C is correct. The analyst is using an ordinal scale which involves sorting data into categories based on some characteristic, such as the firms' market capitalization value.

2. C is correct. The steps involved in statistical inference include forecasting, making estimates, or using a smaller group to make judgments about a larger group. Description of important aspects comes under descriptive statistics.

3. C is correct. The height of basketball players in a team is measured on a ratio scale as it is possible to express in terms of a ratio. For example, the height of player A is 1.2 times the height of player B, etc.

4. A is correct. A parameter describes the characteristic of a population while a sample statistic describes the characteristic of a sample.

5. B is correct. A subset of a population is known as a sample.

6. A is correct. The actual number of observations in a given interval is known as the absolute frequency. Relative frequency is the absolute frequency of each interval divided by the total number of observations. Cumulative absolute frequency is the sum of all absolute frequencies.

7. C is correct. The cumulative relative frequency is the fraction of the observations that are less than the upper limit of each interval. A is incorrect as an observation *cannot* fall in more than one interval. B is incorrect as the data is sorted in *ascending* order for the construction of a frequency distribution.

8. C is correct. In the histogram, the height represents the *absolute* frequency for each interval.

9. A is correct. For a frequency polygon, the mid points for each interval are plotted on the x-axis and the absolute frequency for that interval on the y-axis.

10. C is correct.

| Interval | Frequency | Relative Frequency | Cumulative Relative Frequency |
|---|---|---|---|
| $1 \le r \le 3$ | 1 | 8.33% | 8.33% |
| $4 \le r \le 6$ | 2 | 16.67% | 25% |
| $7 \le r \le 9$ | 3 | 25% | 50% |
| $10 \le r \le 12$ | 4 | 33.33% | 83.33% |
| $13 \le r \le 15$ | 2 | 16.67% | 100% |

$$\text{Relative Frequency} = \frac{\text{Frequency}}{\text{Total Observations}}.$$

Cumulative relative frequency is the sum of subsequent relative frequencies. Thus the cumulative relative frequency is 83.33% for the interval $10 \leq r \leq 12$.

11. A is correct.

$$Geometric\ Mean = [(1-0.08)\times(1+0.02)\times(1-0.04)\times(1+0.07)\times(1+.12)]^{\frac{1}{5}} - 1 = 1.5\%$$

12. B is correct. The mode is the most frequent value in the set of items and thus is equal to 41. The mean is the average value from the set of items and is computed as follows:

$$Mean = \frac{Sum\ of\ observations}{Number\ of\ observations} = \frac{837}{18} = 46.5$$

The median is the value of the middle item of a set of items and is computed as the average of the n/2th item and the (n+2)/2th item which is the $9^{th}$ and $10^{th}$ item. The median is thus 44.5.
Therefore the median is smaller than the mean but larger than the mode.

13. A is correct. The sum of the ten numbers is 113. Dividing by 10 gives the mean of 11.30.

14. A is correct. Add one to each of the given returns, then multiply them together, then take the fifth root of the resulting product. 1.18 × 1.12 × 0.95 × 0.90 × 1.07 = 1.209066. 1.209066 raised to the 0.20 power is 1.0387. Subtracting one and multiplying by 100 gives the correct geometric mean return of 3.87%.

15. A is correct. The geometric mean return is calculated as $[(1 + 0.05) \times (1 + 0.11) \times (1 - 0.06) \times (1 + 0.00)]^{0.25} - 1 = 0.0231 \sim 2.3\%$.

16. B is correct. Median is the value of the middle item of a set of items. The value of the 10th item is 11; the value of the 11th item is 13. The mean of 11 and 13 is 12.

17. A is correct.

$$\text{Sample Mean} = \frac{\sum_{t=1}^{n} X_i}{N}$$

$$\text{Sample Mean} = \frac{10.0 + 10.5 + 11.4 + 8.5 + 9.6 + 11.5}{6} = 10.25 \text{ percent}$$

18. A is correct. B is incorrect because the sum of the deviations around the mean is equal to 0. C is incorrect because the advantage of an arithmetic mean is that it makes use of all data.

19. A is correct. Arrange the data in ascending order as: 8.5, 9.6, 10.0, 10.5, 11.4, 11.5
Since there are an even number of observations, take the average of the two middle values to calculate median: $\frac{10.0+10.5}{2} = 10.25$
Median = 10.25 percent

20. B is correct. The modal interval is the interval with the highest frequency, which in this case, is $10 < r \leq 20$.

21. A is correct. Mean portfolio return is the weighted average of each asset class' returns.
$\overline{X_w} = (0.25 * 5.4) + (0.13 * 8.9) + (0.27 * -2.5) + (0.18 * -7) + (0.17 * 11) = 2.44 \text{ percent}$

22. A is correct. First, calculate the holding period returns at the end of year 1 and year 2.
$\text{HPY}_1 = \frac{54}{45} - 1 = 20\%$
$\text{HPY}_2 = \frac{63}{54} - 1 = 16.67\%$
$\text{Geometric Mean} = [(1 + 0.2)(1 + 0.1667)]^{0.5} - 1 = 18.32 \text{ percent}$

23. B is correct.
$$\text{Harmonic Mean} = \frac{3}{\left[\left(\frac{1}{20}\right) + \left(\frac{1}{22}\right) + \left(\frac{1}{25}\right)\right]} = \$22.15$$

24. C is correct. Unless all observations in a data set are equal, the harmonic mean is less than the geometric mean which is less than the arithmetic mean.

25. B is correct. The position of the third quintile can be found through the following formula:
$L_y = (n + 1) * \left(\frac{y}{100}\right)$; Where, y is the percentage point at which we are dividing the distribution. Here, y = 60, the 60th percentile (third quintile);
n = 10
$L_{60} = (10 + 1) * \left(\frac{60}{100}\right) = 6.6$
Therefore, the location of the third quintile is between the return of Stock 6 and Stock 7.
Linear interpolation is used for finding the approximate value of the third quintile.
In the above case, return on the 6th stock is 14.24% and on the 7th stock is 14.75%. L60 = 14.55% which is 14.24% (6th value) plus 0.6 times the linear distance between 14.24% and 14.75%.

26. B is correct. Quintiles divide data into five parts. Hence the first quintile corresponds to the 20th percentile and the second quintile corresponds to the 40th percentile. The location can be determined using: $L_y = (n + 1) * \left(\frac{y}{100}\right) \rightarrow L_{40} = (13 + 1) * \left(\frac{40}{100}\right) = 5.6$. The value corresponding to location 5 (Fund 5) is 8.25%. The value corresponding to location 6 (Fund 6) is 10.11%. The approximate value corresponding to location 5.6 can be estimated using linear interpolation: $8.25\% + \left(0.6 * \left(10.11\% - 8.25\%\right)\right) = 9.37\%$.

27. B is correct. The first quintile is the 20th percentile and the third quintile is the 60th percentile. The first decile is the 10th percentile, the first quartile is the 25th percentile, and the median is the 50th percentile. While it is possible that these various percentiles or some

subsets of them might be equal (for example the10th percentile possibly could be equal to the 20th percentile), in general the order from smallest to largest would be: first decile, first quintile, first quartile, median.

28. B is correct. First we need to sort the data in ascending order: -21, -12, 3, 6, 8, 10, 11, 12, 15, 32. The third quintile corresponds to the 60th percentile. The location of the 60th percentile is given by: $L_{60}$ = (10 + 1) 60 / 100 = 6.6. The value is estimated using linear interpolation: $P_{60}$ = 10 + 0.6(11 – 10) = 10.6.

29. C is correct. Linear interpolation is used when the location, L, is not a whole number and lies between two closest integers.

30. A is correct.
    The 30th percentile is the value at or below which 30 percent of observations lie.
    To solve this problem, we first arrange the 20 data points in ascending order: 4.50, 4.75, 5.25, 5.78, 6.29, 6.44, 6.50, 6.99, 7.21, 8.11, 9.33, 10.49, 11.54, 11.73, 12.15, 12.98, 13.22, 13.25, 14.50, and 15.00.
    The location of the 30th percentile is 30% of 20 = 6. The 6th data point is 6.44.
    We can also use the location formula: $L_y = (n+1)\left(\frac{y}{100}\right) = (20+1)\left(\frac{30}{100}\right) = 6.30$
    $P_{30} \approx X_6 + (6.3 - 6.0)(X_7 - X_6) = 6.44 + (0.3)(6.50 - 6.44) = 6.46$
    The two numbers (6.44 and 6.46) are different because the percentile calculations using the location formula gives an approximate answer when n is small.

31. B is correct. Since quintiles divide the distribution into fifths, they are represented as $P_{20,} P_{40}, P_{60},$ and $P_{80}$.

32. B is correct. The second quartile is equivalent to the median, the 50th percentile, and the 5th decile.

33. C is correct.
    Using your calculator:
    - [2ND][DATA]
    - [2ND][CLR WORK]
    - 5[+/-] [ENTER]
    - [↓][↓]4 [ENTER]
    - [↓][↓]7[ENTER]
    - [↓][↓]11[ENTER]
    - <and so on for the rest of the data>
    - [2ND][STAT]
    - Press [2ND][SET] repeatedly until you get **I-V**
    - Press[↓] to begin computing results.
    - You'll Sx (sample standard deviation) = 5.93; simply square this to get the variance = 35.19

34. C is correct.

| | Observation | Value | Difference from Mean | Difference$^2$ |
|---|---|---|---|---|
| | | | | |
| | 1 | 13 | 12.2 | 148.84 |
| | 2 | -5 | -5.8 | 33.64 |
| | 3 | 1 | 0.2 | 0.04 |
| | 4 | 3 | 2.2 | 4.84 |
| | 5 | -8 | -8.8 | 77.44 |
| **Sum** | | 4 | | 264.8 |
| **Mean** | | 0.8 | | |

The sample variance is given by

$$s^2 = \sum_i^n (X_i - \bar{X})^2 / n - 1$$

$s^2$ = 264.8/5-1 = 66.2

The sample standard deviation is simple the square root of the sample variance. The sample standard deviation is 8.13.

OR

| Keystrokes | Explanation | Display |
|---|---|---|
| [2nd] [DATA] | Enter data entry mode | |
| [2nd] [CLR WRK] | Clear data registers | X01 |
| 13 [ENTER] | | X01 = 13 |
| [↓] [↓] 5 +/- [ENTER] | | X02 = -5 |
| [↓] [↓] 1 [ENTER] | | X03 = 1 |
| [↓] [↓] 3 [ENTER] | | X04 = 3 |
| [↓] [↓] 8 +/- [ENTER] | | X05 = -8 |
| [2nd] [STAT] [ENTER] | Puts calculator into stats mode. | |
| [2nd] [SET] | Press repeatedly till you see → | 1-V |
| [↓] | Number of data points | N = 5 |
| [↓] | Mean | X = 0.8 |

| Keystrokes | Explanation | Display |
|---|---|---|
| [↓] | Sample standard deviation | Sx = 8.136 |
| [↓] | Population standard deviation | σx = 7.277 |

35. A is correct. The Mean Absolute Deviation (MAD) is calculated through the following formula:
Mean = (-12+10+15+17+19)/5 = 9.8%
MAD = (|-12 - 9.8| + |10 - 9.8| + |15 – 9.8| + |17 – 9.8| + |19 – 9.8|)/5 = 8.72%.

36. B is correct. Compute the mean: (7.5 + 9.0 + 11.5 – 5.3 + 9.7) / 5 = 6.48% and compute MAD, (|7.5 – 6.48| + |9.0 – 6.48| + |11.5 – 6.48| + | –5.3 – 6.48| + |9.7 – 6.48|) / 5 = 4.71%.

37. B is correct. Mean is 2.74. MAD is the mean of the absolute deviations from 2.74:
(2.26 + 5.94 + 3.36 + 1.76 + 1.44) / 5 = 2.95.

38. C is correct. $\text{Range} = \text{Maximum value} - \text{Minimum value}$
$\text{Range} = 51 - (-15) = 66.$

39. B is correct. $\text{Range} = \text{Maximum value} - \text{Minimum value}$
$\text{Range} = 178 - 15 = 163.$

40. A is correct. First, calculate the arithmetic mean return.

$$\text{Mean Absolute Deviation} = [\sum_{i=1}^{n} |X_i - \overline{X}|]/n$$

$$\text{Mean}, \overline{X} = \frac{\text{Sum of observations}}{\text{Number of observations}}$$

$$\text{Mean}, \overline{X} = \frac{100 + 65 + 27 + 120 + 34 + 175 + 50 + 20 + 75 + 90}{10} = 75.6$$

$$\text{Mean Absolute Deviation} = \frac{[|100 - 75.6| + |65 - 75.6| + \cdots + |90 - 75.6|]}{10} = 36.5$$

41. B is correct. Use the following keystrokes to calculate the population variance:
[2nd] [DATA]
[2nd] [CLR WRK]
X01 = 10.5
X02 = 16.25
X03 = 27
X04 = 12
X05 = 7.8
Choose the population standard deviation: σ = 6.723.

Then square it, to get population variance as 45.2.

42. A is correct. Use the following keystrokes to calculate the population standard deviation:
    [2nd] [DATA]
    [2nd] [CLR WRK]
    X01 = 10.5
    X02 = 16.25
    X03 = 9.81
    X04 = 12
    Population standard deviation: σ =2.5.

43. C is correct. Use the following keystrokes to calculate the sample variance:
    [2nd] [DATA]
    [2nd] [CLR WRK]
    X01 = 10.5
    X02 = 16.25
    X03 = 27
    X04 = 12
    X05 = 7.8
    Choose the sample standard deviation: s = 7.515. Square this value to get sample variance as 56.49.

44. B is correct. Use the following keystrokes to calculate the sample standard deviation:
    [2nd] [DATA]
    [2nd] [CLR WRK]
    X01 = 10.5
    X02 = 16.25
    X03 = 9.81
    X04 = 12
    *s* represents the value of sample standard deviation = 2.88.

45. A is correct. Semivariance can be defined as the average squared deviations below the mean.

46. B is correct. Chebyshev's inequality holds for any distribution, regardless of shape, and states that the minimum proportion of observations located within k standard deviations of the mean is equal to $1 – 1/k^2$. In this case, k = 3 and 1 – 1/9 = 0.89 or 89%.

47. B is correct. According to Chebyshev's inequality, the proportion of the observations within k standard deviations of the arithmetic mean is at least $1 – 1/k^2$ for all k>1. For k =2, that proportion is $1 – 1/2^2$, which is 75%. The lower endpoint is, therefore the mean (144) minus 2 times 12 (the standard deviation) and the upper endpoint is 144 plus 2 times 12.
    144 – (2 x 12) = 120; 144 + 2(12) = 168.

48. C is correct. The formula for Chebyshev's inequality is:

$1-\left(\frac{1}{k^2}\right) = \%$ of distribution
$1-\left(\frac{1}{k^2}\right) = 0.8889$; solving for $k$, we get $k = 3$
88.89% of any distribution lies within 3 standard deviations.

49. B is correct. Sharpe Ratio = (Portfolio return−Risk free rate) ÷ standard deviation of returns
= (0.2 - 0.06) ÷ sqrt(0.025)
= 0.89

50. A is correct. The coefficient of variation is: (Standard deviation of return) / (Mean return) = $\sqrt{212}$ / 12.9 = 1.13

51. B is correct. The Sharpe Ratio is: (Return on portfolio – Risk free return)/ (Standard deviation of portfolio) = (15.0 – 5.0) / sqrt (520) = 0.44.

52. C is correct. The Sharpe ratio is defined as $S_p = (R_p - R_F)/s_p$
$S_A$ = (16 – 3)/32 = 0.40625
$S_B$ = (11 – 3)/15 = 0.6
$S_C$ = (9 – 3)/8 = 0.75

53. B is correct. In order to find the bond with the lowest risk per unit of return, we need to determine the bond with the lowest coefficient of variation.
$CV = s/\overline{X}$ where s is the sample standard deviation and $\overline{X}$ is the sample mean.
Bond A: $CV = \frac{4.9}{16.4} = 0.299$
Bond B: $CV = \frac{3.5}{12.6} = 0.277$
Bond C: $CV = \frac{4.2}{14.8} = 0.284$
Bond B, whose standard deviation and CV are the lowest, is least risky.

54. A is correct.
$$\text{Sharpe ratio} = \frac{R_p - R_f}{s_p}$$
$$\text{Portfolio A: } \frac{16.4 - 10.5}{\sqrt{4.9}} = 2.665$$
$$\text{Portfolio B: } \frac{12.6 - 10.5}{\sqrt{3.5}} = 1.122$$
$$\text{Portfolio C: } \frac{14.8 - 10.5}{\sqrt{4.2}} = 2.098$$

Portfolio A has the highest Sharpe ratio.

55. C is correct. Leptokurtic describes a distribution that is more peaked than the normal distribution.

Platykurtic is a distribution less peaked than a normal distribution.
Mesokurtic is a distribution as peaked as the normal distribution.

56. C is correct. A positively skewed distribution appears as if the right tail has been pulled away from the mean.

57. C is correct. A positively skewed distribution has frequent small losses and a few large gains. A negatively skewed distribution has frequent small gains and a few large losses. A normal distribution is symmetrical.

58. A is correct. For a negatively skewed distribution, the mean is less than the median, which is less than the mode.

59. A is correct. A positively skewed distribution is skewed to the right whereas a negatively skewed distribution is skewed to the left.

60. A is correct. A negatively skewed distribution has a long tail to the left with a large frequency of observations occurring in the right part of the distribution. For a distribution of returns, this means frequent small gains and a few extreme losses. The result is that the extreme losses pull the mean to the left while the mode resides on the right with the bulk of the observations. The median falls between the mean and the mode.

61. A is correct. For the positively skewed unimodal distribution, the mode is less than the median, which is less than the mean.

62. C is correct. Equity return series have been found to be leptokurtotic.

63. C is correct. A distribution that is less peaked than normal is called platykurtotic.

64. C is correct. Kurtosis is the statistical measure that tells us about the peakedness of a distribution.

65. B is correct. A distribution identical to a normal distribution is mesokurtic.

66. C is correct. As stated in the reading, “In fact, the geometric mean is always less than or equal to the arithmetic mean. The only time the two means will be equal is when there no variability in the observations.”

**LO.a: Define a random variable, an outcome, an event, mutually exclusive events, and exhaustive events.**

1. If events A and B are mutually exclusive, then which of the following is *true*?
   A. P(A|B) = P(A).
   B. P(AB) = P(A) x P(B).
   C. P(A or B) = P(A) + P(B).

**LO.b: State the two defining properties of probability and distinguish among empirical, subjective, and a priori probabilities.**

2. The probability of any event can be *best* defined as a number between:
   A. negative one and positive one.
   B. zero and positive infinity.
   C. zero and positive one.

3. If an analyst estimates the probability of a stock earning at least the 5-year market average return using relative frequency from historical data, then the resulting probability is *best* known as:
   A. a priori.
   B. empirical.
   C. subjective.

4. An event is equally likely to occur in any month this year. The probability of the event occurring is *best* known as:
   A. a priori.
   B. empirical.
   C. subjective.

5. Which of the following is *most likely* a subjective probability?
   A. The probability that KSE 100 index will outperform LSE 100 index over a 5 year period.
   B. The probability of a particular outcome when only five possible outcomes exist.
   C. The probability of Kay Electronics going bankrupt changes after adjusting it to the reduced confidence in electronics' companies.

6. Which of the following types of probabilities is *most likely* based on logical analysis?
   A. An empirical probability.
   B. A priori probability.
   C. A subjective probability.

**LO.c: State the probability of an event in terms of odds for and against the event.**

7. The probabilities of earning returns are as follows:

| Probability | Return |
|---|---|

| | |
|---|---|
| 0.20 | 15% |
| 0.20 | 20% |
| 0.20 | 7% |
| 0.20 | 12% |
| 0.20 | 13% |

What are the odds of earning *at least* 15%?
A. 2 to 3.
B. 3 to 2.
C. 2 to 5.

8. The odds for a company's share price to fall below $45 are 1 to 5. The probability of the event occurring is *closest* to:
A. 0.17.
B. 0.20.
C. 0.83.

**LO.d: Distinguish between unconditional and conditional probabilities.**

9. An analyst estimates the probability of a stock earning at least a risk-free rate given that the overall portfolio does not give negative returns. This probability is *best* described as:
A. a priori.
B. conditional.
C. marginal.

10. Consider two independent events, A and B, with unequal probabilities (i.e. $P(A) \neq P(B)$), then the probability of event A given that event B has occurred (i.e., $P(A \mid B)$) is *best* described as:
A. P(A).
B. P(B).
C. $P(B \mid A)$.

**LO.e: Explain the multiplication, addition, and total probability rules.**

11. A and B are independent events. P(AB), the joint probability of events A and B is *best* denoted by:
A. P(A).
B. P(A) + P(B).
C. P(A) * P(B).

12. Irfanullah & Co. has issued two callable bonds with a maturity of 2 and 5 years respectively. The probability that Bond A will be called is 60% and the probability that Bond B will be called is 50%. The probability that at least one of the bonds will be called is *closest* to:

A. 0.8.
B. 0.3.
C. 0.83.

13. The probability of stock A going up is 0.6 and the probability of Stock B going up is 0.2. The probability that both stocks will go up is 0.15. What is the probability that Stock A will go up *or* Stock B will go up *or* both will go up?
A. 0.12.
B. 0.65.
C. 0.95.

14. The probability of an above average economic growth for a country is 0.35. The probability that GE stock will appreciate given the above average economic growth is 0.60. The joint probability of an above average economic growth and appreciation of GE stock is *closest* to:
A. 0.21.
B. 0.60.
C. 0.95.

**LO.f: Calculate and interpret 1) the joint probability of two events, 2) the probability that at least one of two events will occur, given the probability of each and the joint probability of the two events, and 3) a joint probability of any number of independent events.**

15. A fund manager has noted that during the past five years 70 percent of the stocks in her portfolio have paid a cash dividend and 20 percent of the stocks have paid a stock dividend. If 80 percent of the stocks have paid a dividend of any kind, the joint probability of a stock paying a cash dividend and a stock dividend is *closest* to:
A. 10%.
B. 15%.
C. 20%.

16. The probability of event A is 50%. The probability of event B is 20%. The joint probability of AB is 5%. The probability that A or B occurs or both occur is *closest* to:
A. 65%.
B. 70%.
C. 75%.

17. A and B are two independent events. The probability of event A is 0.5 and the probability of event B is 0.4. The joint probability of A and B is *closest* to:
A. 0.2.
B. 0.7.
C. 0.9.

18. From the past records of Irfanullah Financial Training, the passing rates for Level I exam and CTP exam have been 70% and 60% respectively. Analysis indicates that among the people

who have passed CTP, 50% have also passed CFA Level I. What is the passing rate of CTP among people who have also passed CFA Level I before?

A. 58.3%.
B. 42.9%.
C. 84%.

19. A company has two bottle producing machines, one old and one new. The older machine produces 10% defective bottles, whereas the new machine produces 4% defective bottles only. Additionally, the new machine uses latest technology to produce 5 times as many bottles as the older machine. Given that the bottle was produced by the new machine, what is the probability that it is *not* defective?
   A. 0.864.
   B. 0.96.
   C. 0.192.

**LO.g: Distinguish between dependent and independent events.**

20. A and B are independent events. Which of the following conditions is *least likely* true regarding the probability of the independent events?
   A. P(A|B) = P(A).
   B. P(AB) = P(A) P(B).
   C. P(AB) = 0.

21. Which of the following statements about dependent and independent events is *most likely* true?
   A. P(A)P(B) is used to determine the joint probability of the two events, A and B, whether they are dependent or independent.
   B. P(A)P(B) is used to determine the joint probability of the two events, A and B, that are independent.
   C. The two events are independent if the occurrence of one event is related to the occurrence of the other.

22. Two events, A and B, are independent. Given that P(A) ≠ P(B), the probability of P(A | B) is *most likely*:
   A. P(B).
   B. P(B | A).
   C. P(A).

**LO.h: Calculate and interpret an unconditional probability using the total probability rule.**

23. An analyst is analyzing the prospects of survival of ShopKart, an e-commerce retailer over the next six months. The retailer's survival depends on the growth in customer base. The

analyst assigns probabilities to three possible scenarios and estimates the probability of closing down for each of them.

| Scenario | Probability of scenario | Probability of closing down |
| --- | --- | --- |
| Decrease in customer base | 30% | 60% |
| Maintaining the customer base | 50% | 30% |
| Increase in customer base | 20% | 10% |

Based on the analyst's estimates, the probability that ShopKart will not close down in the next six months is *closest* to:
A. 35%.
B. 65%.
C. 72%.

24. Which of the following is used to determine the unconditional probability, given conditional probabilities?
A. Total probability rule.
B. Multiplication rule.
C. Addition rule.

**LO.i: Explain the use of conditional expectation in investment applications.**

25. Conditional expectation is *least likely* used in investments to determine which of the following?
A. Expected value of EPS if interest rates increase.
B. Sample mean of EPS.
C. Variance of EPS given different scenarios.

**LO.j: Explain the use of a tree diagram to represent an investment problem.**

26. The probability that a stock's price will change is 0.6 versus a probability of 0.4 that the stock price will not change. If there is a change, the probability of a price increase is 0.4 and the probability of a price decrease is 0.6. The unconditional probability of a price decrease is:
A. 0.24
B. 0.36
C. 0.40

**LO.k: Calculate and interpret covariance and correlation.**

27. Rehan Khan, a fund manager is allocating different securities in his equity fund with an objective to diversify risk. Assuming no short selling, diversification benefit is *most likely* to occur when the correlations among the securities contained in the portfolio are:
A. equal to positive one.

B. greater than positive one.
C. less than positive one.

28. Two companies, Lemon Co. and Demon Co. have the following probability distributions in different economic situations:

| **Scenario** | **P(Scenario)** | **Expected Returns of Lemon Co.** | **Expected Returns of Demon Co.** |
|---|---|---|---|
| Recession | 0.25 | 2% | 4% |
| Normal | 0.5 | 8% | 10% |
| Boom | 0.25 | 12% | 16% |

The covariance of the expected returns for Lemon Co. and Demon Co. is *closest* to:
A. 0.0013.
B. 0.0014.
C. 0.0015.

29. Using the same data as in the previous question, the correlation coefficient of Lemon Co. and Demon Co. *is closest* to:
A. 0.34.
B. 0.99.
C. 0.55.

30. Professor Irfanullah comes across the following three statements made by his students.
- Fatima: Covariance lies within the range -1 < Covariance < +1
- Taimour: The covariance of a stock with itself is equal to its own variance.
- Vishal: The covariance of returns is negative when the return of one asset is above its expected value given that the return on the other asset tends to be below its expected value.

The statements made by which of the students are *most likely* correct?
A. Fatima and Taimour.
B. Fatima and Vishal.
C. Taimour and Vishal.

31. A portfolio will *least likely* benefit from diversification when the correlation between its securities is:
A. 0.0.
B. 0.5.
C. 1.0.

32. The covariance matrix for a portfolio is given below.

| **Security** | **A** | **B** |
|---|---|---|
| **A** | 480 | 140 |
| **B** | 140 | 600 |

The correlation for the portfolio is *closest* to:

A. 0.26.
B. 0.36.
C. 0.46.

**LO.l: Calculate and interpret the expected value, variance, and standard deviation of a random variable and of returns on a portfolio.**

33. A portfolio manager had invested a total amount of $300,000 in stocks and fixed income instruments at the start of the year. Equity investments represented 60% of the portfolio and generated year-end return of 35%, whereas the fixed income instruments yielded 15%. The correlation of stock returns with fixed income instruments' returns was found to be 20%. Based on the given data, the portfolio return would be *closest* to:

A. 16.7%.
B. 22.2%.
C. 27.0%.

34. Ali, a CFA candidate, is evaluating a portfolio, which is composed of Fund A and Fund B. He has collected the following information:

| | Fund A | Fund B |
|---|---|---|
| Portfolio weights (%) | 45 | 55 |
| Expected returns (%) | 23 | 13 |
| Standard deviations (%) | 14 | 6 |
| Correlation between the returns of Fund X and Fund Y | 0.7 | |

The portfolio standard deviation of the returns is *closest* to:

A. 9.50%.
B. 8.90%.
C. 6.00%.

35. The table below shows information on two portfolios:

| | Fund A | Fund B |
|---|---|---|
| Portfolio weights (%) | 45 | 55 |
| Expected returns (%) | 14 | 18 |
| Standard deviations (%) | 25 | 32 |
| Correlation between the returns of Fund A and Fund B | 0.85 | |

The portfolio standard deviation of returns is *closet* to:

A. 17%.
B. 28%.
C. 35%.

36. The table below shows weighting and returns of different asset classes comprising a portfolio:

| Asset class | Asset allocation (weight) (%) | Asset class return (%) | Correlation with equities class (%) |
|---|---|---|---|
| Equities | 65 | 22 | 100 |
| Bonds | 30 | 8 | 30 |
| Cash and equivalents | 5 | 1 | 25 |

Based on the data given in the table, the portfolio return is *closest* to:
A. 14.50%.
B. 16.75%.
C. 31.00%.

37. Arvind Roy currently has two stocks in his portfolio. 30% is invested in Gala Cement and the remainder is invested in Aqua Fertilizer. The two stocks have been performing quite well over the years with expected returns and standard deviations as follows:

| Company | Expected Return | Standard Deviation |
|---|---|---|
| Gala Cement | 10% | 8% |
| Aqua Fertilizer | 17% | 20% |

The covariance between these two stocks is 0.005. Arvind is considering adding another stock, Teragon Foods. Teragon Foods has a correlation coefficient of 0.4 with the current portfolio. Which of the following statements is *least* accurate?
A. The expected return on the portfolio is 14.9%.
B. By adding Teragon's stock, he will reduce his portfolio's systematic risk.
C. The standard deviation of the portfolio is 14.2%.

38. The probability distribution for a company's dividend yield is as follows:

| Probability | Dividend Yield |
|---|---|
| 0.40 | 6.4% |
| 0.20 | 7.2% |
| 0.15 | 8.1% |
| 0.25 | 6.8% |

The expected value of the dividend yield is *closest* to:
A. 6.40%.
B. 6.92%.
C. 7.13%.

39. The probability distribution for the rate of return on a project is as follows:

| Probability | Rate of Return |
|---|---|
| 0.30 | 12.4% |

| | |
|---|---|
| 0.25 | 7.2% |
| 0.20 | 10.8% |
| 0.25 | 8.6% |

The variance for the above distribution is *closest* to:
A. 2.07.
B. 4.28.
C. 9.83.

40. The total cost of producing mugs is given by the equation: C = 2.5Q + 2000, where C is the total cost in dollars, $2.5 is the variable cost per unit, Q is the number of units, and $2000 is the fixed cost. The quantities and the probabilities of producing the respective quantities are given in the table below:

| **Probability** | **Quantity** |
|---|---|
| 0.30 | 200 |
| 0.50 | 300 |
| 0.20 | 400 |

The total expected cost of manufacturing mugs is *closest* to:
A. $2,725.
B. $3,525.
C. $4,250.

41. Which of the following equations relating independent random variables is *most likely* correct?
A. E (XY) = E (X) * E (Y).
B. E (XY) = E (X) + E (Y).
C. E (XY) = E (X) + E (Y) – E (X) E (Y).

**LO.m: Calculate and interpret covariance given a joint probability function.**

42. The joint probabilities for X and Y are P (X=10, Y=5) = 0.3, and P(X=20, Y=8) = 0.7. The covariance of XY is *closest* to:
A. 6.8.
B. 6.5.
C. 6.3.

**LO.n: Calculate and interpret an updated probability using Bayes' formula.**

43. A researcher is studying the link between exchange rate movements and the discount rate set by the country's bank. He uses historical data to determine that the probability of exchange rate rising or falling over the next month is 63% and 35% respectively, while the probability that the exchange rate stays the same is 2%. Some days later, he receives information that the central bank will increase the discount rate. The researcher estimates that given the new

information regarding discount rates, the probabilities that the central bank will increase the discount rate given the scenarios that exchange rate rises, falls or stays the same are as follows:

- P(increased discount rate| exchange rate increases) = 67%
- P(increased discount rate| exchange rate stays same) = 9%
- P(increased discount rate| exchange rate decreases) = 24%

What is the probability that the exchange rate will fall given the new information that the central bank will increase the discount rate?

A. 24.0%.
B. 50.8%.
C. 16.5%.

44. An analyst has established the following prior probabilities regarding a company's next quarter's earnings per share (EPS) exceeding, equaling, or being below the consensus estimate.

| | Prior Probabilities |
|---|---|
| EPS exceed consensus | 15% |
| EPS equal consensus | 40% |
| EPS less than consensus | 45% |

Several days before releasing its earnings statement, the company announces an increase in its dividend. Given this information, the analyst revises his opinion regarding the likelihood that the company's EPS will be below the consensus estimate. He estimates the likelihood of the company increasing the dividend given that EPS exceed/meet/fall below consensus as reported below:

| | | **Probabilities the company increases dividends conditional on EPS exceeding/equaling/falling below consensus** |
|---|---|---|
| P(increase div | EPS exceed) | 75% |
| P(increase div | EPS equal) | 20% |
| P(increase div | EPS below) | 5% |

Using Bayes' formula, the updated (posterior) probability that the company's EPS will be below the consensus given that the dividend has increased is *closest* to:

A. 10.47%.
B. 24.36%.
C. 29.45%.

45. Finnish Mortgage Holding Company estimated that about 5 percent of its mortgage holders default. Out of those who default, 80 percent of them make payments a month late as compared to 60 percent of those who do not default. The probability that a mortgage with late payments will default is *closest* to:

A. 0.04.

B. 0.07.
C. 0.20.

46. ABC Juices Limited has outlets in the city as well as the suburbs. 60% of the people live in the city, while the rest live in the suburbs. ABC's juices are consumed by 50% of the people in the city and 25% of those in the suburbs. The probability that a person chosen at random lives in the city given that he consumes ABC Juices is *closest* to:
A. 0.25.
B. 0.50.
C. 0.75.

47. The probability of boom is 60% and the probability of recession is 40% for the economy of Lorekia. If Lorekia's economy is in a boom, the probability of Stock LMN outperforming is 85%, and the probability of the stock underperforming is 15%. On the other hand, during a recession, there is a 20% probability that Stock LMN will outperform and an 80% probability that it will underperform. The probability of the economy being in a recession, given that LMN is outperforming is *closest* to:
A. 0.14.
B. 0.20.
C. 0.27.

**LO.o: Identify the most appropriate method to solve a particular counting problem, and solve counting problems using factorial, combination, and permutation concepts.**

48. The number of ways we can choose *r* objects from a total of *n* objects, when the order in which the *r* objects are listed does matter is given by the permutation formula:
$_nP_r = n!/(n - r)!$
How many permutations are possible when choosing 3 objects from a total of 9 objects?
A. 84.
B. 210.
C. 504.

49. An investor is considering investing in 8 bonds. According to a new investment policy of a company, an investor can invest in 3 bonds graded AAA, 3 bonds graded AA and 2 graded A. The investor can choose this combination from a pool of 30 bonds available in market. Of the 30 bonds 10 are AAA, 10 are AA and 10 are A. How many different ways are possible for an investor to invest considering the new policy?
A. 560.
B. 648,00.
C. 46,656,000.

50. The number of ways in which three stocks can be sold from a total of 12 stocks, when the order in which the stocks are sold matters, is *most likely*:
A. 144.

B. 1320.
C. 1728.

51. Which of the following methods will you *most likely* use to count the number of ways for a certain event when the order matters?
    A. Combination.
    B. Labeling.
    C. Permutation.

52. The number of ways to select 15 stocks from a universe of 60 stocks, given that the order does not matter, is *most likely*:
    A. 4.
    B. 5.
    C. 7.

53. Vicky Walters has to conduct a series of tasks in order to complete her research project. The first task can be done in 6 different ways, the second one in 2 different ways, and the final task in 2 different ways. The total number of ways in which Walters can carry out all three tasks is *most likely*:
    A. 10.
    B. 24.
    C. 180.

**Solutions**

1. C is correct. Mutually exclusive events are those events which cannot happen together, i.e. there is no intersection between the two events. Therefore, both P (A|B) and P (AB) must be equal to zero.

2. C is correct. The two defining properties of a probability are as follows:
   - The probability of any event, E, is a number between 0 and 1.
   - The sum of the probabilities of any set of mutually exclusive and exhaustive events equals one.

3. B is correct. An empirical probability is "a probability estimated from data as a relative frequency of occurrence."

4. A is correct. A probability obtained based on logical analysis is a priori probability.

5. C is correct.
   Empirical: it is based on past data.
   A Priori: it is based on logical reasoning.
   Subjective: it is based on personal judgment.

6. B is correct. A priori probability is based on logical analysis, an empirical probability on historical data, and a subjective probability on personal or subjective judgment.

7. A is correct. The odds of an event can be determined by dividing the probability of the event occurring by the probability of the event not occurring. As a formula this can be expressed as: P(E) / (1 – P(E)). In this case the probability of the event (earning at least 15%) is 0.20 + 0.20 which 0.40. The probability of the event not occurring (earning less than 15%) is 0.20 + 0.20 + 0.20 = 0.60. Hence the odds are 0.40/0.60 = 2/3. This can also be written as 2 to 3.

8. A is correct. The probability of an event occurring given the odds for it is calculated as follows:
   $\text{Probability of E given odds of a to b} = \frac{a}{a+b} = \frac{1}{1+5} \approx 0.17.$

9. B is correct. A probability of an event given (conditioned on) another event is a conditional probability.

10. A is correct. Two events, A and B, are independent if and only if P(A | B) = P(A) or, equivalently, P(B | A) = P(B). The wording of the question precludes P(A) = P(B); therefore, responses B and C cannot be correct.

11. C is correct. According to the multiplication rule of probabilities, the joint probability of A and B can be expressed as:
    $P(AB) = P(A|B) * P(B)$

It is given that A and B are independent events and hence P(A|B) = P (A).
$P(AB) = P(A) * P(B)$

12. A is correct. The probability that at least one of the bonds will be called can be calculated using the Addition rule of probability which is:
P(A or B) = P(A) + P(B) – P(A and B) where P(A and B) is P(A) * P(B)
$P(A \text{ or } B) = 0.6 + 0.5 - 0.6 * 0.5 = 0.8.$

13. B is correct. Whenever *or* is used, use the addition rule for probabilities to calculate the probability of either of the events occurring or that both will occur:
$P(A \text{ or } B) = P(A) + P(B) - P(AB)$
$P(A \text{ or } B) = 0.6 + 0.2 - 0.15 = 0.65.$

14. A is correct. The joint probability can be computed using the multiplication rule:
P (AB) = P(A | B) P(B) where P(A | B) is the conditional probability of A given that B has occurred. If, A refers to the probability that that GE stock will appreciate and B refers to the probability that the economic growth will be above average, then the joint probability is: 0.60 * 0.35 = 0.21.

15. A is correct. The probability that at least one of two events will occur is the sum of the probabilities of the separate events less the joint probability of the two events.
$P(A \text{ or } B) = P(A) + P(B) - P(AB)$
$80\% = 70\% + 20\% - P(AB)$; therefore, $P(AB) = 10\%$.

16. A is correct. $P(A \text{ or } B) = P(A) + P(B) - P(AB) = 50 + 20 - 5 = 65\%$.

17. A is correct. A and B are two independent events, their joint probability is equal to the product of their individual probabilities, so joint probability = 0.5 × 0.4 = 0.2.

18. B is correct. Data given in the question:
$P(CFA) = 70\%,\ P(CTP) = 60\%,\quad P(CFA \mid CTP) = 50\%, P(CTP \mid CFA) = ?$
$P(CTP \mid CFA) = P(CTP\ CFA)/P(CFA)$
We have to find the passing rate of CTP giving members who have passed the CFA exams as well.
$P(CFA \text{ and } CTP) = P(CTP\ CFA) = P(CFA \mid CTP) * P(CTP) = 0.5 * 0.6 = 0.3$
$P(CTP \mid CFA) = P(CTP \text{ and } CFA)/P(CFA) = 0.3/0.7 = 0.428$ or 42.8%.

19. B is correct. The question is asking for the probability of a bottle produced by the new machine which is not defective. In the question, the probability of defective is given as 4% and therefore, the probability of not defective will be $1 - 0.04 = 0.96$.

20. C is correct. Note that A and B are independent events, and not mutually exclusive events. It is possible that both the independent events occur. Hence, the joint probability, P (AB) is not necessarily 0. Options A and B are correct for independent events.

21. B is correct. The multiplication rule is applied only when the two events A and B are independent.

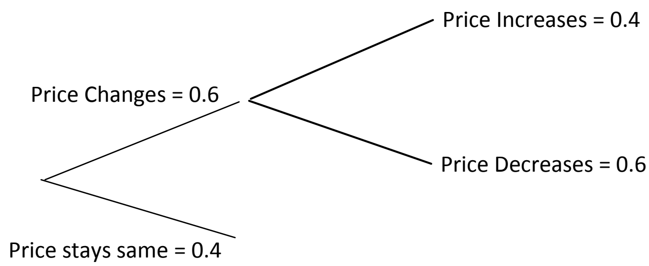
22. C is correct. Since the events are independent, P(A|B) = P(A) and P(B|A) = P(B).

23. B is correct. Using the total probability rule, the unconditional probability of closing down is given by:
$(0.3)(0.6) + (0.5)(0.3) + (0.2)(0.1) = 0.35$
The probability that ShopKart will not close down is,
$1 - 0.35 = 0.65 = 65\%$.

24. A is correct. The total probability rule is used to determine the unconditional probability, given conditional probabilities.

25. B is correct. With Option A we are considering the expected value of EPS if interest rates increase. This requires the use of conditional probability. Option C has the term 'different scenarios' which implies the use of conditional probabilities.

26. B is correct. Consider the tree diagram below:




The probability of a price decrease is equal to the probability of a price change times the probability of a decrease given a change = 0.6 * 0.6 = 0.36.

27. C is correct. Diversification benefit requires correlations less than positive one.

28. C is correct. The formula for solving covariance is:
$$\text{Cov}[X, Y] = \sum_{(x,y)eR_{XY}} (x - E[X])(y - E[Y])P_{XY(x,y)}$$

$E[X] = (2\% * 0.25) + (8\% * 0.5) + (12\% * 0.25) = 7.5\%$
$E[Y] = (4\% * 0.25) + (10\% * 0.5) + (16\% * 0.25) = 10\%$
$\text{Cov}[XY] = 0.25(2\% - 7.5\%)(4\% - 10\%) + 0.5(8\% - 7.5\%)(10\% - 10\%) + 0.25(12\% - 7.5\%)(16\% - 10\%)$
$= 0.000825 + 0 + 0.000675 = 0.0015.$

29. B is correct. The formula for Correlation Coefficient is:
$r = (\text{Covariance between X, Y})/(\text{Sample standard deviation of X}) * (\text{Sample std. dev. of Y})$

$= \sqrt{0.25(2\% - 7.5\%)^2 + 0.5(8\% - 7.5\%)^2 + 0.25(12\% - 7.5\%)^2} = 0.035707$

$= \sqrt{0.25(4\% - 10\%)^2 + 0.5(10\% - 10\%)^2 + 0.25(16\% - 10\%)^2} = 0.042426$

$\text{Cov[XY]} = \frac{0.0015}{0.035707 * 0.042426} = 0.99.$

30. C is correct. Fatima is incorrect because covariance may range from negative infinity to positive infinity. Taimour and Vishal are correct.

31. C is correct. The correlation of 1.0 signifies that the securities are perfectly positively correlated; it implies that they will move in the same direction so the portfolio cannot benefit from diversification.

32. A is correct.
Standard Deviation of A = $\sqrt{480} = 21.91$
Standard Deviation of B = $\sqrt{600} = 24.49$
$\text{Correlation} = \frac{\text{Covariance}}{\text{Standard deviation of A} * \text{Standard deviation of B}} = \frac{140}{21.91 * 24.49} = 0.26.$

33. C is correct.
The total portfolio return is calculated as the weighted average return of the portfolio constituents.
$\text{Portfolio return} = (0.6 * 0.35) + (0.4 * 0.15) = 0.27 = 27.0\%.$

34. B is correct. The portfolio standard deviation of the returns is calculated through following formula:

$$\sigma(R_{Portfolio}) = \sqrt[2]{W_A^2\sigma^2(R_A) + W_B^2\sigma^2(R_B) + 2W_AW_B\text{Cov}(R_A, R_B)}$$

And covariance is calculated through following formula:

$$\text{Cov}(R_AR_B) = \rho(R_AR_B)\sigma(R_A)\sigma(R_B)$$

First calculate the covariance, $\text{Cov} = 0.7 * .14 * .06 = 0.00588$, then enter values in the formula 1 for calculating portfolio standard deviation, you should get portfolio standard deviation = 8.90%.

35. B is correct. Calculate the portfolio standard deviation of returns as follows:
$\sqrt{(.45^2 * 25^2 + .55^2 * .32^2 + 2 * .45 * .55 * .85 * .25 * .32)} = 0.28.$

36. B is correct. The portfolio return is the weighted mean return and is calculated as:

$0.65 * 22 + 0.30 * 8 + 0.05 * 1 = 16.75.$

37. B is correct. Systematic risk cannot be reduced.

38. B is correct. The expected value of the dividend yield is the sum of the probability-weighted average of the dividend yields whose formula is given by:

$$E(X) = \sum_{i=1}^{n} P(X_i)X_i$$

$E(X) = (0.4 * 6.4) + (0.2 * 7.2) + (0.15 * 8.1) + (0.25 * 6.8) = 6.92\%.$

39. B is correct. The formula for variance is as follows:

$$\alpha^2(X) = \sum_{i=1}^{n} P(X_i)[X_i - E(X)]^2$$

$E\,(X) = (12.4 * 0.3) + (7.2 * 0.25) + (10.8 * 0.2) + (8.6 * 0.25) = 9.83$

$\alpha^2(X) = (0.30)(12.4 - 9.83)^2 + (0.25)(7.2 - 9.83)^2 + (0.20)(10.8 - 9.83)^2 + (0.25)(8.60 - 9.83)^2 = 4.28.$

40. A is correct. First, calculate the expected number of units produced given the probabilities.
$E\,(Q) = (200 * 0.3) + (300 * 0.5) + (400 * 0.2) = 290$
Use this in the equation to determine the total cost.
$\text{Total cost} = 2.5\,(290) + 2000 = \$2{,}725.$

41. A is correct. The expected value of two independent random variables is the product of their own expected values.

42. C is correct. The joint probabilities in the question are given as follows:

| **X, Y** | **5** | **8** |
|---|---|---|
| **10** | 0.3 | |
| **20** | | 0.7 |

$E[X] = 0.3(10) + 0.7(20) = 17$
$E[Y] = 0.3(5) + 0.7(8) = 7.1$
$Cov[XY] = 0.3(10 - 17)(5 - 7.1) + 0.7(20 - 17)(8 - 7.1) = 6.3.$

43. C is correct. According to Bayes' Theorem:
Updated probability of event given the new information

$$= \frac{\text{Probability of new information given event}}{\text{Unconditional probability of new information}} * \text{Prior probability of event}$$

In order to proceed with the given data, we need to calculate the unconditional probability of new information i.e. the probability of an increase in the discount rate.
P (increased discount rate)

= P (increased discount rate| exchange rate increases) $*$ P (exchange rate increases) $+$
P (increased discount rate| exchange rate stays same) $*$
P (exchange rate stays same) $+$
P (increased discount rate| exchange rate decreases) $*$ P(exchange rate decreases)
$= (0.67 * 0.63) + (0.09 * 0.02) + (0.24 * 0.35)$
= 0.5079
= 50.79%

Using the unconditional probability and Bayes' Theorem, we can calculate updated probability of event given the new information about discount rates as:

P (exchange rate decreases| increased discount rate)
= [P (increased discount rate| exchange rate decreases) ÷ P (increased discount rate)] $*$ P (exchange rate decreases)
$= (0.24 \div 0.5079) * 0.35$
$= 16.5\%.$

44. A is correct. First, calculate the unconditional probability for an increase in dividends:

$$\text{P(Increase div)} = \text{P(Increase div|EPS exceed)} * \text{P(EPS exceed)} + \text{P(Increase div|EPS equal)} * \text{P(EPS equal)} + \text{P(Increase div|EPS below)} * \text{P(EPS below)}$$

$= 0.75 * 0.15 + 0.20 * 0.40 + 0.05 * 0.45 = 0.215$

Then update the probability of EPS falling below the consensus as:

$$\text{P(EPS below|Increase div)} = \left[\frac{\text{P(Increase div|EPS below)}}{\text{P(Increase div)}}\right] * \text{P(EPS below)}$$

$= (0.05 \div 0.215) * 0.45 = 0.1047.$

45. B is correct. Based on the information presented, Bayes' formula can be applied. The first step is to note down the various probabilities given:

P (Default) = 0.05
P (No default) = 0.95
P (Delayed Payments | Default) = 0.80
P (Timely Payments | Default) = 0.20
P (Delayed Payments | No Default) = 0.60
P (Timely Payments | No Default) = 0.40

$$\text{P (Event | Information} = \frac{\text{P (Information | Event)}}{\text{P (Information)}} * \text{P (Event)}$$

In this case, 'delayed payments' is the information and 'default' is the event. The formula can be written as.

P (Default | Delayed Payments)

$$= \frac{[\text{P(DelayedPayments|Default)} * \text{P(Default)}]}{\{\text{P(DelayedPayments|Default)} * \text{P(Default)}\} + \{\text{P(DelayedPayments|NoDefault)} * \text{P(NoDefault)}\}}$$

$$\text{P (Default | Delayed Payments)} = \frac{0.80*0.05}{(0.80*0.05)+(0.60*0.95)} = 0.07.$$

46. C is correct. First, note down the various probabilities given in the problem:
    P (City) = 0.60
    P (Suburbs) = 0.40
    P (Consumers | City) = 0.50
    P (Consumers | Suburbs) = 0.25

$$\text{P (City | Consumer)} = \frac{[\text{P(Consumer|City)} * \text{P(City)}]}{\{\text{P(Consumer|City)} * \text{P(City)}\} + \{\text{P(Consumer|Suburb)} * \text{P(Suburb)}\}}$$

$$\text{P (City |Consumer)} = \frac{0.50 * 0.60}{(0.50 * 0.60) + (0.25 * 0.40)} = 0.75$$

47. A is correct. First, list the various probabilities given and determine the probability to be calculated:
    P (Boom) = 0.60
    P (Recession) = 0.40
    P (Outperform | Boom) = 0.85
    P (Underperform| Boom) = 0.15
    P (Outperform | Recession) = 0.20
    P (Underperform | Recession) = 0.80

$$\text{P (Recession| Outperform)} = \frac{[\text{P(Outperform|Recession)} * \text{P(Recession)}]}{\{\text{P(Outperform|Recession)} * \text{P(Recession)}\} + \{\text{P(Outperform|Boom)} * \text{P(Boom)}\}}$$

$$\text{P (Recession |Outperform)} = \frac{0.20 * 0.40}{(0.20 * 0.40) + (0.85 * 0.60)} = 0.14$$

48. C is correct. In this problem,

$$\frac{9!}{(9-3)!} = \frac{9!}{6!} = 504.$$

49. B is correct. The number of ways in which an investor can invest in 3 AAA, 3 AA and 2 A bonds is: ${}_{10}C_3$ x ${}_{10}C_3$ x ${}_{10}C_2$ = 120 x 120 x 45 = 648,000.

50. B is correct. Since the order in which the stocks are sold matters, use the permutation formula:

$$\text{Number of ways} = \frac{n!}{(n-r)!} = \frac{12!}{(12-3)!} = 1320$$

    You may also use the nPr function on the calculator. Note that r is the number of stocks to be selected and n is the total number of stocks.

51. C is correct. Permutation is the method used when the order does matter. The order does not matter in combination and labeling.

52. B is correct. Use the combination formula since the order of selection does not matter.

$$\text{Number of ways} = \frac{n!}{r!\,(n-r)!} = \frac{60!}{15!\,(60-15)!} \approx 5$$

You may also use the nCr function on the calculator. Note that r is the number of stocks to be selected and n is the total number of stocks.

53. B is correct. Use the multiplication rule of counting to determine the total number of ways the three tasks can be done. Total number of ways $= 6 * 2 * 2 = 24$.

**LO.a: Define a probability distribution and distinguish between discrete and continuous random variables and their probability functions.**

1. X is a discrete random variable with four possible outcomes: X= {1,2,3,4}. Which of the following *best* represent the probability function f(x) for the discrete variable X?
   A. f(X): f(1) = -0.25 f(2) = -0.25 f(3) = 0.5 f(4) = -0.05.
   B. f(X): f(1) = 0.25 f(2) = 0.25 f(3) = 0.4 f(4) = 0.1.
   C. f(X): f(1) = 0.2 f(2) = 0.2 f(3) = 0.6 f(4) = 0.01.

2. The probability function for a discrete random variable is denoted by g(y) = g(Y = y). Which of the following is *most likely* true?
   A. The probability that a random variable Y takes on the value y.
   B. Sum of the probabilities g(y) over all values of Y equals 0.
   C. The probability g(y) is a number between -1 and 1.

**LO.b: Describe the set of possible outcomes of a specified discrete random variable.**

3. A discrete uniform distribution consists of the following 12 values:
   2.0, 6.2, -1.5, 2.4, 9.0, 4.1, -3.2, -1.0, 5.5, 8.2, 4.1 and 0.8
   The probability of a value lying between -3.0 and 1.0 in a single draw from the distribution is *closest* to:
   A. 16.67%.
   B. 25.00%.
   C. 33.33%.

4. A six sided biased dice has the probability of landing on its edge twice out of 50 throws. The probability of any number showing up is equal. When the dice is rolled, the prize is equal to the number it lands on, i.e. $1 for showing 1, $2 for showing 2 and so on. The prize of landing on its edge is $10. What is the expected value of the prize on a single roll of dice?
   A. 3.76.
   B. 3.91.
   C. 3.81.

5. The outcomes of rolling a dice can be *best* represented by which of the following types of probability distributions?
   A. A continuous probability distribution.
   B. A discrete probability distribution.
   C. A normal distribution.

**LO.c: Interpret a cumulative distribution function.**

6. The notation ‘F (x) = P (X ≤ x)’ *best* describes which of the following?
   A. Cumulative distribution function.
   B. Probability density function.

C. Probability function.

**LO.d: Calculate and interpret probabilities for a random variable, given its cumulative distribution function.**

7. Discrete uniform probability distribution of net profits for a currency option on EURO (€) is as follows:

| Net Profit (€) | Probability |
|---|---|
| Net profit of 0 | 0.25 |
| Net profit of 2 or less | 0.50 |
| Net profit of 4 or less | 0.75 |
| Net profit of 6 or less | 1.00 |

The probability of a net profit greater than €2 and less than or equal to €6 is *closest* to:
A. 1.00.
B. 0.75.
C. 0.50.

8. A box contains 10 labeled pieces of paper. Each piece of paper has one integer ranging between 1 and 10 written on it, and the numbers are not repeated. If you draw a piece of paper at random, then the probability that the number is greater than 3 and less than or equal to 7 is *closest* to:
A. 0.40.
B. 0.50.
C. 0.60.

**LO.e: Define a discrete uniform random variable, a Bernoulli random variable, and a binomial random variable.**

9. Which of the following *best* describes the binomial distribution? The binomial distribution:
A. has an infinite number of specified outcomes.
B. has an infinite number of unspecified outcomes.
C. is based on the Bernoulli random variable.

10. Which of the following is *least likely* an assumption of the binomial distribution?
A. The probability, p, of success is constant for all trials.
B. The trials are independent.
C. The probability of failure is the reciprocal of the probability of success.

**LO.f: Calculate and interpret probabilities given the discrete uniform and the binomial distribution functions.**

11. Karachi Footy Club, an emerging football team, had a tough last season with a win to loss record of 1 to 5. In order to contest and increase its chances of winning, the team signed 2 new players and it is estimated that the chances of winning a game in the next season are

60%. Assuming that winning a single game is independent of other games, the probability that the team will win 2 out of next 5 games is *closest* to:
A. 0.2304.
B. 0.3456.
C. 0.5184.

12. You toss a coin 14 times. The probability of getting exactly 6 tails is:
A. 0.016.
B. 0.183.
C. 0.428

**LO.g: Construct a binomial tree to describe stock price movement.**

13. An investor charts the movement of a stock's price over the next three years as follows:

| **T = 0** | **T = 1** | **T = 2** |
|---|---|---|
| $S_0$ = 45 | $S_u$ = 49.5 | $S_{uu}$ = 54.45 |
| | $S_d$ = 40.5 | $S_{ud.du}$ = 44.55 |
| | | $S_{dd}$ = 36.45 |

The initial price of the stock is $45. The probability of the price increasing at any given point is 55% and that of the price decreasing is 45%. The probability, using the binomial model, that the stock's price would be $36.45 two years later is *closest* to:
A. 20.25%.
B. 24.75%.
C. 30.25%.

14. Suppose National Refinery Limited's (NRL) expected price over the next two periods is as shown below.

| Time = 0 | Time = 1 | Time = 2 |
|---|---|---|
| $NRL_0$ = 100 | $NRL_u$ = 110 | $NRL_{uu}$ = 121 |
| | $NRL_d$ = 90 | $NRL_{ud,du}$ = 99 |
| | | $NRL_{dd}$ = 81 |

NRL's current price is $100. The probability of an up move in any given period is 65% and the probability of a down move in any given period is 35%. Using the binomial model, the probability that the NRL's price will be $99 at the end of two periods is *closest* to:
A. 42.25%.
B. 22.75%.
C. 45.50%.

15. Assume that a stock's price over the next two periods is as shown below:

| | | |
|---|---|---|
| Time = 0 | Time = 1 | Time = 2 |
| S0 = 60 | Su = 69 | S uu = 79.35 |
| | Sd = 51 | S ud,du = 58.65 |
| | | S dd = 43.35 |

The initial value of the stock is $60. The probability of an up move in any given period is 60% and the probability of a down move in any given period is 40%. Using the binomial model, the probability that the stock's price will be $58.65 at the end of two periods is *closest* to:

A. 24%.
B. 32%.
C. 48%.

16. A stock's price over the next two periods is as shown below.

| **Time = 0** | **Time = 1** | **Time = 2** |
|---|---|---|
| $S_0$ = 100 | $S_u$ = 105 | $S_{uu}$ = 110 |
| | $S_d$ = 95 | $S_{ud,du}$ = 102 |
| | | $S_{dd}$ = 90 |

The initial value of the stock is 100. From historical data, it has been observed that the probability of an up move in any given period is 30% and the probability of a down move in any given period is 70%. Using the above data, the probability that the stock's price will be equal to 102 at the end of period 2 is *closest* to:

A. 21%.
B. 49%.
C. 42%.

17. Using the same data as in the previous question, the expected prices of the stock at the end of period 1 and period 2 are *closest* to:

| | **Time 1** | **Time 2** |
|---|---|---|
| A. | 98 | 96.84 |
| B. | 102 | 83.42 |
| C. | 98 | 84.84 |

18. A bank has issued loans to 60 customers. Based on past experience, the bank expects 10% of the customers to default. Which of the following is *most likely* the expected number of defaults and the standard deviation of the number of defaults?

| | Expected number of defaults | Standard deviation |
|---|---|---|
| A. | 5.40 | 6 |
| B. | 6 | 5.40 |
| C. | 6 | 2.32 |

.

**LO.h: Calculate and interpret tracking error.**

19. Alex, a fund manager at Morgan Investment Bank manages Anil's portfolio. At the beginning of the year, the portfolio had a value of $50,000 and at the end it was $45,000. Alex's performance is measured against an index which declined by 8% in that year due to below average economic conditions. The tracking error of this portfolio is *closest* to:
    A. 2%.
    B. -2%.
    C. -18%.

**LO.i: Define the continuous uniform distribution and calculate and interpret probabilities, given a continuous uniform distribution.**

20. At a restaurant, the service time for a single order is uniformly distributed between 10 to 18 minutes. If a customer places an order at 5:30 PM, what is the probability that the order will be served after 5:45 PM?
    A. 0.375.
    B. 0.833.
    C. 0.660.

**LO.j: Explain the key properties of the normal distribution.**

21. Which of the following statements about a normal distribution is *most* accurate? A normal distribution:
    A. has an excess kurtosis of 3.
    B. is partially described by two parameters.
    C. can be the linear combination of two or more normal random variables.

22. Which of the following is the *most likely* characteristic of the normal probability distribution? The normal probability distribution:
    A. has an excess kurtosis of 3.0.
    B. has a mode higher than mean and median.
    C. is more suitable as a model for returns than for asset prices.

23. Which of the following is *least likely* a characteristic of the normal distribution?
    A. Skewness = 0.
    B. Kurtosis = 3.

C. Mean > Mode.

24. The normal density with $\mu = 0$ and $\sigma = 1$ is called a:
    A. standard normal distribution.
    B. lognormal distribution.
    C. binomial distribution.

**LO.k: Distinguish between a univariate and a multivariate distribution, and explain the role of correlation in the multivariate normal distribution.**

25. A multivariate distribution for the returns on *y* stocks is *most likely* defined by which of the following parameters?
    A. mean returns on *(y-1)* securities.
    B. variances of returns of *(y-1)* securities.
    C. $\frac{y(y-1)}{2}$ pairwise return correlations.

26. Which of the following is an example of a multivariate distribution?
    A. Distribution of returns on each asset in a group of assets.
    B. Distribution of returns on the assets as a group.
    C. Distribution considering the means and variances of the assets in the group.

**LO.l: Determine the probability that a normally distributed random variable lies inside a given interval.**

27. In a normal distribution, approximately what percent of all observations fall in the interval $\mu \pm \sigma$?
    A. 68 percent.
    B. 50 percent.
    C. 99 percent.

28. In a normal distribution, approximately 99 percent of all observations fall within which of the following intervals?
    A. $\mu \pm 2\sigma$.
    B. $\mu \pm 3\sigma$.
    C. $\mu \pm \sigma$.

29. Two students, Miley and Mariah, make the following statements:
    - Miley: Approximately 5% of the observations lie outside the range of $\mu \pm 2\sigma$.
    - Mariah: Approximately 68% of the observations lie in the interval $\mu \pm \sigma$.

    Which of the above statements is *most likely* correct?
    A. Only Miley's statement.
    B. Only Mariah's statement.
    C. Both Miley and Mariah's statements.

**LO.m: Define the standard normal distribution, explain how to standardize a random variable, and calculate and interpret probabilities using the standard normal distribution.**

30. Given that X follows a normal distribution with a mean of 4.5 and standard deviation of 1.5, the standardized value corresponding to X=8.9 would be *closest* to:
    A. 1.64.
    B. 2.93.
    C. 5.93.

31. Consider a variable that is normally distributed with a mean of 10 and a variance of 16. To find the probability of observing a value of -1 or less, the calculated Z value is *closest* to :
    A. -2.7500.
    B. -0.6875.
    C. 0.0035.

32. In order to standardize a random variable X, the steps that *most accurately* describe the process are :
    A. subtract the mean of X from X, and then divide that result by the standard deviation of X.
    B. subtract the mean of X from X, and then divide that result by the standard deviation of the standard normal distribution.
    C. divide X by the difference between the standard deviation of X and the standard deviation of the standard normal distribution.

33. A portfolio has a mean return of 15% and a standard deviation of return of 20% per year. Given the following information, the probability that the portfolio return will be below 18% is *closest* to:

    P (Z < 0.15) = 0.5596, P (Z > 0.15) = 0.4404, P (Z < 0.18) = 0.5714, P (Z > 0.18) = 0.4286.

    A. 0.5596.
    B. 0.4404.
    C. 0.5714.

34. A portfolio has a mean return of 15% and a standard deviation of return of 20% per year. Given the following information, the probability that the portfolio return will be between 16% and 20% is *closest* to:

    P (Z < 0.16) = 0.5636, P (Z < 0.20) = 0.5793, P (Z < 0.05) = 0.5199, P (Z < 0.25) = 0.5987

    A. 0.0157.
    B. 0.0788.
    C. 0.1186.

**LO.n: Define shortfall risk, calculate the safety-first ratio, and select an optimal portfolio using Roy's safety-first criterion.**

35. Information about three possible asset allocations is given below:

| **Allocation** | **Expected Annual Return** | **Standard deviation of return** |
|---|---|---|
| I | 8% | 3% |
| II | 19% | 11% |
| III | 24% | 16% |

Assuming a minimum acceptable return of 6%, based on Roy's safety-first criterion, the *most appropriate* allocation is:

A. I.
B. II.
C. III.

36. The table below shows data on three portfolios:

| Portfolio | Expected Return | Standard Deviation |
|---|---|---|
| 1 | 15% | 33% |
| 2 | 19% | 40% |
| 3 | 22% | 48% |

Assuming the minimum acceptable rate of return is 6%, under Roy's safety-first criterion, which of the following portfolios is the *most* appropriate choice?

A. Portfolio 1.
B. Portfolio 2.
C. Portfolio 3.

37. An investor has a portfolio of $100,000. His investment objective is long term growth but he will need $2,000 for his medical insurance and another $2,000 for his rent expenses by the end of the year. The investor is considering investing in one of these three available portfolios:

| **Portfolio** | **Expected Return** | **Standard Deviation** |
|---|---|---|
| A | 5% | 10% |
| B | 8% | 13% |
| C | 14% | 22% |

Using Roy's safety-first criterion ratio, which one of these portfolios will *minimize* the probability of the investor's portfolio falling below $100,000?

A. Portfolio A.
B. Portfolio B.
C. Portfolio C.

38. Which of the following risks is evaluated by the safety-first rules?

A. Downside risk.
B. Default risk.
C. Upside risk.

39. An investor has a portfolio worth $750,000. At the end of the year, the investor wishes to liquidate $33,750, without using the initial capital. According to the safety-first criterion, which of the following alternatives is the *best* approach?

| **Alternative** | **Expected annual return** | **Standard deviation of return** |
|---|---|---|
| A. | 30% | 32% |
| B. | 15% | 12% |
| C. | 20% | 25% |

A. Allocation A.
B. Allocation B.
C. Allocation C.

**LO.o: Explain the relationship between normal and lognormal distributions and why the lognormal distribution is used to model asset prices.**

40. Which of the following statements regarding the distributions used for asset pricing is *most* accurate?
A. Normal distribution returns will not let returns fall below zero in the case of asset pricing.
B. Lognormal distribution returns will never fall in value below zero.
C. Binomial distribution will allow the asset's value to stay positive and realistic as per the current market.

**LO.p: Distinguish between discretely and continuously compounded rates of return, and calculate and interpret a continuously compounded rate of return, given a specific holding period return.**

41. The continuously compounded daily returns for ICI shares are normally distributed. The probability distribution for ICI share prices *most likely* follow a:
A. Normal distribution.
B. Lognormal distribution.
C. Neither of the above.

42. The price per share of RBook is $45. Exactly, one year later, the stock is trading at $55. The continuously compounded return over the one year period is closest to:
A. 18.18%.
B. 20.06%.
C. 22.22%.

**LO.q: Explain Monte Carlo simulation and describe its applications and limitations.**

43. Which of the following models can be *efficiently used* to value a call option?
A. Black-Scholes-Merton model.

B. Monte Carlo simulation.
C. Historical simulation.

44. Which of the following is *most likely* a weakness of the Monte Carlo simulation?
    A. It provides only estimates, and not exact results.
    B. It is based only on past data, and is not fully reflective of all risks.
    C. It is possible only through the use of supercomputers.

**LO.r: Compare Monte Carlo simulation and historical simulation.**

45. Which of the following statements about simulation models is *least* accurate?
    A. Historical simulation models use the historical data to analyze "what-if" scenarios.
    B. Historical simulation analyzes risks from the events that occurred during the sample period.
    C. Monte Carlo simulation provides only statistical estimates, and not exact results.

46. Which of the following methods addresses the 'what-if' question?
    A. Historical simulation.
    B. Monte Carlo simulation.
    C. Value at risk approach.

**Solutions**

1. B is correct because the sum of f(x) over all values of X must equal 1 and 0 <= p(x) <=1.

2. A is correct. The sum of the probabilities g(y) over all values of Y equals 1. The probability g(y) is a number between 0 and 1.

3. B is correct. First order the values from smallest to largest. Then note that three of the twelve values are between -3.0 and 1.0. Thus, the probability of a draw from the distribution being between -3.0 and 1.0 is 3/12 = 0.25.

4. A is correct. The probability of the dice landing on its edge is 2/50 = 0.04. Since the dice is biased, the probability of showing up any number won't be 1/6. It has been stated that the probability of showing any number is equal, i.e. $\frac{1-0.04}{6}$ = 0.16. The distribution is as follows:

| **Outcome** | **Probabilities** | **Prizes** | **Expected Value** |
|---|---|---|---|
| Edge | 0.04 | $10 | 0.4 |
| 1 | 0.16 | $1 | 0.16 |
| 2 | 0.16 | $2 | 0.32 |
| 3 | 0.16 | $3 | 0.48 |
| 4 | 0.16 | $4 | 0.64 |
| 5 | 0.16 | $5 | 0.80 |
| 6 | 0.16 | $6 | 0.96 |
| | | | **3.76** |

5. B is correct. When a dice is rolled, since there are a finite number of outcomes, it is an example of a discrete probability distribution.

6. A is correct. The cumulative distribution function gives the probability that a random variable X is less than or equal to a particular value x, P $(X \leq x)$.

7. C is correct. $P(X \leq 6) = 1.0$ and $P(X \leq 2) = 0.50$. Therefore, $P(2 \leq X \leq 6) = 1.0 - 0.50 = 0.50$.

8. A is correct. The probability of each piece of paper being drawn will be 1/10 = 0.10.
   $P(3 < x \leq 7) = P(x \leq 7) - P(x \leq 3)$
   $P(3 < x \leq 7) = P(x \leq 1, 2, 3, 4, 5, 6, 7) - P(x \leq 1, 2, 3)$
   $P(3 < x \leq 7) = (0.1 * 7) - (0.1 * 3)$
   $P(3 < x \leq 7) = 0.40.$

9. C is correct. A binomial distribution is based on the Bernoulli random variable.

10. C is correct. Probability of failure = 1 – probability of success. Hence, it is not the reciprocal.

In addition, this statement is not an assumption of the binomial distribution. The binomial distributions make only two assumptions, which are the first two choices listed in this example.

11. A is correct. Using Binomial to calculate the probability of 2 wins out of 5 games:
    $P(x) = P(X = x) = [\text{number of ways to choose x from n}] \times p^x \times (1 - p)^{n-x}$
    P(Win) = 0.6
    P(Lose) = 0.4
    $P(2 \text{ out } 5) = 5C2 \times 0.6^2 \times (1-0.6)^3 = 0.2304$

12. B is correct.
    The probability of getting 6 tails $= {}^{n}_{r}C\ (p)^r\ (1-p)^{n-r} = {}^{14}_{6}C\ (0.5)^6\ (0.5)^8 = 0.183.$

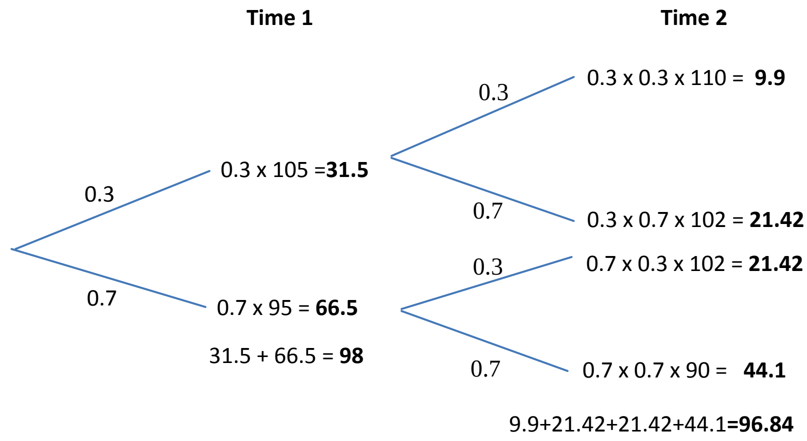
13. A is correct. Only two consecutive downward movements would lead to the price being \$36.45 two years later. The probability of two consecutive downward movements is 0.45 * 0.45 = 0.2025 = 20.25%.

14. C is correct. The probability of an up move followed by a down move is $0.65 * 0.35 = 0.2275$. The probability of a down move followed by an up move is $0.35 * 0.65$ also = 0.2275. Both of these sequences result in an end value of \$99. Therefore, the probability of an end value of \$99 is
    (0.2275 + 0.2275) = 45.5%.

15. C is correct. The probability of an up move followed by a down move is 0.60 times 0.40 equals 0.24. The probability of a down move followed by an up move is 0.40 times 0.60 also equals 0.24. Both of these sequences result in an end value of \$58.65. Therefore, the probability of an end value of \$58.65 is 48%.

16. C is correct. There are four possibilities that stock price can take. It can move up-up, up-down, down-up and down-down. In order to reach 102, a stock's price can either go up first and then down or the other way. Probability for the stock going up first and then down is $0.3 * 0.7 = 0.21$. This probability will be the same for the stock going down first and then up which is, $0.7 * 0.3 = 0.21$. Therefore, the probability of the stock's price reaching 102 is 42% (21% + 21%)

17. A is correct.




18. C is correct.
    Expected number of defaults $= \mathrm{np} = 60 * 0.10 = 6$
    Standard deviation $= \sqrt[2]{\mathrm{np}(1-\mathrm{p})} = \sqrt[2]{60 * 0.1 * 0.9} = 2.32.$

19. B is correct. Tracking error is the portfolio total return less the benchmark total return. The portfolio return is
    (45000 - 50000)/50000 = -10%. Benchmark return is 8% and therefore the tracking error is -10% - (-8%) = -2%.

20. A is correct. In uniform distribution the probability can be found of a range only instead of a point. The time is uniformly distributed from 10 to 18 minutes, i.e. 8 minutes. If a customer places order at 5:30, the probability of being served after 5:45 leaves 3 minutes buffer for a server as it takes from 10 to 18 minutes to serve. Therefore, the probability is 3/8 or 0.375.

21. C is correct. A normal distribution has an excess kurtosis of 0 (kurtosis of 3), is completely described by two parameters (mean and variance) and a liner combination of two or more normal random variables is also normally distributed.

22. C is correct. A normal distribution is more suitable as a model for returns than for asset prices.

23. C is correct. The mean, median, and mode for a normal distribution are equal. It has a skewness of 0 and a kurtosis of 3.

24. A is correct. The normal density with $\mu = 0$ and $\sigma = 1$ is called a standard normal distribution or unit normal distribution.

25. C is correct. The three parameters that define a multivariate distribution for returns on y stocks include mean returns on y securities, variances of returns on y securities, and $\frac{y(y-1)}{2}$ pairwise return correlations.

26. B is correct. C is incorrect because it did not include correlations between the assets. A is incorrect because it is not a distribution of a single asset (or a random variable), but as a group.

27. A is correct. Approximately 50 percent of all observations fall in the interval $\mu \pm (2/3)\sigma$.

28. B is correct. Approximately 68 percent of all observations fall in the interval $\mu \pm \sigma$. Approximately 95 percent of all observations fall in the interval $\mu \pm 2\sigma$.

29. C is correct. Miley and Mariah are both correct.

30. B is correct. If X follows a normal distribution with parameters $\mu$ and $\sigma$, X can be standardized using the formula:
$Z = (X - \mu) \div \sigma$
$= (8.9 - 4.5) \div 1.5$
$= 2.93$

31. A is correct. First, standardize the value of interest, –1, for the given normal distribution:
$Z = (X - \mu)/\sigma = (-1 - 10)/4 = -2.75$.

32. A is correct. There are two steps in standardizing a random variable X: Subtract the mean of X from X, and then divide that result by the standard deviation of X.

33. A is correct.
$$P\left(Z < \frac{X - \mu}{\sigma}\right) = P\left(Z < \frac{0.18 - 0.15}{0.20}\right) = P(Z < 0.15)$$
If the values from the table are not given, then using the cdf table for standard normal variable, find the entry corresponding to 0.10 in the row and 0.05 in the column, which is 0.5596.
This implies the probability that the portfolio return will be less than 18% is 55.96 percent.

34. B is correct.
$$P\left(\frac{X - \mu}{\sigma} < Z < \frac{X - \mu}{\sigma}\right)$$
$$P\left(\frac{0.16 - 0.15}{0.20} < Z < \frac{0.20 - 0.15}{0.20}\right)$$
$$P(0.05 < Z < 0.25) = P(Z < 0.25) - P(Z < 0.05) = 0.5987 - 0.5199 = 0.0788$$

35. B is correct. Roy's safety-first ratio = [*E*(*RP*) – *RL*] / Standard deviation of *P* with the optimal portfolio having the highest ratio. The safety-first ratios for the three allocations are:

| Allocation | Safety-first ratio |
|---|---|
| I | 0.67 |
| II | 1.18 |
| III | 1.125 |

36. C is correct. The portfolio with the highest SF-Ratio is preferred. The SF-Ratio is calculated by subtracting the target return from the expected return and dividing by the standard deviation.
Portfolio 1: 0.270
Portfolio 2: 0.325
Portfolio 3: 0.333.

37. C is correct. The investor requires a minimum return of $\frac{\$4,000}{\$100,000}$ or 4 percent. Roy's safety-first model uses the excess of each portfolio's expected return over the minimum return and divides that excess by the standard deviation for that portfolio. The highest safety-first ratio is associated with Portfolio 3: (14% – 4%)/22% = 0.45.

38. A is correct. The safety-first rules is an approach to evaluate the downside risk or shortfall risk.

39. B is correct.

$$\text{Shortfall Level} = \frac{33750}{750000} = 4.5\%$$

The formula for SF ratio is $\frac{[E(R_p)-R_L]}{\sigma_P}$

Calculate the safety first ratios for each allocation:

$$A{:}\ \frac{30-4.5}{32} = 0.7968$$

$$B{:}\ \frac{15-4.5}{12} = 0.8750$$

$$C{:}\ \frac{20-4.5}{25} = 0.6200$$

Since allocation B has the highest ratio, it's the best one.

40. B is correct. Only lognormal distributions are used for asset pricing models because their value is above zero, i.e. they always stay positive and asset pricing cannot be negative. The normal distribution will allow prices to be negative.

41. B is correct. If the continuously compounded returns are normally distributed, then the future stock price is log-normally distributed.

42. B is correct. Continuously compounded return = ln (1+ holding period return) = ln (55/45) = 0.2006 = 20.06%.

43. A is correct. BSM model takes into account the sensitivity of call values to changes in a stock price and other variables which the others do not.

44. A is correct. Monte Carlo simulation only provides statistical estimates and not exact results.

45. A is correct. Historical simulation does not analyze what-if scenarios.

46. B is correct. The Monte Carlo simulation addresses the what-if question.

**LO.a: Define simple random sampling and a sampling distribution.**

1. A descriptive measure of a population is *best* described as:
   A. an estimator.
   B. a parameter.
   C. a sample statistic.

**LO.b: Explain sampling error.**

2. The difference between the observed value of a statistic and the quantity intended to estimate is known as:
   A. a parameter.
   B. a sampling error.
   C. a systematic error.

**LO.c: Distinguish between simple random and stratified random sampling.**

3. Paul uses the stratified random sampling technique of categorization for his research project. He first divides the country into 15 regions; then for each region, he categorizes the population into three age groups; young, adults, and elderly. Finally, he divides these categories into males and females. The number of cells or strata the sampling plan entails is *closest* to:
   A. 20.
   B. 45.
   C. 90.

4. Which of the following methods produces precise parameter estimates?
   A. Simple random sampling.
   B. Stratified random sampling.
   C. Indexing.

**LO.d: Distinguish between time-series and cross-sectional data.**

5. Which of the following is *most likely* to be an example of cross-sectional data?
   A. Financial ratios of Siemens for the years 2007, 2008, and 2009.
   B. Financial ratios of Engro, Nestle, and Unilever for the year 2009.
   C. Financial ratios of Engro, Nestle and Unilever for the years 2007, 2008, and 2009.

6. An analyst compiles EPS data for a sample of companies randomly drawn from the KSE-100 index. He gathers the data from the companies' fiscal year 2013 annual reports. This data is *best* characterized as:
   A. time-series data.
   B. longitudinal data.
   C. cross-sectional data.

7. Julian Spencer is conducting a research for his project. He makes use of the household budget data of the Scandinavian countries for FY2012. This is *most likely* an example of:
   A. cross sectional data.
   B. time series data.
   C. panel data.

**LO.e: Explain the central limit theorem and its importance.**

8. The population distribution of real estate investment returns in a country is found to be negatively skewed in a particular year. Given that the sample size is large, the sampling distribution of the sample mean returns would be characterized by:

| | **Distribution** | **Mean** | **Variance** |
|---|---|---|---|
| A | Negative skewed | Less than population mean | Equal to population variance |
| B | Normal distribution | Equal to population mean | Less than population variance |
| C | Normal distribution | Less than population mean | Equal to population variance |

9. According to the central limit theorem, the sampling distribution of the sample mean will be approximately normal for a large-size sample if the:
   A. population distribution is normal.
   B. population distribution is symmetric.
   C. population is described by any probability distribution.

10. An analyst draws samples from a population with distribution that is negatively skewed. Given the sample size is large, the sampling distribution of the sample mean is *most likely*:
    A. approximately normally distributed.
    B. to have a variance equal to that of the entire population.
    C. to have a mean smaller than the mean of the entire population.

11. Which of the following statements about central limit theorem are *most likely* correct?
    Statement I: The value of n should exceed 30 for the sample to be considered large.
    Statement II: The central limit theorem states that the variance of the distribution of the sample mean is $\frac{\sigma^2}{(n-1)}$.
    Statement III: The sample mean follows an approximately normal distribution for large sample sizes.
    A. Statements I and II.
    B. Statements I and III.
    C. Statements II and III.

**LO.f: Calculate and interpret the standard error of the sample mean.**

12. From the following information, the standard error of the sample mean is *closest* to:

| | |
|---|---|
| Mean | 33 |
| Number of observations | 82 |
| Variance | 53 |

A. 0.63.
B. 0.75.
C. 0.80.

13. A sample of 40 observations has a mean of 5 and a standard deviation of 22. The standard error of the sample mean is *closest* to:
A. 0.55.
B. 0.80.
C. 3.48.

14. Following sample of 10 items is drawn from the population:
2, 5, -5, 12, 9, 11, 0, 1, 20, -7
If the population variance is unknown, the standard error of the sample mean is *closest* to:
A. 2.5.
B. 2.6.
C. 2.8.

15. Ali manages a portfolio of 250 stocks. He draws a sample of 50 stocks, which has a standard deviation of returns of 15% and a mean annual return of 20%. Standard error of the sample mean is *closest* to:
A. 0.9500%.
B. 0.0212%.
C. 2.1200%.

16. From a large population you draw a sample of 64. The sample mean is 12 and the standard deviation is 3. What is the standard error of the sample mean?
A. 0.375.
B. 0.378.
C. 0.667.

**LO.g: Identify and describe desirable properties of an estimator.**

17. Which of the following is *least likely* a desirable property of an estimator?
A. Consistency.
B. Efficiency.
C. Reliability.

18. An analyst considers a large sample size to estimate a population parameter. A larger sample size is *most likely* to improve the estimator's:
A. consistency.

B. efficiency.
C. unbiasedness.

19. As the sample size increases, the probability of an estimate being close to the value of the population parameter increases. This desirable property of estimators is known as:
    A. Consistency.
    B. Efficiency.
    C. Unbiasedness.

**LO.h: Distinguish between a point estimate and a confidence interval estimate of a population parameter.**

20. All else held constant, the width of a confidence interval is *most likely* to be smaller if:
    A. sample size is larger and degree of confidence is higher.
    B. sample size is larger and degree of confidence is lower.
    C. sample size is smaller and degree of confidence is lower.

21. A researcher is unsure of the underlying population distribution and wants to increase the reliability of the parameter estimates. Which of the following is *least likely* to achieve her objective?
    A. Increase in the sample size.
    B. Use of point estimates rather than confidence intervals.
    C. Use of the t-distribution rather than the normal distribution to establish confidence intervals.

22. Which of the following *most likely* represents the degree of confidence?
    A. α.
    B. 1-α.
    C. α – 1.

23. The average dividend yield for a sample of 50 companies is 4.5% and its standard deviation is 3.75%. The 95% confidence interval for this sample is *most likely*:
    A. [3.46, 5.54].
    B. [3.13, 5.87].
    C. [3.62. 5.38].

**LO.i: Describe properties of Student's t-distribution and calculate and interpret its degrees of freedom.**

24. Which of the following is *least accurate* about student's t-distribution in comparison with the normal distribution? Student's t-distribution:
    A. has fatter tails.
    B. is more peaked.
    C. is symmetrical.

25. Which of the following would result in the t-distribution to approach a standard normal distribution?
    A. An increase in degrees of freedom.
    B. An increase in standard deviation.
    C. Greater probability in the tails.

**LO.j: Calculate and interpret a confidence interval for a population mean, given a normal distribution with 1) a known population variance, 2) an unknown population variance, or 3) an unknown variance and a large sample size.**

26. A researcher wants to set the confidence intervals for the population mean of an approximately normal distribution. Assuming the sample size is small, the student's t-distribution is the preferred method when the variance is:
    A. unknown.
    B. too large.
    C. negative.

27. An analyst wants to predict the return on the KSE Index for the current year using the following data and assumptions:
    - Sample size = 60 stocks
    - Mean return for those stocks in the sample for the previous year = 15%
    - Sample variance = 5%
    - Confidence interval = 99%
    - Population variance is unknown

    If she assumes that the KSE return this year will be the same as it was last year, which of the following is the *best* estimate of the 99% confidence interval for this year's KSE return?
    A. 0.16665 to 0.13335.
    B. 0.09345 to 0.20656.
    C. 0.07454 to 0.22452.

28. A researcher wants to set the confidence interval for the population mean. The distribution is normal, the sample size is small and the variance is unknown. It is *most* appropriate for the researcher to use:
    A. the t-distribution.
    B. the z-distribution.
    C. either distribution.

29. Use the following values from Student's t-distribution to establish a 95% confidence interval for the population mean given a sample size of 11, a sample mean of 8.0, and a sample standard deviation of 15. Assume that the population from which the sample is drawn is normally distributed and the population variance is not known. Note that the probabilities given below are one-tailed probabilities.

| Degrees of freedom | $p$ = 0.10 | $p$ = 0.05 | $p$ = 0.025 | $p$ = 0.01 |
|---|---|---|---|---|
| 9 | 1.383 | 1.833 | 2.262 | 2.821 |
| 10 | 1.372 | 1.812 | 2.228 | 2.764 |
| 11 | 1.363 | 1.796 | 2.201 | 2.718 |

A. A lower bound of 4.96 and an upper bound of 11.04.
B. A lower bound of -1.95 and an upper bound of 17.95.
C. A lower bound of -2.08 and an upper bound of 18.08.

30. A sample of 125 observations drawn from a normally distributed population has a sample mean of 8 and a sample standard deviation of 12. Using the extract from the $z$-distribution given below, find the 95% confidence interval for the population mean:

| **Cumulative Probabilities for a Standard Normal Distribution P(Z = x) = N(x) for x = 0 or P(Z = z) = N(z) for z = 0** | | | |
|---|---|---|---|
| x or z | 0.04 | 0.05 | 0.06 |
| 1.6 | 0.9495 | 0.9505 | 0.9515 |
| 1.7 | 0.9591 | 0.9599 | 0.9608 |
| 1.8 | 0.9671 | 0.9678 | 0.9686 |
| 1.9 | 0.9738 | 0.9744 | 0.9750 |

The 95% confidence interval is *closest* to:
A. 5.90 and 10.10.
B. 6.23 and 9.77.
C. 7.80 and 8.20.

31. A sample of 74 observations drawn from a normally distributed population has a sample mean of 11 and a sample standard deviation of 19. The extract from the $z$-distribution is given below.

| **Cumulative Probabilities for a Standard Normal Distribution P(Z = x) = N(x) for x = 0 or P(Z = z) = N(z) for z = 0** | | | |
|---|---|---|---|
| x or z | 0.04 | 0.05 | 0.06 |
| 1.6 | 0.9495 | 0.9505 | 0.9515 |
| 1.7 | 0.9591 | 0.9599 | 0.9608 |
| 1.8 | 0.9671 | 0.9678 | 0.9686 |
| 1.9 | 0.9738 | 0.9744 | 0.9750 |

The 95% confidence interval is *closest* to:
A. 5.90 and 16.10.
B. 6.67 and 15.33.
C. 7.37 and 14.63.

32. Assume a population with a non-normal distribution and known variance, and a large sample size. The statistic *most likely* used to estimate the mean of this population is:
    A. F.
    B. t.
    C. z.

33. In the confidence interval equation given below, $z_{\alpha/2}$ is known as the:

    $$\text{Confidence Interval} = \mu \pm z_{\alpha/2}\left(\frac{\sigma}{\sqrt{n}}\right)$$

    A. Point estimate.
    B. Reliability factor.
    C. Standard error.

**LO.k: Describe the issues regarding selection of the appropriate sample size, data-mining bias, sample selection bias, survivorship bias, look-ahead bias, and time-period bias.**

34. Extensive searching through a dataset for statistically significant patterns is known as:
    A. data mining.
    B. data diddling.
    C. hypothesis testing.

35. Which of the following biases is most prevalent when evaluating mutual funds?
    A. Look ahead bias.
    B. Survivorship bias.
    C. Time period bias.

**Solutions**

1. B is correct. A descriptive measure of a population is best described as a parameter.

2. B is correct. The difference between the observed value of a statistic and the quantity intended to estimate is the sampling error.

3. C is correct. This is an application of the multiplication rule of counting. The total number of cells is the product of 15, 3, and 2, which is 90.

4. B is correct. Stratified random sampling produces more precise parameter estimates than simple random sampling. Indexing is an investment strategy.

5. B is correct. Option B is an example of cross-sectional data which can be defined as data on some characteristic of individuals or groups at a single point in time. Option A is an example of time-series data. Option C is an example of longitudinal data.

6. C is correct. Data on some characteristics of companies at a single point in time are cross-sectional data.

7. A is correct. Cross sectional data are observations that represent individuals, groups, geographical regions, or companies at a single point in time. So, this is an example of cross sectional data.

8. B is correct. According to the central limit theorem, the sampling distribution of sample means is approximately a normal distribution with its mean is equal to the population mean. Its variance is equal to population variance divided by the sample size and hence would be less than population variance. The Central Limit Theorem is independent of the probability distribution of the given population when the sample size is large and thus the skewness of population does not matter.

9. C is correct. Based on the central limit theorem, when the sample size is large, we can compute confidence intervals for the population mean based on the normal distribution regardless of the distribution of the underlying population.

10. A is correct. The central limit theorem establishes that the sampling distribution of sample means will be approximately normal, will have a mean equal to the population mean, and will have a variance equal to the population variance divided by the sample size.

11. B is correct. Statement II is incorrect. This is because the central limit theorem states that the variance of the distribution of the sample mean is $\frac{\sigma^2}{n}$.

12. C is correct. The standard error of the sample mean is the sample standard deviation (or the population standard deviation if known) divided by the square root of the sample size. In this case, the standard error of the sample mean = sqrt (53)/ sqrt (82) = 0.80.

13. C is correct. The standard error of the sample mean, when we know the sample standard deviation, is sample standard deviation divided by square root of sample size:
$22/\sqrt{40} = 3.478505$.

14. B is correct. The sample mean is 4.8. The sample variance is 68.8 and sample standard deviation is 8.3. If the population variance is unknown the standard error of sample mean is calculated as sample standard deviation divided by square root of sample size. $8.3/\sqrt{10} = 2.6$

15. C is correct. The standard error of the mean is $s = \frac{\sigma}{\sqrt{n}}$, hence s = 0.15/ (50) ^0.5= 0.0212 = 2.12%.

16. A is correct. $\text{Standard Error} = \frac{\sigma}{\sqrt{n}} = \frac{3}{\sqrt{64}} = 0.375$.

17. C is correct. The desirable properties of an estimator are unbiasedness, consistency and efficiency.

18. A is correct. Unbiasedness and efficiency are properties of an estimator's sampling distribution that hold for any size sample. A consistent estimator is one for which the probability of estimates close to the value of the population parameter increases as sample size increases.

19. A is correct. The property defined by the statement in the question is that of consistency.

20. B is correct. As we increase the degree of confidence, the confidence interval becomes wider. A larger sample size decreases the width of a confidence interval.

21. B is correct. Point estimates are not as reliable as confidence interval estimates. A conservative approach to confidence intervals relies on the *t*-distribution rather than the normal distribution, and use of the *t*-distribution will increase the reliability of the confidence interval. Increasing the sample size increases the reliability of the confidence intervals.

22. B is correct. The degree of confidence is 1 - α for a confidence interval.

23. A is correct. $\text{Confidence Interval} = \mu \pm z\left(\frac{\sigma}{\sqrt{n}}\right) = 4.5 \pm 1.96\left(\frac{3.75}{\sqrt{50}}\right) = [3.46, 5.54]$

24. B is correct. The Student's *t*-distribution has fatter tails and is less peaked compared to the normal distribution.

25. A is correct. As the degrees of freedom increases, the tails are no longer fat, and the t-distribution approaches a standard normal distribution.

26. A is correct. The Student's t-distribution is the preferred option when the sample size is small and the variance is unknown.

27. C is correct. Confidence interval $= \overline{X} \pm z_{\alpha/2} \frac{s}{\sqrt{n}}$. Here, s = sqrt(0.05) = 0.2236, n = 60 and X = 0.15. Since n is large we can use the z-table. For a 99% confidence level the z-value is 2.58. The estimated interval is 0.15 +/- 2.58*(0.2236/7.746) or 0.07454 to 0.22452.

28. A is correct. When the sample size is small, the Student's t-distribution is preferred if the variance is unknown.

29. C is correct. With a sample size of 11, there are 10 degrees of freedom. The confidence interval concept is based on a two-tailed approach. For a 95% confidence interval, 2.5% of the distribution will be in each tail. Thus, the correct t-statistic to use is 2.228.
    $8.0 \pm 2.228 \times 15/\sqrt{11}$
    $8.0 \pm 10.08 = -2.08$ to $18.08$.

30. A is correct. The 95% confidence interval uses $z_{0.025}$ as the reliability factor. The cumulative probability value closest to 0.975 provides the appropriate value of $z_{0.025}$ which is $z_{0.025} = 1.96$. The confidence interval is:
    $8 \pm 1.96 \times (12/\sqrt{125}) = 5.90$ and $10.10$.

31. B is correct. The 95% confidence interval uses $z_{0.025}$ as the reliability factor. The cumulative probability value closest to 0.975 provides the appropriate value of $z_{0.025}$ which is $z_{0.025} = 1.96$. The confidence interval is:
    $11 \pm 1.96 \times (19/\sqrt{74}) = 6.67$ and $15.33$.

32. C is correct. z-test statistic is most likely used for a large sample size with non-normal distribution, and known variance.

33. B is correct. $\text{Confidence Interval} = \text{Point estimate} \pm \text{Reliability factor (Standard error)}$
    Hence, it is the reliability factor.

34. A is correct. Extensive searching through a dataset for statistically significant patterns is known as data mining.

35. B is correct. The mutual funds that do not perform well or are no longer in business are often not found in the dataset. As a result, a sample often only consists of surviving funds leading to survivorship bias.

**LO.a: Define a hypothesis, describe the steps of hypothesis testing, and describe and interpret the choice of the null and alternative hypotheses.**

1. Which of the following steps in hypothesis testing *least likely* includes 'Collecting the data and calculating the statistic'?
   A. Making the economic or investment decision.
   B. Making the statistical decision.
   C. Stating the decision rule.

2. Marco Vitaly is a researcher and wants to test whether a particular parameter is larger than a specific value. In this case, the null and alternative hypothesis would be *best* defined as:
   A. $H_0$: $\theta = \theta_0$ versus $H_a$: $\theta \neq \theta_0$.
   B. $H_0$: $\theta \leq \theta_0$ versus $H_a$: $\theta > \theta_0$.
   C. $H_0$: $\theta \geq \theta_0$ versus $H_a$: $\theta < \theta_0$.

3. Professor Alan Chang is reviewing the following statements made by his students:
   - Beth: The null hypothesis is the hypothesis that is being tested; and a two tailed hypothesis may have either of the two signs: $\leq$ or $\geq$.
   - Donald: Specifying the significance level, α, isn't a necessary step and one could do without it during hypothesis testing.
   - Kevin: The test statistic is a quantity calculated based on a sample, whose value is the basis for deciding whether or not to reject the alternate hypothesis.

   Whose statements will Professor Chang will *least likely* agree to?
   A. Only Donald.
   B. Only Donald and Beth.
   C. All of them.

**LO.b: Distinguish between one-tailed and two-tailed tests of hypotheses.**

4. Which of the following statements requires a two-tailed test?
   A. $H_0$: $\mu \leq 0$ versus $H_a$: $\mu > 0$.
   B. $H_0$: $\mu = 0$ versus $H_a$: $\mu \neq 0$.
   C. $H_0$: $\mu \geq 0$ versus $H_a$: $\mu < 0$.

**LO.c: Explain a test statistic, Type I and Type II errors, a significance level, and how significance levels are used in hypothesis testing.**

5. A Type II error is *best* described as when a test:
   A. fails to reject a false null hypothesis.
   B. fails to reject a true null hypothesis.
   C. rejects a true null hypothesis.

6. In order to calculate the test statistic, the difference between the sample statistic and the value of the population parameter under $H_0$ is *most likely* divided by:

A. appropriate value from the t-distribution.
B. sample standard deviation.
C. standard error of the sample statistic.

7. When a false null hypothesis is not rejected, it leads to a/an:
   A. Type I Error.
   B. Type II Error.
   C. acceptance of the alternate hypothesis.

8. The results of an experiment are statistically significant when:
   A. the null hypothesis is rejected.
   B. the null hypothesis is not rejected.
   C. the level of significance is altered.

**LO.d: Explain a decision rule, the power of a test, and the relation between confidence intervals and hypothesis tests.**

9. Jane Norah is an analyst for a midcap growth fund. The fund earns a quarterly return of 4.5 percent relative to an estimated return of 6.0 percent. If Norah wishes to test whether the actual results are different from the estimated return of 6 percent, the null hypothesis is *most likely*:
   A. $H_0$: $\mu \leq 6.0$.
   B. $H_0$: $\mu = 6.0$.
   C. $H_0$: $\mu \neq 6.0$.

10. The mean annual return is 8 percent and the standard deviation is 6.4 percent for a sample containing 25 sectors. A fund manager is testing whether the mean annual return is less than 9 percent. The critical value is -1.96. What is the *most likely* conclusion from this test?
    A. Reject the null hypothesis.
    B. Do not reject the null hypothesis.
    C. Additional information is required to decide.

11. Assume that the population mean is μ, sample mean is $\overline{X}$, and $s_{\bar{X}}$ is the standard error of the sample mean. Which of the following is a condition for rejecting the null hypothesis at the 95 percent confidence interval?
    A. $\frac{\overline{X}-\mu_0}{s_{\overline{X}}} > 1.96$.
    B. $(\overline{X} - \mu_0) > 1.96$.
    C. $\frac{\mu_0-\overline{X}}{s_{\overline{X}}} > 1.96$.

**LO.e: Distinguish between a statistical result and an economically meaningful result.**

12. Rejecting or not rejecting the null hypothesis is a:

A. Statistical decision.
B. Economic decision.
C. Both statistical and economic decision.

13. What type of consideration is an investor's tolerance for risk and financial position in hypothesis testing?
A. Investment or economic decision.
B. Statistical decision.
C. Both statistical and economic decision.

**LO.f: Explain and interpret the p-value as it relates to hypothesis testing.**

14. Which of the following statements regarding the p-value is *most likely* to be correct?
A. The p-value is the smallest level of significance at which the null hypothesis can be rejected.
B. The p-value is the smallest level of significance at which the null hypothesis can be accepted.
C. The p-value is the largest level of significance at which the null hypothesis can be rejected.

15. A researcher formulates a null hypothesis that the mean of a distribution is equal to 20. He obtains a p-value of 0.018. Using a 5% level of significance, the *best* conclusion is to:
A. reject the null hypothesis.
B. accept the null hypothesis.
C. decrease the level of significance.

16. A researcher conducted a one-tailed test with the null hypothesis that the mean of a distribution is greater than 2. The *p*-value came out to be 0.0475. If the researcher decides to use a 5% level of significance, the *best* conclusion is to:
A. fail to reject the null hypothesis.
B. reject the null hypothesis.
C. decrease the level of significance to 4.75%.

17. A researcher is using the *p*-value test for conducting hypothesis testing. He is *most likely* to reject the null hypothesis when the *p*-value of the test statistic:
A. exceeds a specified level of significance.
B. falls below a specified level of significance.
C. is negative.

18. A researcher conducts a two-tailed t-test test with a null hypothesis that the population mean differs from zero. If the *p*-value is 0.089 and he is using a significance level of 5%, the *most* appropriate conclusion is:
A. do not reject the null hypothesis.
B. reject the null hypothesis.

C. the chosen significance level is too high.

**LO.g: Identify the appropriate test statistic and interpret the results for a hypothesis test concerning the population mean of both large and small samples when the population is normally or approximately distributed and the variance is 1) known or 2) unknown.**

19. Which of the following statistic is *most likely* to be used for the mean of a non-normal distribution with unknown variance and a small sample size?
   A. z test statistic.
   B. t test statistic.
   C. There is no test statistic for such a scenario.

20. Orlando Bloom is analyzing a portfolio's performance for the past 15 years. The mean return for the portfolio is 10.25% with a sample standard deviation of 12.00%. Bloom wants to test the claim that the mean return is less than 12.50%. The null hypothesis is that the mean return is greater than or equal to 12.50%. If the critical value for this test is -2, which of the following is *most likely* the test statistic and the decision of this test?

| | **Test Statistic** | **Decision** |
|---|---|---|
| A. | -0.726 | Reject $H_0$ |
| B. | -0.726 | Do not reject$H_0$ |
| C. | -0.5422 | Do not reject$H_0$ |

21. The test statistic for hypothesis test of a single mean where the population sample has unknown variance is *most likely*:
   A. $\frac{\bar{X}-\mu}{\frac{s}{\sqrt{n}}}$.
   B. $\frac{(n-1)s^2}{\sigma^2}$.
   C. $\frac{s_1^2}{s_2^2}$.

22. Peter is studying the earnings per share of 32 companies in an industry. He plans to use the t-test for hypothesis testing. The degrees of freedom Peter will use for defining the critical region is *closest* to:
   A. 30.
   B. 31.
   C. 32.

**LO.h: Identify the appropriate test statistic and interpret the results for a hypothesis test concerning the equality of the population means of two at least approximately normally distributed populations, based on independent random samples with 1) equal or 2) unequal assumed variances.**

23. From two normally distributed populations, independent samples were drawn and following observations were made:
    - Sample A: The sample size of 20 observations had a sample mean of 63.
    - Sample B: The sample size of 14 observations had a sample mean of 58.
    - Standard deviations of sample A and sample B were equal. The pooled estimate of common variance was equal to 565.03.

    A researcher devised the hypothesis that the two sample means are equal. In order to test this hypothesis, the t-test statistic to be used is *closest* to:
    A. 0.21.
    B. 0.35.
    C. 0.60.

**LO.i: Identify the appropriate test statistic and interpret the results for a hypothesis test concerning the mean difference of two normally distributed populations.**

24. The table below shows the return data for samples which have been pooled from two normally distributed populations with equal variance.

| **Sample #** | **Sample size** | **Annual returns** |
|---|---|---|
| 1 | 60 | 15.8% |
| 2 | 112 | 12.5% |

    The standard deviation of the pooled sample, s, is 256.68. Which of the following is the correct test statistic to test for the differences between means?
    A. 0.0006.
    B. 0.0008.
    C. 0.0011.

25. Using the sample results given below, drawn as 25 paired observations from their underlying distributions, test if the mean returns of the two portfolios differ from each other at the 1% level of statistical significance. Assume the underlying distributions of returns for each portfolio are normal and that their population variances are not known.

| | Portfolio 1 | Portfolio 2 | Difference |
|---|---|---|---|
| Mean Return | 8.00 | 11.25 | 3.25 |
| Standard Deviation | 8.80 | 15.50 | 6.70 |
| *t*-statistic for 24 df and at the 1% level of statistical significance = 2.797 | | | |

    Based on the paired comparisons test of the two portfolios, the *most* appropriate conclusion is to:
    A. reject the hypothesis that the mean difference equals zero as the computed test statistic exceeds 2.807.

B. accept the hypothesis that the mean difference equals zero as the computed test statistic exceeds 2.807.
C. accept the hypothesis that the mean difference equals zero as the computed test statistic is less than 2.807.

26. An analyst collects the following data related to paired observations for Sample A and Sample B. Assume that both samples are drawn from normally distributed populations and that the population variances are not known:

| Paired Observation | Sample A Value | Sample B Value |
|---|---|---|
| 1 | 12 | 5 |
| 2 | 18 | 15 |
| 3 | 4 | 1 |
| 4 | -6 | -9 |
| 5 | -5 | 4 |

The *t*-statistic to test the hypothesis that the mean difference is equal to zero is *closest* to:
A. 0.23.
B. 0.27.
C. 0.52.

27. Which of the following is *true* for a paired comparison test?
A. The samples are independent.
B. The samples are dependent.
C. The test conducted is a test concerning differences between mean and not mean differences.

28. The table below shows the annual return summary for KSE-50 and KSE-100 portfolios.

| Portfolio | Mean Return | Standard Deviation |
|---|---|---|
| KSE – 50 | 19.25% | 20.05% |
| KSE – 100 | 15.98% | 17.11% |
| Difference | 3.27% | 5.48% |

The null hypothesis for the test conducted is $H_o$: $\mu_d = 0$. The sample size is 64.
Which of the following *most likely* represent the test conducted and the value of the test statistic?
A. A chi square test with t statistic = 4.77.
B. A paired comparison test with t statistic = 5.27.
C. A paired comparison test with t statistic = 4.77.

29. A hypothesis test is to be conducted in order to test the differences between means. Which of the following will *least likely* be used as a null hypothesis for this test?
A. $H_o$: $\mu_1 + \mu_2 = 0$.
B. $H_o$: $\mu_1 - \mu_2 = 0$.

C. $H_o$: $\mu_1 \leq \mu_2$.

**LO.j: Identify the appropriate test statistic and interpret the results for a hypothesis test concerning 1) the variance of a normally distributed population, and 2) the equality of the variances of two normally distributed populations based on two independent random samples.**

30. A researcher drew two samples from two normally distributed populations. The mean and standard deviation of the first sample were 4 and 48 respectively. The mean and standard deviation of the second sample were 6 and 52 respectively. The number of observations in the first sample was 30 and second sample was 32. Given a null hypothesis of $\sigma_1^2 = \sigma_2^2$ versus an alternate hypothesis of $\sigma_1^2 \neq \sigma_2^2$, which of the following is *most likely* to be the test statistic?
    A. 0.235.
    B. 0.852.
    C. 1.170.

31. The null hypothesis $H_o: \sigma_1^2 = \sigma_2^2$ *most likely* tests:
    A. the mean differences.
    B. a single variance.
    C. the equality of two variances.

32. For an F-test specified as $\frac{s_1^2}{s_2^2}$, which of the following is used as the actual test statistic?
    A. $s_1$ should be greater than $s_2$.
    B. $s_1$ should be less than $s_2$.
    C. It does not matter whether $s_1$ is greater or less than $s_2$.

33. Which test should be used for hypothesis related to a single population variance?
    A. A chi-square test with degrees of freedom, n.
    B. A chi-square test with degrees of freedom, n-1.
    C. An F-test with degrees of freedom, n-1.

**LO.k: Distinguish between parametric and nonparametric tests and describe situations in which the use of nonparametric tests may be appropriate.**

34. A test that makes minimal assumptions about the population from which the sample comes is known as a:
    A. paired comparisons test.
    B. parametric test.
    C. nonparametric test.

35. An investment analyst will *least likely* use a non-parametric test in which of the following situations?

A. When the data does not meet distributional assumptions.
B. When the data provided is given in ranks.
C. When the hypothesis being addressed concerns a parameter.

**Solutions**

1. C is correct. The seven steps in hypothesis testing are:
   1) Stating the hypothesis.
   2) Identifying the appropriate test statistic and its probability distribution.
   3) Specifying the significance level.
   4) Stating the decision rule.
   5) Collecting the data and calculating the test statistic.
   6) Making the statistical decision.
   7) Making the economic or investment decision.

2. B is correct. A positive "hoped for" condition means that we will only reject the null (and accept the alternative) if the evidence indicates that the population parameter is greater than $\theta_0$. Thus, $H_0$: $\theta \leq \theta_0$ versus $H_a$: $\theta > \theta_0$ is the correct statement of the null and alternative hypotheses.

3. C is correct. The null hypothesis is the hypothesis that is tested, and a two tailed hypothesis has the sign: =. Specifying the significance level, α, is a necessary step and one cannot do without it during hypothesis testing. The test statistic is a quantity calculated based on a sample, whose value is the basis for deciding whether or not to reject the null hypothesis.

4. B is correct. A two-tailed test for the population mean is structured as: $H_o$: $\mu = 0$ versus $H_a$: $\mu \neq 0$.

5. A is correct. When we do not reject a false null hypothesis we have a Type II error.

6. C is correct. A test statistic is defined as the difference between the sample statistic and the value of the population parameter under $H_0$ divided by the standard error of the sample statistic.

7. B is correct. Type II error arises when a false null hypothesis is not rejected. Type I error is rejecting the null hypothesis when it is true.

8. A is correct. The results of an experiment are statistically significant when the null hypothesis is rejected.

9. B is correct. The null hypothesis for this test will be $H_0 = 6.0$.

10. B is correct. The test statistic is
    $\frac{\bar{X} - \mu}{\frac{s}{\sqrt{n}}} = \frac{8 - 9}{\frac{6.4}{\sqrt{25}}} = -0.78$
    Since the test statistic is less negative (lower absolute value) than the critical value, the null hypothesis is not rejected.

11. A is correct.

12. A is correct. The economic decision considers economic issues.

13. A is correct. Investor's risk tolerance is an investment decision, and not a statistical decision.

14. A is correct. The p-value is defined as the smallest level of significance at which the null hypothesis can be rejected.

15. A is correct. As the p-value is less than the stated level of significance, we reject the null hypothesis.

16. B is correct. Because the p-value (0.0475) is lower than the stated level of significance (0.05), we will reject the null hypothesis.

17. B is correct. If the p-value is less than the specified level of significance, the null hypothesis is rejected.

18. A is correct. The *p*-value is the smallest level of significance at which the null hypothesis can be rejected. In this case, the given *p*-value is greater than the given level of significance. Hence, we cannot reject the null hypothesis. Note that we simply compare the given p-value with the level of significance. Even though this is a two-tailed test we **do not** divide the p-value by 2.

19. C is correct. The statistic for small sample size of a non-normal distribution with unknown variance is not available. z-test statistic is used for large sample size of a non-normal distribution with known variance while t-test statistic is used for large sample size of a non-normal distribution with unknown variance.

20. B is correct.

    $$t = \frac{10.25 - 12.50}{12/\sqrt{15}} = -0.726$$

    Since the absolute value of -0.726 is less than the absolute value of -2, we cannot reject the null hypothesis.

21. A is correct. The test statistic shown in option A is correct as the description given in the question requires a t-test.

22. B is correct. In a t-test, the degree of freedom is 1 less than the sample size. Therefore, it will be 31 in this case.

23. C is correct. The appropriate t-statistic can be calculated using the formula:

**t-statistic**

$$=\frac{[(X_1 - X_2) - (\mu 1 - \mu 2)]}{\sqrt{\left[\left(\frac{s_p^2}{n_1}\right)+\left(\frac{s_p^2}{n_2}\right)\right]}}$$

$$= \frac{[(63-58) - 0]}{\sqrt{\left[\left(\frac{565.03}{20}\right)+\left(\frac{565.03}{14}\right)\right]}}$$

= 0.604

24. A is correct.

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\left[\left(\frac{s^2}{n_1}\right)+\left(\frac{s^2}{n_2}\right)\right]^{\frac{1}{2}}} = \frac{.158 - .125}{\left[\left(\frac{256.68^2}{60}\right)+\left(\frac{256.68^2}{112}\right)\right]^{\frac{1}{2}}} = 0.0008.$$

25. C is correct. The test statistic is: $\frac{3.25 - 0}{\frac{6.70}{\sqrt{25}}}$ = 2.425.

As 2.425 < 2.807, we do not reject the null hypothesis that the mean difference is zero. This is a two tail test.

26. C is correct.

| **Paired Observation** | **Sample A Value** | **Sample B Value** | **Differences** | **Differences Minus the Mean Difference, Then Squared** |
|---|---|---|---|---|
| 1 | 12 | 5 | 7 | $(7 - 1.4)^2$ = 31.36 |
| 2 | 18 | 15 | 3 | $(3 - 1.4)^2$= 2.56 |
| 3 | 4 | 1 | 3 | $(3 - 1.4)^2$ = 2.56 |
| 4 | -6 | -9 | 3 | $(3 - 1.4)^2$= 2.56 |
| 5 | -5 | 4 | –9 | $(-9 - 1.4)^2$ = 108.16 |
| | | | Sum = 7<br>Mean = 1.4 | Sum of squared differences = 147.2 |
| | | | Sample variance: | $\frac{147.2}{4} = 36.8$ |
| | | | Standard error: | $2.712932 = \sqrt{\frac{36.8}{5}}$ |
| | | | *t*-Statistic: | $0.51605 = \frac{1.4 - 0}{2.712932}$ |

27. B is correct. A paired comparison test is conducted for mean differences and the samples are dependent.

28. C is correct. Since the test concerns mean differences, it is a paired comparisons test.
$t = (3.27 - 0)/(5.48/\sqrt{64}) = 4.77.$

29. A is correct. The incorrect null hypothesis is $H_o$: $\mu_1 + \mu_2 = 0$.

30. C is correct. The test that compares the variances using two independent samples from two different populations makes use of the F-distributed t-statistic:
$$\frac{\sigma_1^2}{\sigma_2^2}$$
The smaller variance is the denominator, thus:

$$\frac{52^2}{48^2} = 1.17.$$

31. C is correct. The test concerns the equality of two variances. It is known as the F-test.

32. A is correct. A common convention or a usual practice is that the ratio should be greater than or equal to 1, which is only possible if option A is true.

33. B is correct. To test for a single population variance, select a chi-square test with (n – 1) degrees of freedom.

34. C is correct. A test that makes minimal assumptions about the population from which the sample comes is known as a non-parametric test. It is not concerned with a parameter.

35. C is correct. In nonparametric tests, the hypothesis being addressed should not concern a parameter.

**LO.a: Explain principles of technical analysis, its applications, and its underlying assumptions.**

1. Technical analysis *least likely* relies upon:
   A. price and volume information.
   B. market trends and patterns.
   C. financial statements.

2. Which of the following is *most* useful for a technical analyst?
   A. Details about the type and features of the security under analysis.
   B. Trading data of the security.
   C. Financial ratios of the security.

3. Which of the following statements is *most* consistent with the underlying assumptions of technical analysis?
   A. It is not possible to earn extra profit and beat the market.
   B. With the help of technical analysis; it is possible to earn extra profit and beat the market.
   C. When technical analysis is used with fundamental analysis; it is possible to earn extra profit and beat the market.

4. One of the key advantages of technical analysis over fundamental analysis is that:
   A. technical analysts have actual and observable data available to arrive at the results.
   B. technical analysis incorporates the relevant economic data to arrive at the results.
   C. technical analysis can be effectively put into use for thinly traded stocks.

5. Which of the following is *least likely* the difference between technical and fundamental analysis?
   A. Technical analysis focuses on analyzing markets, while fundamental analysis takes into account financial, economic, political, and societal analysis.
   B. Technical analysis is driven by price and volume data, whereas fundamental analysis also incorporates data that are external to the market.
   C. Fundamental analysts have more concrete data to work with, while technicians use data based on estimates and assumptions.

6. Which of the following is *least likely* an assumption made in technical analysis?
   A. Market trends and patterns reflect the rational behavior of human beings.
   B. Market trends and patterns are predictable to an extent as they tend to repeat themselves.
   C. Market prices are a reflection of the collective knowledge and sentiment of several varied participants.

**LO.b: Describe the construction of different types of technical analysis charts and interpret them.**

7. Which of the following charts does not show the high and low prices for each trading period?

A. Bar chart.
B. Point and figure chart.
C. Candlestick chart.

8. The horizontal axis *least likely* represents discrete units of time in a:
   A. bar chart.
   B. candlestick chart.
   C. point and figure chart.

9. The tools a technical analyst is *most likely* to use to depict four prices per data point entry are:
   I. A bar chart.
   II. A candlestick chart.
   III. A line chart.
   A. I and II.
   B. I and III.
   C. II and III.

10. Professor Simons comes across the following statements regarding the tools used in technical analysis.
    **Statement I:** In a candlestick chart, the body of the candle is shaded if the opening price is lower than the closing price.
    **Statement II:** Analyzing a candlestick chart is faster as the price movements are more visible in a candlestick chart than in a bar chart.
    **Statement III**: The horizontal axis of a point and figure chart represents the number of changes in price.
    Which of the statements is *most likely* accurate?
    A. Statement II only.
    B. Statements II and III only.
    C. Statements I and III only.

11. Who, among the following, will *most likely* use a logarithmic scale on the vertical axis of charts?
    A. Christopher, who is analyzing the performance of GE stock for the past 2 years.
    B. Richard, who is analyzing the performance of the US Treasury Bill for the past 6 months.
    C. Pamela, who is analyzing the performance of Microsoft stock since 1990.

12. Which of the following technical analysis techniques is used to compare the performance of an asset with that of some benchmark?
    A. A candlestick chart.
    B. A point and figure chart.
    C. Relative strength analysis.

**LO.c: Explain uses of trend, support, resistance lines, and change in polarity.**

13. A price range in which selling is sufficient to stop the rise in price is *best* described as:
    A. support.
    B. resistance.
    C. continuation pattern.

14. The concept when buying activity during a low price range is sufficient to halt a price decline is *best* described as:
    A. change in polarity.
    B. resistance.
    C. support.

15. Google's stock price is increasing and reaches a price range wherein selling activity is expected to emerge that prevents further price increases. This situation is *best* described as a:
    A. resistance level.
    B. change in polarity point.
    C. support level.

16. Statement 1: In an uptrend, a trend line connects the higher highs and higher lows of security prices.
    Statement 2: In a downtrend, a trend line connects the lower highs and lower lows of security price.
    Which of the above statements is most likely true?
    A. Statement 1.
    B. Statement 2.
    C. Both.

17. Once support level is breached, it becomes resistance level and once resistance level is breached it becomes support level. What is the *most* appropriate term for this concept?
    A. Head and shoulder pattern.
    B. Double top pattern.
    C. Change in polarity.

18. Which of the following indicates the start of an uptrend?
    A. Breakout.
    B. Breakdown.
    C. Price touching resistance level.

19. Which of the following statements regarding trend lines is *most* accurate?
    A. An uptrend for a security is when the price goes to the higher highs and higher lows.
    B. In a downtrend, demand is more than supply.
    C. To draw a downtrend line, the technician draws a line connecting the lows of the price chart.

20. Which of the following is true for support and resistance?
    A. Support is a lower price range in which selling activity is sufficient to stop a decline in price.
    B. Resistance is a high price range in which selling activity is sufficient to stop an increase in price.
    C. The change in polarity principal states that a breached resistance level cannot become a support level.

**LO.d: Describe common chart patterns.**

21. While analyzing the daily price chart of The Peacock Company, a technical analyst observed three troughs at roughly the same price level. This chart pattern is *most accurately* described as:
    A. inverse head and shoulders.
    B. triple bottoms.
    C. head and shoulders.

22. In technical analysis, a chart pattern where the left segment shows a decline followed by a reversal to the starting price level, the middle segment shows a more pronounced decline than in the first segment and again a reversal to near the starting price level, and the third segment is a mirror image of the first segment, is *best* described as:
    A. head and shoulders.
    B. triple bottom.
    C. inverse head and shoulders.

23. Sarah, a technical analyst, observes a head and shoulders pattern in a stock she has been following. She notes the following information:

| | |
|---|---|
| Head Price | $37.50 |
| Shoulder Price | $31.20 |
| Neckline Price | $28.25 |

    Her estimated price target is *closest* to:
    A. $19.00.
    B. $21.95.
    C. $24.90.

***Use the following information to answer questions 24 and 25.***
1st Trading Session: Price - $80
2st Trading Session: Price - $110
3nd Trading Session: Price - $90
4rd Trading Session: Price - $130
5th Trading Session: Price - $90

6th Trading Session: Price - $110
7th Trading Session: Price - $70

24. What chart pattern do the security prices *most likely* represent?
    A. Triangle Pattern.
    B. Double Bottom.
    C. Head and Shoulder.

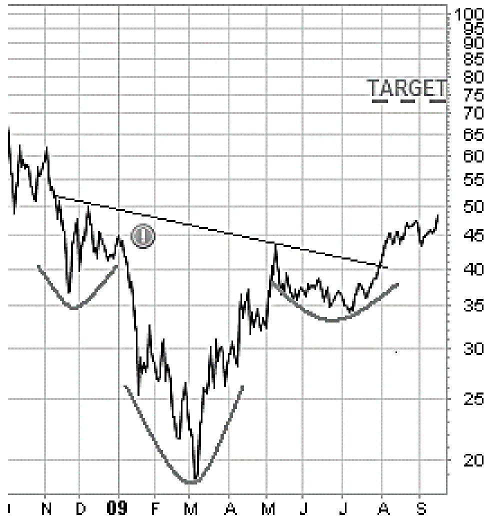
25. Based on the available information, what is the target price of the security?
    A. $50.
    B. $60.
    C. $70.

26. Which one of the following indicates strengthening prices and a future uptrend?
    A. Double top.
    B. Double Bottom.
    C. Rectangles.

27. Chart patterns can be divided into which of the following two categories?
    A. uptrend and downtrend.
    B. reversal patterns and continuation patterns.
    C. converging patterns and diverging patterns.

28. Simon Harrison, a technical analyst at Zebra Securities Ltd., recently started following a company called Orange Ltd. He believes the share price of Orange Ltd. is following a head and shoulders pattern. Over the past few weeks, the share price peaked $80 and today's closing price is $69. Given that the neckline is estimated to be $73, the price target is *closest* to:
    A. $62.
    B. $66.
    C. $77.

29. The following chart is for the Philadelphia Banking Index.




Which of the following chart patterns has this index *most likely* been following?

A. Double tops and bottoms.
B. Triple tops and bottoms.
C. Inverse head and shoulders.

30. Which of the following is not a continuation pattern?
A. Flag.
B. Pennant.
C. Triple bottom.

**LO.e: Describe common technical analysis indicators (price-based, momentum oscillators, sentiment, and flow of funds).**

31. Which of the following is *least likely* an input required in calculating the moving average?
A. Traded volume data.
B. Traded price Data.
C. Number of periods.

32. Which of the following is *most likely* a price based indicator?
A. Volatility Index.
B. Short Interest Ratio.
C. Relative Strength Index.

33. Momentum Oscillators are *most likely* used to:
A. indicate an overbought or oversold position.
B. set the target price.
C. analyze the movement of price of security with respect to economic changes.

34. The “%K” line in a stochastic oscillator represents the:

A. difference between the latest price and the recent high as a percentage of the difference between recent high and low.
B. difference between the latest price and the recent low as a percentage of the difference between recent high and low.
C. 3-period average of the %D line.

35. No. of Issues Advancing – 950 Volume Advancing – 98,986,987
No. Of issues Declining – 545 Volume Declining – 57,874,589
Based on the available information what will be the TRIN value for the index?
A. 1.0191.
B. 0.9890.
C. 1.0219.

36. Statement 1: An increase in new equity issuance (IPO) suggests that the upward price trend is sustainable for long term.
Statement 2: An increase in new equity issuance (IPO) suggest that the upward price trend is about to turn down.
Which statement is *most likely* true?
A. Statement 1.
B. Statement 2.
C. Neither statement.

37. Which of the following statements regarding moving averages is *most* accurate?
A. A dead cross is considered bearish.
B. Moving averages are difficult to construct.
C. When a short-term moving average crosses a longer-term moving average from above, the movement is considered bullish.

38. A technical analyst is executing a contrarian strategy, whereby he sells a security when the price reaches a certain level, and buys the security when it drops to another certain level. Which of the following price based technical indicators is he *most likely* using?
A. Bollinger Bands.
B. Moving averages.
C. Relative strength index.

39. Which of the following analysts is *least likely* to use momentum oscillators?
A. Elizabeth, who is determining the strength of a trend in terms of overbought and oversold levels.
B. Patrick for making short-term trading decisions.
C. Samuel, who intends to measure the relative extent to which money is moving into or out of rising and declining stocks.

40. Which of the following measures is *least likely* to have an upper or a lower limit?
A. Momentum oscillator.

B. Moving average convergence/divergence.
C. Stochastic oscillator.

41. Which of the following statements is *most likely* correct about the put/call ratio?
A. A put/call ratio is a type of flow-of-funds indicators.
B. A put/call ratio is the ratio of the price of put options traded to the price of call options traded.
C. A put/call ratio is the ratio of the volume of put options traded to the volume of call options traded.

42. A technical analyst compiles the following information regarding a company and the market:
RSI: 78.
TRIN: 1.30
The 15-day moving average of the share price rose through the 150-day moving average.
Which of the following interpretations is *least likely* correct?
A. The movement is a dead cross.
B. The RSI is indicative of a bearish movement.
C. According to TRIN, there is more volume in declining stocks than in advancing stocks.

**LO.f: Explain how technical analysts use cycles.**

43. Kondratieff wave is a cycle of:
A. 44 years.
B. 54 years.
C. 64 years.

**LO.g: Describe the key tenets of Elliott Wave Theory and the importance of Fibonacci numbers.**

44. In Elliott Wave Theory, the pattern commonly exhibited by Wave 2 can be *best* described as a(n):
A. basing pattern consisting of five smaller waves.
B. Fibonacci ratio percentage retracement composed of three smaller waves.
C. uptrend moving above the high of Wave 1 and consisting of five smaller waves.

45. As per Elliot wave theory, which of the following is the longest wave/cycle?
A. Minute.
B. Minuette.
C. Subminuette.

46. Which of the following ratios is *most likely* used to set price targets?
A. Put call ratio.
B. Short interest ratio.
C. Fibonacci ratio.

47. Which of the following is *least likely* mentioned in the Elliott Wave theory?
    A. Primary wave.
    B. Intermediate wave.
    C. Secondary wave.

48. Which of the following analyses is based on the Fibonacci sequence?
    A. Elliott Wave Theory.
    B. Kondratieff wave.
    C. Stochastic oscillators.

**LO.h: Describe intermarket analysis as it relates to technical analysis and asset allocation.**

49. John Murphy noted that all markets are interrelated and that these relationships are strengthening with globalization of the world economy. In this context if the bond prices increase what will be the *most likely* impact on equities and commodities?
    A. Decreasing equity and increasing commodity prices.
    B. Increasing equity prices and decreasing commodity prices.
    C. Decreasing equity and commodity prices.

50. Which of the following is a *most* commonly used tool to identify intermarket relationships?
    A. Relative strength analysis.
    B. Relative strength index.
    C. Momentum oscillators.

51. Inter-market analysis is *least likely* used for:
    A. identifying investment opportunities within industrial sectors.
    B. allocating funds across national markets.
    C. pricing futures and options.

52. Global markets are inter-related and these relationships are strengthening with globalization. Which of the following tools do analysts usually use to study inter-market relationships?
    A. Arms index.
    B. Relative strength analysis.
    C. Stochastic oscillators.

**Solutions**

1. C is correct. Technical analysis is the study of market trends or patterns and relies upon price and volume data.

2. B is correct. Technical Analysis is based on trading data of security. This includes the price and volume data of past. The detail about the type and features of the security is not relevant for technical analysis. Financial Ratios are used in fundamental analysis and it does not have any application to the technical analysis.

3. B is correct. The underlying assumption of technical analysis is that the market prices reflect both rational and irrational investor behavior. The assumption of technical analysis contradicts with this theory and hence it implies that with the help of technical analysis; it is possible to earn extra profit and beat the market.

4. A is correct. The key advantage of technical analysis is that it is based on actual market data which is easily observable and is not subject to manipulation. Fundamental analysis is based on many assumptions and also on accounting data which is subject to manipulation.

5. C is correct. The technician has more concrete data to work with, while the fundamental analyst uses data based on estimates and assumptions as he makes use of financial statements.

6. A is correct. Market trends and patterns reflect the irrational behavior of human beings.

7. B is correct. A point and figure chart is basically used to map the change in direction of share prices. Only the opening and closing price is incorporated into point and figure chart.

8. C is correct. In a point and figure chart the horizontal axis does not represent discrete units of time.

9. A is correct. The line chart has one data point per interval; the bar chart and candlestick chart have four which include the high price, low price, opening price, and closing price.

10. B is correct. In a candlestick chart, the body of the candle is shaded if the opening price is greater than the closing price. So, Statement I is incorrect.

11. C is correct. A logarithmic scale is used when the data move through a range of values representing several orders of magnitude, especially in this case covering the stock price over 25 years.

12. C is correct. Relative strength analysis is used to compare the performance of a particular asset with that of some benchmark.

13. B is correct. Resistance is defined as a price range in which selling is sufficient to stop the rise in price. Support is the opposite of resistance and is defined as a low price range in which the buying activity is sufficient to stop the decline in price.

14. C is correct. Support is defined as a low price range in which buying activity is sufficient to stop the decline in price.

15. A is correct. At a resistance level, selling activity is expected to emerge that prevents further price increases.

16. C is correct. An uptrend is when the trend line connects the higher highs and higher lows and a downtrend is when a trend line connects to lower highs and lower lows. Hence, both the statements are correct.

17. C is correct. This concept is called change in polarity. Once the price goes beyond the resistance level it shows high demand than supply above resistance level and on price returning to the resistance level the demand again rises which lifts the price up and hence the level which was earlier a resistance level now becomes support level. Double top and head and shoulder are reversal patterns.

18. A is correct. Breakout is the term generally used when the price rises above downtrend line and generally indicates the start of uptrend. Breakdown indicates the start of downtrend. Resistance level is the level at which the price bounces back down due to low demand and high supply.

19. A is correct. In a downtrend, supply is more than demand. To depict a downtrend line, the technician draws a line connecting the highs of the price chart.

20. B is correct. Support is a lower price range in which buying activity is sufficient to stop the decline in the price. The change in polarity principal states that when a resistance level is breached, it becomes a support level.

21. B is correct. Three troughs at roughly the same price level are described as triple bottoms. The head and shoulders and inverse head and shoulders are incorrect choices as their price levels are distinctly different unlike the triple bottoms.

22. C is correct. An inverse head and shoulders pattern consists of a left segment that shows a decline followed by a reversal to the starting price level, a middle segment that shows a more pronounced decline than in the first segment and again a reversal to near the starting price level, and a third segment that is roughly a mirror image of the first segment.

23. A is correct. Price target = Neckline − (Head − Neckline)
= 28.25 – (37.5 – 28.25) = 19.00.

24. C is correct. The movement of the price shows the creation of head and shoulder pattern. The price rises from the level of $70 to $110 and again falls back to $90. It shows the creation of left shoulder and a fall back. Price of $130 is a creation of head and when it goes to $110 from the fall to $90, it creates the right shoulder. Finally, when it breaks the neckline at $90 and goes down to $70, it shows the completion of the head and shoulder pattern.

25. A is correct. In a head and shoulder pattern, the target price is arrived at using the following steps:
    Target Price = Neckline – (Highest Price – Neck Line) = 90 – (130 – 90) = $50

26. B is correct. A double bottom is reversal pattern of downtrends. Hence, it indicates the strengthening of prices and a future uptrend.

27. B is correct. The two broad categories are reversal patterns and continuation patterns.

28. B is correct. $\text{Price target} = \text{Neckline} - (\text{Head} - \text{Neckline}) = 73 - (80 - 73) = \$66.$

29. C is correct. The pattern shown in the diagram is inverse head and shoulders.

30. C is correct. Triple bottom is a reversal pattern and not a continuation pattern.

31. A is correct. Moving average does not take volume in to consideration. While calculating moving average only the date of price and the number of periods (discrete time units) is taken into consideration.

32. C is correct. Relative strength index is a price based indicator. RSI compares security’s gains with its losses over a period of time. Other two are non-price based indicators.

33. A is correct. The most known use of momentum oscillators is to indicate the overbought or oversold position of a security. Thus, it helps in providing signal for buying or selling security but it does not help to set the target price. Economic conditions neither affect technical analysis nor are they used in technical analysis.

34. B is correct. The %K line is the difference of latest price and lowest price in defined time period divided by the difference between highest and the lowest price over the defined time period. The %D line is the 3-period average of the %K line.

35. A is correct.

$$\text{TRIN/Arms Index} = \frac{\text{Number of advancing issues} \div \text{Number of declining issues}}{\text{Volume of advancing issues} \div \text{Volume of Declining issues}}$$

$$= \frac{950 \div 545}{98{,}986{,}987 \div 57{,}874{,}589} = 1.0191.$$

36. B is correct. An increase in new equity issuance is (IPO) suggest that the upward trend may be about to turn down. This happens due to higher supply of shares in the market as against the demand.

37. A is correct. The moving averages method is simple to construct. When a short-term moving average crosses a longer-term moving average from below, this movement is considered bullish and is called a golden cross.

38. A is correct. He is using Bollinger bands as they consist of a band within which the price of the security fluctuates.

39. C is correct. Samuel is least likely to find the momentum oscillator useful. He should use the Arms Index.

40. B is correct. The momentum oscillator and stochastic oscillator oscillate between 0 and 100. The moving average convergence/divergence (MACD) does not have a lower or upper limit.

41. C is correct. A put-call ratio is a sentiment indicator which is calculated by dividing the volume of put options traded by the volume of call options traded.

42. A is correct. Since the short term moving average moves above a long term moving average, the movement is a golden cross. An RSI greater than 70 is considered bearish. A TRIN greater than 1 is also considered bearish.

43. B is correct. Kondratieff wave is a cycle of 54 years. This is the longest and a widely recognized cycle.

44. B is correct. Wave 2 is a correction, retracing much of the gain from Wave 1, but not all of it. The lost proportion is usually a percentage equal to a Fibonacci ratio, and it consists of three smaller waves.

45. A is correct. According to Elliot wave theory, the longest to shortest wave/cycles are: minute, minuette, and subminuette.

46. C is correct. Fibonacci Ratio is often used to set target prices. Put-call ratio is an indicator of overbought or oversold markets and helps to guide about the future directions of the markets. Short interest ratio is also used to predict the movement of market in future but it cannot be used to set the target price.

47. C is correct. Secondary wave is not a cycle mentioned by Elliott.

48. A is correct. The Elliott Wave Theory is based on the Fibonacci sequence as the market waves follow patterns which are ratios of the numbers in this sequence.

49. B is correct. Higher bond price means lower interest rate, which means cheaper financing and better results for companies and hence it results in increasing equity prices. Bond prices move inversely to the interest rates. Interest rates move in proportion to the inflation and the commodity prices. Hence, higher bond price means low interest rates, which in turn, means decreasing commodity prices.

50. A is correct. Relative strength analysis is the most commonly used tool to identify intermarket relationships. Relative strength index and momentum oscillators are tools used to predict the movement of market in future and not to analyze the relationship between different classes of assets.

51. C is correct. Inter-market analysis is not used for pricing futures and options.

52. B is correct. Relative strength analysis is used to compare securities or asset classes.

**LO.a: calculate and interpret price, income, and cross price elasticities of demand and describe factors that affect each measure.**

**Use the data to answer question 1-3**

The market demand function for branded clothes is given by the equation
$Q_{DB} = 91.70 – 0.7 (P_B) + 0.03 (I) + 1.3 (P_{UB})$
Where $Q_{DB}$ is the number of branded clothes purchased per month (in thousand USD), $P_B$ is the average price of a branded cloth (in USD), I is the household monthly income (in thousand USD) and $P_{UB}$ is the average price of an unbranded cloth (in USD). The price of a branded cloth is $20, monthly income of a family is $70,000, and the price of an unbranded cloth is $15.

1. The income elasticity of demand for branded clothes is *closest* to:
   A. 0.0211.
   B. 0.1410.
   C. 0.1964.

2. The own-price elasticity of demand for branded cloth is *closest* to:
   A. -0.0211.
   B. -0.1410.
   C. -0.1964.

3. The cross elasticity of demand for branded cloth is *closest* to:
   A. 0.0211.
   B. 0.1410.
   C. 0.1964.

4. An analyst makes following statements:
   Statement 1: Income elasticity of demand is positive for normal good and negative for inferior good.
   Statement 2: Income elasticity of demand is positive for inferior good and negative for normal good.
   Which of the following is correct?
   A. Statement 1 is incorrect and statement 2 is correct.
   B. Statement 2 is incorrect and statement 1 is correct.
   C. Both statements are incorrect.

5. Two goods whose cross-price elasticity of demand is negative are known as:
   A. substitute good.
   B. complement good.
   C. neither substitute nor complement.

6. Demand for a good is *most likely* more elastic when:
   A. the good is a necessity.
   B. the time-frame being considered is long.
   C. a small proportion of income is spent on the good.

7. The current price of a product is \$10 and the current demand is 10 units. When the price changes to \$7, the quantity demanded increases to 15 units. The price elasticity of demand for the product is:
   A. 1.67.
   B. 1.00.
   C. 1.35.

**Use the data to answer question 8 – 9**

The market demand function for branded clothes is given by the equation:
$Q_{DB} = 91.70 – 0.7(P_B) + 0.3(I)$
where $Q_{DB}$ is the number of branded clothes purchased per month (in thousand USD), $P_B$ is the average price of a branded cloth (in USD) and I is the household monthly income (in thousand USD). Assume that $P_B$ is equal to 20 and I is equal to 30.

8. The demand for branded clothes is *closest* to:
   A. 56.60.
   B. 86.70.
   C. 114.70.

9. Assume the price is not given, the demand function and the inverse demand function are:
   A. $Q_{DB} = 100.70 – 0.7(P_B)$**;** $P_B = 100.70 – 0.7Q_{DB.}$
   B. $Q_{DB} = 143.85 – 1.43(P_B)$**;** $P_B = 143.85 – 1.43Q_{DB.}$
   C. $Q_{DB} = 100.70 – 0.7(P_B)$**;** $P_B = 143.85 – 1.43Q_{DB}$.

10. Demand for bicycles ($Q_{DB}$), an inferior good, is a function of price of bicycles ($P_B$), price of petrol ($P_P$), income level (I) and cost of public transportation ($C_{PT}$). Based on the given information, which of the following *best* represents the demand function for bicycles?
    A. $Q_{DB} = 100 – 2.5P_B + 1.5P_P – 0.5I + 3C_{PT}$
    B. $Q_{DB} = 100 – 2.5P_B - 1.5P_P + 0.5I + 3C_{PT}$
    C. $Q_{DB} = 100 -2.5P_B + 1.5P_P + 0.5I - 3C_{PT}$

11. The slope of a demand curve is *most* often:
    A. zero.
    B. negative.
    C. positive.

12. A high school student's monthly demand for burgers is given by the equation:

| $QD_{Burger} = 15 - 0.90P_{Burger} + 0.006I - 0.60P_{Pepsi}$ | |
|---|---|
| Where | $QD_{Burger}$ is the number of burgers ordered per month |
| | $P_{Burger}$ is the price of a burger |
| | I is his monthly food budget |
| | $P_{Pepsi}$ is the price of Pepsi per bottle |

If the student's monthly food budget is \$1,000, the price of a burger is \$8 and the price of Pepsi is \$1.75 per bottle, then the slope of the demand curve is *closest* to:

A. -0.90.
B. -1.27.
C. -1.11.

13. Which of the following will result in a movement along the demand curve of a given product?
    A. A change in the cost of producing the product.
    B. A change in the price of the product.
    C. A change in price of a substitute product.

14. An analyst makes following comments about shifts and movements along the demand curve.
    Statement 1: Movement along the demand curve occurs due to a change in the price of a substitute product.
    Statement 2: Demand curve shifts as a result of a change in product's own price.
    Which of the following is *most likely* true?
    A. Statement 1 is correct and statement 2 is incorrect.
    B. Statement 2 is correct and statement 1 is incorrect.
    C. Both statements are incorrect.

15. Engro Ltd. manufactures steel plates. Iron ore is an important component of raw material used for manufacturing steel plates. If the price of iron ore decreases, the supply curve for steel plates will:
    A. shift to the left.
    B. shift to the right.
    C. move upward.

**LO.b: compare substitution and income effects.**

16. The demand for railway tickets depends on the prices of its substitutes. If the price of air tickets decreases, the demand curve for railway tickets will:
    A. move downward.
    B. shift to the right.
    C. shift to the left.

17. The market demand function for item A is a function of its price, household income, and the price of item B.

| | |
|---|---|
| Own-price elasticity of demand for A | –0.65 |
| Income elasticity of demand for A | 1.32 |
| Cross-price elasticity of demand for A with respect to the price of B | 0.27 |

Based on the data given above, which of the following statements is *most* accurate?
A. Demand for A is elastic.
B. A and B are substitutes.
C. Item A is an inferior good.

18. For Good A, the substitution effect is positive and the income effect is negative; the income effect is greater than the substitution effect. If the price of Good A decreases, its demand will *most likely*:
    A. increase.
    B. decrease.
    C. not change.

19. Which of the following *most likely* violates the law of demand assuming a decrease in the price of a product?
    A. The negative income effect is greater than the positive substitution effect.
    B. The positive income effect is greater than the negative substitution effect.
    C. The negative income effect is lower than the positive substitution effect.

**LO.c: distinguish between normal goods and inferior goods.**

20. The price of a normal good has increased and the purchasing power of consumers has decreased. The demand for its substitutes will:
    A. increase due to income effect.
    B. increase due to substitution effect.
    C. increase due to both substitution and income effects.

21. When the price falls, income and substitution effects offset each other for which of the following types of goods?
    A. Normal goods.
    B. Inferior goods.
    C. All goods.

22. If a person's income increases from $1,000 to $2,000, then his demand for an inferior good will *most likely*:
    A. increase.
    B. decrease.
    C. not change.

23. When consumers' income increases, the demand for a normal good will *most likely*:
    A. not be affected.
    B. increase.
    C. decrease.

24. When the demand for a good rises due to increase in its own price, the good is *most likely* a:
    A. Normal good.
    B. Giffen good.
    C. Veblen good.

25. Which of the following statements is *incorrect* about a Veblen good?
    A. They are not inferior goods.
    B. Customers see less value in a good as the price of the good increases.

C. In some cases, its demand curve may be positively sloped.

26. Giffen goods are:
    A. Inferior goods whose income effect is negative.
    B. Status goods whose income effect is positive.
    C. Goods with a greater substitution effect than the income effect.

**LO.d: describe the phenomenon of diminishing marginal returns.**

27. Grey left his job, where he was making $35,000 per annum, to start his own business with an initial investment of $70,000. He had an option to invest this amount in a friend's business, where he would have earned $43,000 per annum. Profit and loss statement for first year of Grey's business is given below.

| | |
|---|---|
| Total revenue | $200,000 |
| Cost of raw material | $15,000 |
| Wages paid to employees | $20,000 |
| Interest on debt | $3,000 |

    What is the economic profit for Grey's business in the first year?
    A. $14,000.
    B. $84,000.
    C. $132,000.

28. Two analysts discussing accounting and economic profits made the following statements.
    Statement 1: Accounting profit is book profit based on revenue and cost. It does not consider cost of borrowing and cost of equity. Economic profit considers cost of borrowing as well as cost of equity.
    Statement 2: Accounting profit is book profit based on revenue and cost. It considers cost of borrowing but does not consider cost of equity. Economic profit considers both cost of debt as well as cost of equity.
    Which statement(s) is *least likely* correct?
    A. Statement 1.
    B. Statement 2.
    C. Both.

29. Maple's total revenue is $98,000, explicit cost is $50,000, and normal profit is $10,000. Implicit cost of the company is *most likely*:
    A. $38,000.
    B. $48,000.
    C. $10,000.

30. Normal profit is equal to:
    A. positive economic profit.
    B. total revenue minus all explicit costs.

C. accounting profit minus economic profit.

31. Which of the following is *most likely* a characteristic of perfectly competitive market?
    A. Average revenue > Marginal revenue, all units are sold at a decreasing marginal price.
    B. Average revenue = Marginal revenue, all units are sold at an equal marginal price.
    C. Average revenue < Marginal revenue, all units are sold at an increasing marginal price.

32. An analyst makes the following comments about imperfect competition:
    Statement 1: Both average revenue and marginal revenue decrease with each successive unit sold. Average revenue decreases more than marginal revenue. Marginal revenue is more than average revenue.
    Statement 2: Both average revenue and marginal revenue decrease with each successive unit sold. Marginal revenue decreases more than average revenue. Average revenue is more than marginal revenue. Which statement is *most likely* correct?
    A. Statement 1.
    B. Statement 2.
    C. None.

33. Total revenue is maximized when:
    A. average revenue becomes zero.
    B. average revenue equals marginal revenue.
    C. marginal revenue becomes zero.

34. The sales manager of a British medical equipment manufacturer estimates that the firm can sell 1,000 units of BP monitor and earn a total revenue of GBP 4,000,000. However, if 1,250 units are sold, the total revenue will be GBP 4,800,000. The marginal revenue per unit for selling 1,250 units of BP monitor instead of 1,000 units is *closest* to:
    A. GBP 3200.
    B. GBP 4000.
    C. GBP 4500.

35. A dairy farm operating in a perfectly competitive market, supplies milk to Dane Inc., manufacturers of sweet yoghurt and milk-based frozen desserts. What will be the *most likely* impact if the farm increases its milk production and unit sales by 15%?
    A. a 15% increase in average revenue.
    B. an increase in total revenue of less than 15%.
    C. a 15% increase in total revenue.

36. Dreamworld, a chain of movie theaters, is offering weekday morning shows at discounted prices. If the tickets are priced at $25 per show, then 400 customers are expected each weekday for the morning shows. But, if the tickets are offered at a discount price of $20 per show, then 600 customers are expected each weekday for the morning shows. The marginal revenue per customer earned from offering the discounted price is *closest* to:
    A. $5.
    B. $10.
    C. $40.

37. For a firm operating under perfective competition, the marginal revenue per unit sold is *most likely*:
    A. equal to average revenue.
    B. less than average revenue.
    C. greater than average revenue.

38. Healthpro Inc. produces health supplements. Total fixed and variable costs of the company are $250,000 and $260,000 respectively. Total fixed cost is constant up to a certain range, but can change to another constant level when production moves outside of that range. This type of fixed cost is termed as:
    A. marginal fixed cost.
    B. average fixed cost.
    C. quasi-fixed cost.

39. When MC intersects ATC and AVC:
    A. ATC and AVC start decreasing.
    B. ATC and AVC do not change.
    C. ATC and AVC start increasing.

40. The table below gives the cost structure of a company.

| Output of goods | Labors Employed | TFC | Wage Rate | AFC | AVC | ATC |
|---|---|---|---|---|---|---|
| 0 | 0 | 35 | 30 | - | - | - |
| 7 | 1 | 35 | 30 | 5.00 | 4.29 | 9.29 |
| 15 | 2 | 35 | 30 | 2.33 | 4.00 | 6.33 |
| 21 | 3 | 35 | 30 | 1.67 | 4.29 | 5.95 |
| 26 | 4 | 35 | 30 | 1.35 | 4.62 | 5.96 |
| 30 | 5 | 35 | 30 | 1.17 | 5.00 | 6.17 |

Based on the data above, when production increases from 21 to 26 units of goods, the marginal cost per unit of production is *closest* to:
    A. 5.0.
    B. 6.0.
    C. 7.5.

**The following information relates to Questions 41 – 43**

The table below summarizes the cost structure of a firm for various levels of output of a product:

| Quantity (Q) | Total Fixed Cost (TFC) | Total Variable Cost (TVC) |
|---|---|---|
| 0 | 540 | 0 |
| 2 | 540 | 200 |
| 4 | 540 | 300 |

| | | |
|---|---|---|
| 6 | 540 | 400 |
| 8 | 540 | 500 |
| 10 | 540 | 550 |

41. If the firm produces 6 units, the average fixed cost (AFC) is *closest* to:
    A. 60.
    B. 75.
    C. 90.

42. When the firm increases production from 6 to 8 units, the marginal cost per unit (MC) is *closest* to:
    A. 50.
    B. 75.
    C. 100.

43. The number of units that results in the lowest average total cost (ATC) is *closest* to:
    A. 6.
    B. 8.
    C. 10.

44. Newage Inc. is operating in a perfectly competitive market. AVC for the firm is \$33, ATC is \$45 and AR is \$38. The firm should:
    A. operate in both the short run and the long run.
    B. operate in the short run, but exit in the long run.
    C. shut down in the short run and exit the market in the long run.

45. Spacelight Inc. is operating under imperfect competition. Total cost for the firm is \$64, total variable cost is \$54 and total revenue is \$60. The firm should:
    A. operate in the short run, but exit in the long run.
    B. shut down in the short run, but can operate in the long run.
    C. operate in the short run as well as in the long run.

**LO.e: determine and describe breakeven and shutdown points of production.**

46. Under perfect competition, which of the following statements regarding the breakeven point is *least likely* accurate? The breakeven point is the quantity where:
    A. Total revenue equals total costs.
    B. Total revenue exceeds total costs.
    C. Price and marginal revenue equal average total cost.

47. Under perfect competition, which of the following statements regarding short-term shutdown point is *most likely* accurate? Shutdown point is:
    A. When average revenue is less than average variable costs.
    B. Below which a firm may continue to operate in the long run as long as it covers variable costs.
    C. The quantity below which price is greater than the average variable cost.

48. When total revenue is less than total variable costs, the company will *most likely:*
    A. shut down production to zero.
    B. stay in the market in the short-run.
    C. continue production in the short run and shut down to zero in the long run.

49. A firm operates in a perfectly competitive market. What is the level of MR and MC beyond which total profit may remain positive but cannot be maximized?
    A. When MR < MC.
    B. When MR = MC.
    C. When MR > MC.

50. An analyst makes the following statements:
    Statement 1: Profit maximization can be identified with two methods. When MR = MC or when the difference of TR and TC is maximum.
    Statement 1: Profit maximization can be identified with only one method. Profit is maximized when difference of TR and TC is maximized.
    Which statement is *least likely* correct?
    A. Both.
    B. Statement 1.
    C. Statement 2.

51. Profit maximization *most likely* occurs when:
    A. Average total cost is minimum.
    B. Marginal revenue is greater than marginal cost.
    C. The difference between total revenue and total costs is the most.

**LO.f: describe how economies of scale and diseconomies of scale affect costs.**

52. A firm in perfect competition has a total output of 100 units, which is the point of minimum efficient scale. It means that:
    A. at this point economies of scale are maximum and diseconomies of scale are minimum.
    B. at this point diseconomies of scale are maximum and economies of scale are minimum.
    C. information is insufficient to identify the level of economies and diseconomies of scale at this point.

53. Long term average cost of production is decreasing due to labor specialization, mass production, and better technology and equipment. This situation is *best* termed as:
    A. diminishing marginal returns to scale.
    B. economies of scale.
    C. diseconomies of scale.

54. The output of Abel Inc. increases by a larger percentage than the increase in inputs. Abel is *most likely* experiencing:
    A. economies of scale.
    B. diseconomies of scale.

C. constant returns to scale.

55. Current market price of a pack of A4 size paper is $7, which is below minimum efficient scale along the long-run average total cost curve (LRATC). Price at minimum efficient scale is $9. What will be the *most likely* price movement in the long run? Price will:
A. remain stable at $7.
B. go down to $5.
C. go up to $9.

56. In the short run, auto industry is earning positive economic profit. As a result, firms increased their scale of production to earn higher profits. What will be the *most likely* effect?
A. The short run average total cost curve will shift to the minimum efficient scale. The prices will increase and in the long run firms will earn zero economic profit.
B. The short run average total cost curve will shift to the minimum efficient scale. The prices will decrease and in the long run firms will earn zero economic profit.
C. The short run average total cost curve will shift to the minimum efficient scale. The prices will remain stable and in the long run firms will earn zero economic profit.

57. Ali Enterprises is operating in a perfectly competitive environment. Which of the following actions is *best* for Ali Enterprises to take in order to stay in the market in the long run?
A. Operate at any point beyond the minimum efficient scale point on the LRATC to lower costs.
B. Operate at the minimum efficient scale point on the long run average total cost curve (LRATC).
C. Maintain the current level of production.

58. Under perfect competition, what will a firm *least likely* earn in the long run?
A. Normal profits.
B. Zero economic profit.
C. Positive economic profit.

59. Three analysts made the following comments about labor productivity.
Analyst 1: Total labor productivity is the most useful measure for analyzing labor productivity as it considers total output per total labor employed.
Analyst 2: Average labor productivity is the most useful measure for analyzing labor productivity as it considers overall efficiency of labor.
Analyst 3: Marginal labor productivity is the most useful measure for analyzing the labor productivity as it considers addition to total product from increasing one more unit of labor.
Which analyst is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Analyst 3.

60. The point at which the benefit of employing one more labor starts to decrease is *most likely* termed as:
A. decreasing marginal productivity of labor.

B. declining marginal productivity of labor.
C. diminishing marginal productivity of labor.

**The following information relates to Questions 61–62**

The Production Manager of a manufacturing company has gathered the following information:

| Labor (L) | Total Product (TP) |
|---|---|
| 0 | 0 |
| 1 | 175 |
| 3 | 450 |
| 5 | 600 |
| 7 | 675 |
| 9 | 700 |

61. The level of labor at which the average product of labor is highest is *close*st to:
   A. 1.
   B. 3.
   C. 5.

62. As labor is added, the firm experiences increasing returns. The number of workers where increasing marginal returns turn to diminishing marginal returns is closest to:
   A. 0.
   B. 1.
   C. 3.

63. A manufacturing firm wants to achieve the most efficient combination of labor and capital. What should the firm *most likely* do to minimize total costs for a desired level of output? It should equalize the:
   A. marginal product per unit of capital to the marginal product per unit of labor.
   B. average product of capital to the average product of labor.
   C. marginal product per dollar spent on capital to the marginal product per dollar spent on labor.

64. A firm plans to expand production by 500 units. The marginal product per day for one additional unskilled laborer is 250 units and one additional skilled worker is 500 units. Wages per day are £150 for an unskilled labor and £280 for a skilled worker. The firm should hire:
   A. two additional unskilled laborers.
   B. one additional skilled worker.
   C. either a skilled worker or two unskilled laborers.

65. An American firm employs unskilled, semi-skilled, and skilled labor in a cost-minimizing mix at its manufacturing plant. The current wage of unskilled labor is $100 per day and the

government passes a law that requires the minimum wage to be $150 per day. The marginal product of unskilled labor is lower than semi-skilled and skilled labor. Since the equilibrium wages for semi-skilled and skilled labor exceed the minimum wage, they are not affected by the new law. Which of the following actions will the firm *most likely* take in response to the imposition of the minimum wage law?

A. Employ fewer unskilled workers at its plant.
B. Employ more unskilled workers at its plant.
C. Retain the current mix of unskilled, semi-skilled, and skilled workers.

66. A firm is using two inputs 1 and 2 and wants to determine the profit-maximizing utilization level of an input. The firm's cost of an input:

A. is maximized when $MP_1/P_1 = MP_2/P_2$.
B. is minimized when $MP_1/P_1 = MP_2/P_2$.
C. does not change when $MP_1/P_1 = MP_2/P_2$.

67. Milkyway produces food colors. All the inputs mentioned can substitute each other. What input type should the firm use when expanding output for maximizing profitability?

| **Input** | **MP** | **Resource Price/Unit** |
|---|---|---|
| Natural color extract | 450 | 450 |
| Artificial chemicals | 300 | 270 |
| Artificial color mixture | 600 | 800 |

A. Natural color extract.
B. Artificial color mixture.
C. Artificial chemicals.

**The following information relates to Questions 68–69**

A Pakistani firm makes lanterns, employing both skilled craftsmen and automated equipment in its plant. The selling price for a lantern is PKR 3,000. A craftsman earns PKR 10,000 per week and can produce ten lanterns per week. On the other hand, a machine leased for PKR 12,000 per week can produce ten lanterns per week.

68. If the firm hires an additional craftsman, then the marginal revenue product (per week) will be *closest* to:

A. PKR 30,000.
B. PKR 32,000.
C. PKR 40,000.

69. The firm plans to increase the weekly production to 40 lanterns. The firm would *most likely* maximize profits by:

A. hiring additional craftsmen.
B. leasing additional machine.
C. neither of the above since it is not viable for the firm to produce additional lanterns.

**Solutions:**

1. A is correct. The income elasticity of demand is given by ($\Delta Q_{DB}/\Delta I$) * ($I/Q_{DB}$), and notice from the demand function that $\Delta Q_{DB}/\Delta I = 0.03$. Use the demand equation for calculating $Q_{DB}$.
$Q_{DB} = 91.70 - 0.7\ (P_B) + 0.03\ (I) + 1.3\ (P_{UB})$
$Q_{DB} = 91.70 - 0.7\ (20) + 0.03\ (70) + 1.3\ (15) = 99.3$
Inserting in the values for I and $Q_{DB}$ yields income elasticity of (0.03) (70/99.3) = 0.0211.

2. B is correct. The own-price elasticity of demand is given by ($\Delta Q_{DB}/\Delta P_B$) ($P_B/Q$), and notice from the demand function that $\Delta Q_{DB}/\Delta P_B = -0.7$. Inserting the given variable values into the demand function yields $Q_{DB} = 99.3$. So at a price of \$20, the own-price elasticity of demand equals (–0.7) (20/99.3) = −0.1410.

3. C is correct. The cross-price elasticity of demand is given by ($\Delta Q_{DB}/\Delta P_{UB}$) ($P_{UB}/Q_{DB}$), and notice from the demand function that $\Delta Q_{DB}/\Delta P_{UB} = 1.3$. Inserting in the values for $P_{UB}$ and $Q_{DB}$ yields a cross-price elasticity of demand for branded clothes of (1.3) (15/99.3) = 0.1964.

4. B is correct. Income elasticity of demand is positive for normal goods and negative for inferior goods. When income increases, the consumption of a normal good rises but the consumption of an inferior good decreases.

5. B is correct. Two goods whose cross-price elasticity of demand is negative are known as complements.

6. B is correct. The longer the time elapsed since a price change, the more elastic the demand is. For example, if gasoline (petrol) prices rise, consumers cannot quickly change their mode of transportation, but will be likely do so in the long run.

7. A is correct. The price elasticity of demand is the ratio of percentage change in demand and percentage change in price. Price elasticity of demand = (15 – 10)/10 ÷ (7 – 10)/10 = -1.67. Any value above 1.0 in absolute terms indicates high elasticity.

8. B is correct.
$Q_{DB} = 91.70 - 0.7\ (P_B) + 0.3\ (I)$
$Q_{DB} = 91.70 - (0.7)\ (20) + (0.3)\ (30)$
$Q_{DB} = 86.70$

9. C is correct.

| **Demand function** | **Inverse Demand function** |
|---|---|
| $Q_{DB} = 91.70 - 0.7\ (P_B) + 0.3\ (I)$ | $Q_{DB} = 100.70 - 0.7\ (P_B)$ |
| $Q_{DB} = 91.70 - 0.7\ (P_B) + (0.3)\ (30)$ | $0.7\ (P_B) = 100.70 - Q_{DB}$ |
| $Q_{DB} = 100.70 - 0.7\ (P_B)$ | $P_B = 143.85 - 1.43Q_{DB}$ |

10. A is correct. Demand function based on the given information is $Q_{DB} = 100 – 2.5P_B + 1.5P_P – 0.5I + 3C_{PT.}$ Demand of bicycles is inversely related to its own price and income level and it is proportionately related to the cost of public transportation and the price of petrol.

11. B is correct. The demand curve is generally downward sloping (negative slope) because of the inverse relationship between the price of a product and its quantity demanded.

12. C is correct. Substituting the given values in the demand function, we have:
$QD_{Burger}$= 15 – 0.90 $P_{Burger}$ + 0.006 * \$1000 – 0.60 * 1.75 = 19.95 – 0.90 $P_{Burger}$,
Demand curve or inverse Demand function: $P_{Burger}$ = 22.17 – 1.11 $QD_{Burger}$

13. B is correct. When a good's own-price changes, quantity demanded changes; this is called a movement along the demand curve.

14. C is correct. Movement along the demand curve occurs due to a change in product's own price. Demand curve shifts as a result of a change in price of a substitute product.

15. B is correct. When the price of iron ore decreases, the cost of production will come down. This will shift the supply curve to the right.

16. C is correct. A decrease in the price of air tickets will decrease the demand for railway tickets, which will shift the demand curve for railways tickets to the left.

17. B is correct. The cross-price elasticity is positive, which implies that as the price of B increases, more of A is demanded, making A and B substitutes.

18. B is correct. In the special case of a Giffen good, the negative income effect will be greater than the positive substitution effect; this means that for a Giffen good, a decrease in the price of Good A will cause a decrease in its consumption.

19. A is correct. In the special case of a Giffen good, the negative income effect will be greater than the positive substitution effect; this means that for a Giffen good, a decrease in the price of Good A will cause a decrease in its consumption. It's a violation of the law of demand.

20. C is correct. When the price of a normal good increases, the demand for its substitutes will increase due to both substitution and income effects.

21. B is correct. If the price of a normal good decreases, both the substitution and income effects lead to an increase in the quantity demanded. If the price of a good falls and income and substitution effect offset each other, then it is an inferior good.

22. B is correct. When income increases, the demand for an inferior good decreases.

23. B is correct. When income increases, the demand for a normal good increases.

24. C is correct. Veblen goods are generally considered a status symbol. An increase in the price of a Veblen good leads to an increase in the quantity demanded.

25. B is correct. Veblen goods offer more value to the consumer when the price of the good increases.

26. A is correct. Veblen goods are not inferior goods, whereas Giffen goods are. An increase in income for consumers of a Veblen good leads to an increase in the quantity purchased at each price. The opposite is true for a Giffen good.

27. B is correct. Economic profit = Accounting profit – Total implicit costs
    = 162,000 – 43,000 – 35,000
    = $84000

28. A is correct. Accounting profit is book profit based on revenue and cost. It includes cost of borrowing as interest expenses, but it does not consider the opportunity cost of the owner's capital.

29. C is correct. Normal profit is the level of accounting profit needed to just cover the implicit opportunity costs ignored in accounting costs. Normal profit can be considered as the cost of capital or implicit costs in money terms.

30. C is correct. Accounting profit = Economic profit + Normal profit.

31. B is correct. In a perfectly competitive market, all units are sold at an equal price and average revenue is equal to marginal revenue.

32. B is correct. In imperfect competition, both average and marginal revenue decrease with each successive unit sold. The decrease in marginal revenue is more than average revenue.

33. C is correct. Total revenue is maximized when marginal revenue becomes zero.

34. A is correct. $\text{Marginal revenue per unit} = \frac{\text{Change in total revenue}}{\text{Change in quantity sold}}$.

    Change in total revenue = GBP 800,000

    Change in total units sold = 250. Marginal revenue = $\frac{800,000}{250}$ = GBP 3200.

35. C is correct. Since it is a perfectly competitive market, the 15% increase in supply by a single firm will not affect the price. The increase in units sold by the farm will be matched by a 15% increase in revenue.

36. B is correct. $\text{Marginal revenue per unit} = \frac{\text{Change in total revenue}}{\text{Change in quantity sold}}$.

    Change in total revenue per day = [(600 * $20) – (400 * $25)] = 2,000
    Change in units sold = (600 – 400) = 200
    Marginal revenue = $\frac{2000}{200}$ = $10.

37. A is correct. A firm is a price taker under perfect competition; it cannot change the price at any quantity supplied to the market. AR = MR = Price.

38. C is correct. Quasi-fixed cost is fixed up to a certain range, but can change to another constant level when production moves outside of that range.

39. C is correct. MC intersects ATC and AVC at their minimum, after that ATC and AVC start increasing.

40. B is correct. Marginal cost of production = ΔTC/ΔQ
For increase in output from 21 to 26 marginal cost = (155 - 125) / (26 - 21) = 6.00

41. C is correct. $AFC = \frac{TFC}{Q} = \frac{540}{6} = 90$.

42. A is correct. $MC = \frac{\Delta TC}{\Delta Q} = \frac{100}{2} = 50$.

43. C is correct. When the number of units produced is 10, the average total cost is 109, which is the lowest. $ATC = \frac{TC}{Q} = \frac{1090}{10} = 109$.

44. B is correct. When AR is less than ATC, but more than or equal to AVC, the firm should continue to operate in the short run but must exit in the long run.

45. A is correct. When total revenue is less than total cost and more than total variable cost, the firm should continue to operate in the short run but should exit in the long run.

46. B is correct. Under perfect competition, the breakeven point is the quantity where price, average revenue, marginal revenue and average total cost are equal. It is also the quantity where total revenue equals total costs.

47. A is correct. Under perfect competition, the short-term shutdown point is when average revenue is less than average variable costs. B is incorrect because a firm must cover all costs in the long run to stay operational, including fixed and variable costs. C is incorrect because for any quantity below the shutdown point, price is less than the average variable cost.

48. A is correct. When total revenue is enough to cover total variable costs, but not total fixed costs, the firm will stay in the market in the short run. If it is not able to meet variable costs, then it will shut down production to zero in the short-run and exit the market in the long run.

49. B is correct. When MR = MC, profit is maximized, beyond this point profit may be positive but it cannot be maximized.

50. C is correct. There are two methods for identifying profit maximization level. 1) When MR = MC and 2) when the difference between TR and TC is maximized.

51. C is correct. The quantity at which average total cost is minimized does not necessarily correspond to a maximum profit. Profit maximization occurs when marginal revenue equals marginal cost, and the difference between TR and TC is the greatest.

52. A is correct. Minimum efficient scale is the point at which economies of scale are maximized and diseconomies of scale are minimized.

53. B is correct. When the long term average cost decreases due to labor specialization, mass production, technological advances, and better equipment, it is known as economies of scale.

54. A is correct. When output increases by a greater proportion than the increase in inputs, the company is said to be experiencing economies of scale. C is incorrect because constant returns to scale occur when the output increases in the same proportion as input with no increase in per-unit cost.

55. C is correct. Lower than equilibrium market price will result in losses to producers and they will exit. This decrease in supply will increase price to new equilibrium level.

56. B is correct. The short run average total cost curve will shift to the minimum efficient scale. The prices will decrease and in the long run firms will earn zero economic profit.

57. B is correct. The firm operating beyond the long-run efficient scale is subject to diseconomies of scale. It should decrease its level of production to stay in the market.

58. C is correct. Under prefect competition, a firm only earns normal profit in the long run as competition drives prices down to long-run marginal cost. Economic profit is zero.

59. C is correct. Marginal productivity of labor shows addition to the total product due to addition of one more unit of labor. This gives a better picture and shows changes in output for increase in one unit of labor.

60. C is correct. The point at which, the benefit of employing one more labor starts to decrease is termed as diminishing marginal product of labor.

61. A is correct. $\text{Average product } = \frac{\text{Total product}}{\text{Labor}}$. Average product of one worker is 175. Average product of 3 workers = $\frac{450}{3}$ = 150. Average product of 5 workers = 600/5 = 120. It is the highest for 1 worker.

62. B is correct. Marginal product = $\frac{\text{change in total product}}{\text{change in labor}}$. The increase in MP from 0 to 1 worker is 175. This is the only point where marginal product increases.

63. C is correct. Costs are minimized when substitution of capital for labor does not result in any cost savings, which is the case when the marginal product per dollar spent is equalized across the inputs.

64. B is correct. The firm will minimize costs at the higher level of production by hiring one additional skilled worker at a total cost of £280.

65. A is correct. The firm employs labor of various types in a cost-minimizing combination. Profit is maximized when marginal revenue product is equalized across each type of labor input. If the wage rate of unskilled workers increases, the marginal product produced per dollar spent to employ unskilled labor will decline. The original employment mix is no longer optimal, so the firm will respond by shifting away from unskilled workers to workers whose wages are unaffected by the minimum wage law.

66. B is correct. When $MP_1/P_1 = MP_2/P_{2,}$ cost of inputs is minimized.

67. C is correct. The firm minimizes cost and enhances profitability by using artificial chemical as it has the highest ratio of MP to input price (MP/P = 300/270 = 1.11).

68. A is correct. The marginal revenue product is the marginal product of an additional craftsman (10 tables) times the price per table (PKR 3,000). Therefore, 10 * PKR 3,000 = PKR 30,000.

69. A is correct. The firm would most likely enhance profits by hiring additional craftsmen. The cost of hiring a craftsman is lower than the equipment. However, both produce the same quantity.

**LO.a: Describe characteristics of perfect competition, monopolistic competition, oligopoly, and pure monopoly.**

1. A market structure characterized by many sellers of a homogeneous product, with no firm having any pricing power is *best* described as:
   A. monopolistic competition.
   B. oligopoly.
   C. perfect competition.

2. A market structure characterized by a single seller who has significant pricing power is *best* described as:
   A. monopoly.
   B. monopolistic completion.
   C. oligopoly.

3. A market structure characterized by few sellers and high barriers to entry into or exit from the industry is *best* described as:
   A. monopolistic competition.
   B. oligopoly.
   C. monopoly.

4. A market structure characterized by many sellers and high advertising and marketing expenditure is *best* described as:
   A. monopolistic competition.
   B. monopoly.
   C. oligopoly.

5. Advertising is *least likely* used in a:
   A. monopoly.
   B. monopolistic competition.
   C. perfect competition.

6. In which of the following cases is collusion *most likely* to occur?
   A. When the product is homogeneous.
   B. When there are many small companies in the industry.
   C. When the cost structures of companies are different.

7. An industry comprises of four firms that produce an easily replicable product. The barriers to entry are low. This industry is best characterized as:
   A. an oligopoly.
   B. monopolistic competition.
   C. perfect competition.

8. Indus Manufacturing is one of many companies in an industry. Indus produces widgets which are similar to those produced by its competitors up to the point they are labeled. The labeled

brand sells for £3.50 per unit. Other firms in the industry sell their products for £2.50 per unit. This industry is best characterized as:
A. monopoly.
B. monopolistic competition.
C. perfect competition.

9. Acme Enterprises operates in an industry with many sellers who differentiate their products. This industry is best characterized as:
A. oligopoly.
B. monopolistic competition.
C. perfect competition.

10. Zain Enterprises operates in an industry, which is characterized by a few sellers of a homogeneous product. The pricing decisions of the firms in this industry are interdependent. This industry is best characterized as:
A. monopolistic competition.
B. oligopoly.
C. perfect competition.

**LO.b: Explain relationships between price, marginal revenue, marginal cost, economic profit, and the elasticity of demand under each market structure.**

11. Which of the following statements about the demand schedules in perfect competition is *most* accurate?
A. The demand schedule faced by a firm is downward sloping, while the demand schedule faced by the market is horizontal.
B. The demand schedule faced by a firm is horizontal, while the demand schedule faced by the market is downward sloping.
C. The demand schedules faced by both the firm and the market are horizontal.

12. In a monopoly, a firm is operating at an average total cost of $15. The marginal cost is $10 which is equal to the marginal revenue. The firm produces 1000 units, charging a price of $25 per unit. The total profit of this firm is *closest* to:
A. $10,000.
B. $15,000.
C. $25,000.

13. Which of the following statements about monopolistic competition is *least* accurate?
A. The demand curve for a firm is downward sloping.
B. In equilibrium, price = marginal revenue = marginal cost.
C. In long-run equilibrium, economic profits are zero.

14. The following equations show the demand and cost curves for a company:
Demand curve: P = 135-5 * Q

Total revenue curve: $TR = 135 * Q – 5 * Q^2$
Marginal revenue curve: $MR = 135 – 15 * Q$
Total cost curve: $TC = Q^3 – 10 * Q^2 + 65 * Q + 110$
Average cost curve: $AC = Q^2 – 10 * Q + 65 + 110/Q$
Marginal cost curve: $MC = 20 * Q + 65$
The profit maximizing output for this firm is *closet* to:
A. 2.
B. 5.
C. 7.

15. The demand schedule in a perfectly competitive market is given by $P = 65 – 2.2Q$ (for $Q \leq 55$). The long-run cost structure of each company is:
Total cost: $243 + 3Q + 6Q^2$
Average cost: $243/Q + 3 + 6Q$
Marginal cost: $3 + 9Q$
New companies will enter the market at any price greater than:
A. 55.
B. 74.
C. 84.

**LO.c: Describe a firm's supply function under each market structure.**

16. Firms *most-likely* have a well-defined supply function under:
A. Oligopoly.
B. Monopoly.
C. Perfect competition.

17. Analyst 1: For firms operating under monopolistic competition, the supply curve is equal to the average cost curve.
Analyst 2: For firms operating under monopolistic competition, the supply curve is equal to the marginal cost curve.
Which analyst is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

**LO.d: Describe and determine the optimal price and output for firms under each market structure.**

18. A firm in a perfectly competitive market is operating at a price which is less than the average total cost, but it is more than the average variable cost. What is the *most* appropriate decision with respect to operating this firm?
A. The firm should be shut down as it is not able to recover average total cost.
B. The firm should continue its operations in the short run. This will minimize the losses.
C. The available details are insufficient to reach a decision.

19. A monopolist faces the following demand and cost schedules:

| Output (units) | Price ($/unit) | Total Costs ($) |
|---|---|---|
| 0 | 5,000 | 800 |
| 20 | 4,800 | 20,800 |
| 40 | 4,600 | 64,800 |
| 60 | 4,400 | 122,800 |
| 80 | 4,200 | 244,800 |
| 100 | 4,000 | 350,800 |

The optimal output level for this producer is *closest* to:
A. 40.
B. 60.
C. 80.

20. A firm in an industry characterized by monopolistic competition will *most likely* maximize profits when its output quantity is set such that the:
A. average cost is minimized.
B. marginal revenue equals marginal cost.
C. total cost is minimized.

**LO.e: Explain factors affecting long-run equilibrium under each market structure.**

21. Two dominant companies operating in the smart phone manufacturing industry agree not to reduce price below a certain limit. Based on whether or not each company honors the agreement, the possibilities are:

| Possibilities | **Company A honors** | **Company A breaches** |
|---|---|---|
| **Company B honors** | Company A earns $1 million<br>Company B earns $1 million | Company A earns $1.5 million<br>Company B earns $0.5 million |
| **Company B breaches** | Company A earns $0.5 million<br>Company B earns $1.5 million | Company A earns $0.7 million<br>Company B earns $0.7 million |

Considering game theory and Nash equilibrium, what will be the *most likely* outcome?
A. Company A will agree and B will breach the agreement.
B. Both companies will breach the agreement.
C. Both companies will honor the agreement.

22. Which of the following statements is *most accurate*?
A. Collusion is less likely when the product is homogeneous.
B. Collusion is less likely when the companies have similar market shares.
C. Collusion is less likely when the cost structures of companies are similar.

23. In a perfect competition, if companies are earning economic profit then over the long run the supply curve will *most likely*:
A. remain unchanged.
B. shift to the left.

C. shift to the right.

24. Analyst 1: Over time, the market share of the dominant company in an oligopolistic market will most likely increase.
Analyst 2: Over time, the market share of the dominant company in an oligopolistic market will most likely decrease.
Which analyst is correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

25. In a monopolistic market, consumer surplus decreases in the long run. This is *most likely* because of:
A. a reduction in quantity produced.
B. an increase in prices.
C. both a reduction in quantity produced and increase in prices.

26. Two analysts make the following statements:
Analyst 1: Compared to perfect competition, monopolies are always inefficient.
Analyst 2: Monopolies may sometimes be more efficient than perfect competition.
Which analyst is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

**LO.f: Describe pricing strategy under each market structure.**

27. If a monopoly is regulated by the government, it will *least likely* base its prices on:
A. marginal cost.
B. long run average cost.
C. first degree price discrimination.

28. Which of the following statements is *most* accurate?
A. An oligopolistic pricing strategy results in a kinked demand curve.
B. An oligopolistic pricing strategy results in a vertical demand curve.
C. An oligopolistic pricing strategy results in a horizontal demand curve.

29. Which of the following statements about perfect competition is *most* accurate?
A. In equilibrium, price < marginal revenue = marginal cost.
B. In equilibrium, price = marginal revenue = marginal cost.
C. In equilibrium, price > marginal revenue = marginal cost.

30. In first-degree price discrimination, the consumer surplus:
A. increases.
B. decreases.
C. is eliminated.

31. If a government regulates a monopoly through marginal cost pricing, it will *most likely* provide a subsidy to the monopoly when:
    A. marginal cost is below the average total cost.
    B. marginal cost is equal to the average total cost.
    C. marginal cost is above the average total cost.

32. Which of the following models *most likely* describes a situation in which no firm can increase profits by changing its price/output choice?
    A. Kinked demand curve model.
    B. Cournot model.
    C. Dominant firm model.

33. Engro is the price leader in its market. One of its competitors tries to gain market share by selling at a lower price set by Engro. The market share of Engro will *most likely*:
    A. decrease.
    B. increase.
    C. stay the same.

34. The market price of a dominant firm in an oligopolistic market is *most likely* based on the:
    A. market demand curve.
    B. demand curve faced by the dominant firm (price leader).
    C. demand curve faced by the other firms.

35. An airline segments customers into business travelers and leisure travelers. It then charges a higher price for the business segment. This is most likely an example of:
    A. first-degree price discrimination.
    B. second-degree price discrimination.
    C. third-degree price discrimination.

36. National Refinery of Pakistan is a monopoly enjoying very high barriers to entry. Its marginal cost is PKR 5,000 and its average cost is PKR 8,000. A recent market study has determined the price elasticity of demand to be 1.25. The company will *most likely* set its price at:
    A. 5,000.
    B. 8,000.
    C. 25,000.

**LO.g: Describe the use and limitations of concentration measures in identifying market structure.**

37. A market has 5 suppliers, each of them with 20 percent of the market. What are the concentration ratio and the HHI of the top three firms?
    A. Concentration ratio 6 percent and HHI 12.
    B. Concentration ratio 60 percent and HHI 1.2.
    C. Concentration ratio 60 percent and HHI 0.12.

38. The biggest limitation of N firm concentration ratio is that:
    A. the ratio is insensitive to mergers of two firms with large market share.
    B. the ratio is difficult to calculate and understand.
    C. the ratio is not useful for firms in monopolistic competition.

**Refer to the below information for question 39-40**
Below is the market share of firms in the FMCG industry. The market shares are before merger of A and B.
A – 30%
B – 20%
C – 15%
D – 15%
E – 10%
F – 10%

39. What is the 4-firm concentration ratio before and after merger?
    A. Before merger – 75%, after merger – 90%.
    B. Before merger – 80%, after merger – 90%.
    C. Before merger – 85%, after merger – 95%.

40. What is the 4-firm HHI before and after merger?
    A. Before merger – 0.170, after merger – 0.305.
    B. Before, merger – 0.175, after merger – 0.350.
    C. Before merger – 0.175, after merger – 0.305.

41. One of the disadvantages of the Herfindahl-Hirschmann index is that the index:
    A. is difficult to compute.
    B. fails to reflect the effect of mergers.
    C. fails to reflect low barriers to entry.

42. An analyst gathers the following market data for an industry:

| **Company** | **Revenue (In million $)** |
|---|---|
| UBL | 900 |
| HBL | 800 |
| NBP | 700 |
| NIB | 600 |
| MCB | 500 |
| Others | 400 |

    The industry's four-company concentration ratio is *closest* to:
    A. 67%.
    B. 77%.
    C. 83%.

43. An analyst has gathered the following data for an industry comprising of five firms:

| Company | Market Share (%) |
|---|---|
| UBL | 35 |
| HBL | 30 |
| NBP | 25 |
| NIB | 5 |
| MCB | 5 |

The industry's three-firm Herfindahl-Hirschmann Index is *closest* to:
A. 0.275.
B. 0.300.
C. 0.900.

**LO.h: Identify the type of market structure within which a firm operates.**

44. A firm operates in an industry with very low barriers to entry. The number of players in the market is high and they are competing with each other to provide goods at the lowest prices. None of the players have any pricing power. The *best* characterization of this firm's market is:
A. monopolistic competition.
B. perfect competition.
C. oligopoly.

45. A firm operates in an industry where the barriers to entry are comparatively low. Its competitors offer substitute products, but with differentiated features, quality and pricing. The firm has some pricing power, but it is low due to high number of substitutes and high number of competitors. The *best* characterization of this firm's market is:
A. oligopoly.
B. monopolistic competition.
C. perfect competition.

46. A firm operates in an industry with very few players. The barriers to entry are high and the firm has significant pricing power. The *best* characterization of this firm's market is:
A. monopoly.
B. monopolistic competition.
C. oligopoly.

47. A firm operates in an industry where the average cost of production is falling over the relevant range of consumer demand. The barriers to entry are very high and the firm has significant pricing power. The *best* characterization of this firm's market is:
A. monopoly.
B. oligopoly.
C. monopolistic competition.

## Solutions

1. C is correct. Characteristics of perfect competition include many sellers, homogeneous products and firms have no pricing power.

2. A is correct. In a monopoly, we have a single seller who has significant pricing power.

3. B is correct. In an oligopoly, we have relatively few sellers and the barriers to entry into or exit from the industry are high.

4. A is correct. In monopolistic competition, we have many sellers, the products are differentiated and the advertising and marketing expenses are high.

5. C is correct. In perfect competition, the product cannot be differentiated by advertising or any other means.

6. A is correct. Collusion is more likely when companies have homogeneous products.

7. C is correct. Even though there are only four firms in the industry, the barriers to entry are low. This implies that other firms are voluntarily not entering the industry, making this most likely a perfectly competitive environment.

8. B is correct. There are many competitors in the market, but there is evidence of branding and product differentiation. These are characteristics of monopolistic competition.

9. B is correct. Product differentiation is the most distinctive factor in monopolistic competition

10. B is correct. Oligopoly markets are characterized by a small number of firms that dominate the market. There are so few firms in the relevant market that their pricing decisions are interdependent.

11. B is correct. The demand schedule faced by a firm is horizontal, while the demand schedule faced by the market as a whole is downward sloping.

12. A is correct. The firm is selling at \$25 and the average total cost is \$15. The firm is making a profit of \$10 per unit. This will result in a total profit of \$10,000.

13. B is correct. For monopolistic completion, price > marginal revenue = marginal cost (in equilibrium).

14. A is correct. The profit will be maximum, when MR = MC.
    135 – 15 * Q = 20 * Q + 65. Solving, we get Q = 2

15. C is correct. The long-run competitive equilibrium occurs where MC = AC = P for each company.
    By equating MC and AC,

$3 + 9Q = 243/Q + 3 + 6Q$
$3Q + 9Q^2 = 243 + 3Q + 6Q^2$
$3Q^2 = 243$
$Q = 9$
The equilibrium price can be found by using the following equation: P = 3 + 9Q = 84.
Any price above 84 yields an economic profit because P = MC > AC, so new companies will enter the market. Note that the demand curve for the market is not needed for this problem.

16. C is correct. Under perfect competition, the supply function is well defined and is equal to the marginal cost schedule of the firm.

17. C is correct. Firms operating under monopolistic competition do not have well-defined supply functions, so neither the marginal cost curve nor the average cost curves are supply curves in this case.

18. B is correct. In perfect competition, if the firm is operating where price is less than average total cost and more than average variable cost; the firm is recovering all variable cost and some part of fixed cost. In this scenario, it is best to continue operations in short run, which will minimize the losses.

19. B is correct. The optimal price level is 60 units because it produces the highest profit.

| **Output (units)** | **Price ($/unit)** | **Total Revenue ($)** | **Total Costs ($)** | |
|---|---|---|---|---|
| 20 | 4,800 | 96,000 | 20,800 | 75,200 |
| 40 | 4,600 | 184,000 | 64,800 | 119,200 |
| 60 | 4,400 | 264,000 | 122,800 | **141,200** |
| 80 | 4,200 | 336,000 | 244,800 | 91,200 |
| 100 | 4,000 | 400,000 | 350,800 | 49,200 |

20. B is correct. The profit maximizing choice is the level of output where marginal revenue equals marginal cost.

21. B is correct. Based on game theory and the available information, it is most likely that both companies will breach the agreement.

22. B is correct. When companies have similar market shares, competitive forces tend to outweigh the benefits of collusion.

23. C is correct. The economic profit will attract new entrants to the market and encourage existing companies to expand capacity.

24. B is correct. The dominant company's market share tends to decrease as profits attract entry by other companies.

25. C is correct. In monopoly, in the long run, consumer surplus is reduced because of reduction in quantity produced and increase in prices.

26. B is correct. Economies of scale and regulation may sometimes make monopolies more efficient than perfect competition.

27. C is correct. Government regulation may attempt to improve resource allocation by requiring the monopolist to institute average cost pricing or marginal cost pricing. The monopolist will least likely be allowed to institute first degree price discrimination.

28. A is correct. Under an oligopolistic pricing strategy, competitors will not follow a price increase but will cut their prices in response to a price decrease by a competitor. Hence the demand curve is kinked.

29. B is correct. In perfect competition, at equilibrium, price = marginal revenue = marginal cost.

30. C is correct. In first degree price discrimination, the entire consumer surplus is captured by the producer. The consumer surplus falls to zero.

31. A is correct. Under marginal cost pricing, a subsidy is provided to the monopolist if MC < ATC.

32. B is correct. The Cournot model describes a special case of Nash equilibrium, in which no firm can increase profits by changing its price/output choice.

33. B is correct. As prices decrease, smaller firms will leave the market rather than sell below cost. The most likely scenario is that Engro (market leader) will decrease prices and its market share will increase.

34. B is correct. The dominant company determines its profit maximizing quantity by equating its marginal revenue and marginal cost. The price is then set based on the dominant company's demand curve.

35. C is correct. *In first-degree price discrimination,* a company is able to charge each customer the highest price the customer is willing to pay. *In second-degree price discrimination,* a company offers a menu of quantity-based pricing options designed to induce customers to self-select based on how highly they value the product. The scenario given in the question is an example of third-degree price discrimination where customers are segregated by demographic or other traits.

36. C is correct. Profits are maximized when MR = MC. For a monopoly:

$$\mathrm{MR} = \mathrm{P}\left(1 - \frac{1}{\text{Price Elasticity}}\right)$$

$$5000 = \mathrm{P}\left(1 - \frac{1}{1.25}\right)$$

$$\mathrm{P} = 25000$$

37. C is correct. The concentration ratio for the top three firms is 20 + 20 + 20 = 60 percent. The HHI is $0.20^2 * 3 = 0.12$

38. A is correct. The biggest limitation of N firm concentration ratio is that it is insensitive to mergers of two firms with large market shares. Hence, it does not give the right result in this type of situations.

39. B is correct. The 4-firm concentration ratio before merger is 30 + 20 + 15 + 15 = 80%. After merger of A and B, the ratio will be 50 + 15 + 15 + 10 = 90%. This industry is highly concentrated.

40. B is correct. Before merger 4-firm HHI = $0.30^2 + 0.20^2 + 0.15^2 + 0.15^2 = 0.175$
After merger 4-firm HHI = $0.50^2 + 0.15^2 + 0.15^2 + 0.10^2 = 0.305$

41. C is correct. The HHI does not reflect low barriers to entry that may restrict the market power of companies currently in the market.

42. B is correct. The top four companies in the industry comprise 77% percent of industry sales:
$$\text{Concentration Ratio} = \frac{900 + 800 + 700 + 600}{900 + 800 + 700 + 600 + 500 + 400} = 77\%$$

43. A is correct. The three-firm Herfindahl-Hirschmann Index is $0.35^2 + 0.30^2 + 0.25^2 = 0.275$.

44. B is correct. These characteristics represent perfect competition.

45. B is correct. These characteristics represent monopolistic competition.

46. C is correct. These characteristics represent oligopoly.

47. A is correct. These characteristics represent monopoly.

**LO.a: Calculate and explain gross domestic product (GDP) using expenditure and income approaches.**

1. In a simple economy with no foreign sector, the following equations apply:

| | |
|---|---|
| Consumption function | C = 3,500 - 9 * T |
| Investment function | I = 700 – 35 * r |
| Government spending | G = 1,100 |
| Tax function | T = 350 + 2 * r |
| r: Real interest rate | |

If the real interest rate is 2%, the aggregate income will be *closest* to:
   A. 1,400.
   B. 2,149.
   C. 3,500.

2. The following table shows the GDP data of a country measured at market prices (in domestic currency units) for the year 2014:

| | | | |
|---|---|---|---|
| Consumer spending on goods and services | 986,070 | Government spending on goods and services | 416,700 |
| Business gross fixed investment | 397,500 | Government gross fixed investment | 95,230 |
| Change in inventories | -79,600 | Capital consumption allowance | 9,650 |
| Transfer payments | 9,400 | Statistical discrepancy | -3,960 |
| Exports | 329,900 | Imports | 360,990 |

Using the expenditure approach, the country's gross domestic product (GDP) in 2014 is *closest* to:
   A. 1,771,200.
   B. 1,780,850.
   C. 1,790,500.

3. Which of the following is *most likely* to be included in the measurement of gross domestic product (GDP)?
   A. The salary of a local police officer.
   B. The value of labor used in commuting.
   C. Environmental damage caused by production.

4. Gross domestic product (GDP) can be best described as:
   A. the total value of all goods and services produced within the economy.
   B. the total income earned by all households, firms, and the government.
   C. the total aggregate income earned by all households, all companies, and the government within the economy over a specific time period, usually a year.

5. Which of the following is least likely to be included in the calculation of gross domestic product (GDP)?
   A. Income earned by hospitals.
   B. Income earned by educational institutes.
   C. Environmental damage caused by manufacturing activity.

6. Which of the following will most likely increase the GDP of a country?
   A. An increase in imports.
   B. Increased government transfer payments.
   C. Increased investment in capital goods.

7. Which of the following will most likely be included in China's GDP? The market value of:
   A. Rice grown in China by British citizens.
   B. A phone made in U.S and sold in China.
   C. Films produced outside China by Chinese citizens.

**LO.b: Compare the sum-of-value-added and value-of-final-output methods of calculating GDP.**

8. Consider a sculpture that is produced and sold in 2014 for $3,000. The expenses involved in producing the sculpture were $1,000. According to the sum-of-value-added method of calculating GDP, the value added by the final step of creating the sculpture was:
   A. $1,000.
   B. $2,000.
   C. $3,000.

9. The following production process details are available for a product:

| | |
|---|---|
| Cost of raw materials | $10,000 |
| Manufacturing price | $12,000 |
| Wholesale price | $15,000 |
| Retail price | $17,000 |

   According to the value-of-final-output method of calculating GDP, the amount included in GDP is *closest* to:
   A. $12,000.
   B. $15,000.
   C. $17,000.

10. A piece of jewelry was made and sold in 2014 for $8,000. The expenses involved in hand crafting the jewelry before the final stage amounted to $3,000. According to the 'sum-of-value-added method' of calculating GDP, the value added by the final step of creating the jewelry was:
   A. $3,000.
   B. $5,000.
   C. $8,000.

**LO.c: Compare nominal and real GDP and calculate and interpret the GDP deflator.**

11. The following data pertains to the total output in units and average selling prices in an economy that produces only two products, A and B:

| | **Product A** | | **Product B** | |
|---|---|---|---|---|
| **Year** | **Output (units)** | **Selling price/unit** | **Output (units)** | **Selling price/unit** |

| | | | | |
|---|---|---|---|---|
| 2013 | 3,900 | $10 | 3,000 | $58 |
| 2014 | 4,100 | $11 | 2,800 | $62 |

The implicit price deflator for GDP in 2013 was 100. The GDP deflator for 2014 is *closest* to:

A. 102.6.
B. 105.5.
C. 107.5.

12. Assume that an economy is composed of two products A and B, whose prices and production details are given below:

| **Product** | **Quantity produced in 2013** | **Quantity produced in 2014** | **Product unit prices in 2013** | **Product unit prices in 2014** |
|---|---|---|---|---|
| A | 250 | 253 | 10.5 | 11 |
| B | 149 | 174 | Unknown | 6.5 |

Assuming 2013 is the base year for measuring GDP and the GDP deflator for the economy in 2014 is 103.5, the unit price of B in 2013 is *closest* to:

A. 5.5.
B. 6.5.
C. 7.5.

13. If the GDP deflator values for 2012 and 2014 were 185 and 192.7 respectively, the annual growth rate of the overall price level is *closest* to:

A. 2.06%.
B. 4.16%.
C. 5%.

14. A GDP deflator greater than one *least likely* indicates that an economy has experienced:

A. inflation.
B. deflation.
C. stagflation.

15. Nominal GDP is *best* described as:

A. a measure of total expenditures at current prices.
B. the value of goods and services at base year prices.
C. a measure of total expenditures at base year prices.

16. During the 10 year period from 2000 to 2010, the annual value of Pakistan's final goods and services increased from $75 billion to $150 billion. Over that time period, the GDP deflator increased from 120 to 180. Over the decade, Pakistan's real GDP increased by approximately:

A. 33%.
B. 50%.
C. 100%.

17. The denominator of the GDP price deflator reflects:

A. the value of base year output at current prices.

B. the value of current year output at current prices.
C. the value of current year output at base year prices.

**LO.d: Compare GDP, national income, personal income, and personal disposable income.**

18. Consider the following data for 2014 for a hypothetical country:

| Account name | Amount ($ trillions) |
|---|---|
| Consumption | 26.0 |
| Statistical discrepancy | 0.4 |
| Capital consumption allowance | 1.2 |
| Government spending | 6.5 |
| Imports | 2.7 |
| Gross private domestic investment | 3.0 |
| Exports | 2.5 |

Based only on the given data, the national income for 2014 is *closest* to:
A. 31.7.
B. 33.7.
C. 35.3.

19. Consider the following data for 2014 for a hypothetical country:

| Account name | Amount ($ trillions) |
|---|---|
| National income | 300.0 |
| Indirect business taxes | 17.8 |
| Corporate income taxes | 24.2 |
| Undistributed corporate profits | 59.6 |
| Transfer payments | 18.5 |
| Personal taxes | 44.4 |

Based only on the given data, the personal income for 2014 is *closest* to:
A. 172.5.
B. 198.4.
C. 216.9.

20. Consider the following data for 2014 for a hypothetical country:

| Account name | Amount ($ trillions) |
|---|---|
| National income | 300.0 |
| Indirect business taxes | 17.8 |
| Corporate income taxes | 24.2 |
| Undistributed corporate profits | 59.6 |
| Transfer payments | 18.5 |
| Personal taxes | 44.4 |

Based only on the given data, the personal disposable income is *closest* to:
A. 172.5.

B. 198.4.
C. 216.9.

21. Consider the following data for 2014 for a hypothetical country.

| **Account name** | **Amount ($ trillions)** |
|---|---|
| Compensation of employees | 200.0 |
| Corporate and government profits before taxes | 298.6 |
| Interest income | 45.6 |
| Unincorporated business net income proprietor's income | 32.5 |
| Transfer payments | 15.0 |
| Rent | 49.5 |
| Indirect business taxes less subsidies | 25.5 |
| Statistical discrepancy | 1.5 |

Based only on the given data, the national income is *closest* to:
A. 636.7
B. 650.2
C. 651.7

22. An analyst has gathered the following information about a small country:

| **Account Name** | **Amount (£ million)** |
|---|---|
| Consumption | 30.0 |
| Statistical discrepancy | 1.0 |
| Capital consumption allowance | 3.0 |
| Government spending | 7.6 |
| Imports | 3.4 |
| Gross private domestic investment | 8.0 |
| Exports | 3.0 |

Based only on the data given, the national income and the gross domestic product are:
A. 41.2 and 45.2.
B. 45.2 and 41.2.
C. 46.2 and 42.2.

23. Which of the following is *most likely* added to national income when calculating personal income from national income for a given year?
A. Transfer payments.
B. Indirect business taxes.
C. Personal consumption expenditures.

**LO.e: Explain the fundamental relationship among saving, investment, the fiscal balance, and the trade balance.**

24. Two analysts make the following statements:

Analyst 1: A fiscal deficit implies that the private sector must save more than it invests or the country must run a trade deficit.
Analyst 2: A fiscal deficit implies that the private sector must save less than it invests or the country must run a trade deficit.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. None.

25. The fundamental relationship among saving, investment, the fiscal balance and the trade balance implies that the domestic saving must equal:
A. Investment spending + Government deficit - Net exports.
B. Investment spending + Government deficit + Net exports.
C. Investment spending – Government deficit + Net exports.

26. Consider the following data for 2014 for a hypothetical country.

| **Account name** | **Amount ($ trillions)** |
|---|---|
| Domestic savings | 100 |
| Government deficit | 56 |
| Net exports | 32 |

Based only on the given data, the investment spending is *closest* to:
A. 12.
B. 24.
C. 80.

27. Consider the following data for 2014 for a hypothetical country.

| **Account name** | **Amount ($ trillions)** |
|---|---|
| Investment spending | 200 |
| Government surplus | 16 |
| Net imports | 18 |

Based only on the given data, the domestic saving is *closest* to:
A. 166
B. 200
C. 234

28. Because of a sharp increase in real estate values, the household sector has decreased the fraction of disposable income that it saves. If output and investment spending remain unchanged, which of the following is the *most likely* scenario?
A. A decrease in net exports and increased capital inflow.
B. A decrease in net exports and decreased capital outflow.
C. An increase in net exports and decreased capital outflow.

**LO.f: Explain the IS and LM curves and how they combine to generate the aggregate demand curve.**

29. The curve that represents combination of income and the real interest rate at which planned expenditure equals income is *most likely* the:
    A. LM curve.
    B. IS curve.
    C. Aggregate demand curve.

30. The curve that represents combinations of income and the interest rate at which the demand for real money balances equals supply is *most likely* the:
    A. IS curve.
    B. LM curve.
    C. Aggregate demand curve.

31. Which of the following *best* describes the relationship depicted by the IS curve?
    A. When interest rates are high, investments rise and therefore income must rise as well.
    B. When interest rates are high, investments fall and therefore income must fall as well.
    C. Interest rates have no impact on the investment and income.

32. Which of the following *best* describes the relationship depicted by the LM curve?
    A. When income increases, the demand for money increases and therefore interest rate must increase as well.
    B. When income increases, the demand for money decreases and therefore interest rate must decrease as well.
    C. Income has no impact on the demand for money and interest rates.

33. Which of the following *best* describes the relationship shown by the AD curve?
    A. When price level decreases, the quantity of goods and services demanded decreases.
    B. When price level decreases, the quantity of goods and services demanded increases.
    C. Price level has no impact on the quantity of goods and services demanded.

34. A decrease in government spending would *most likely* shift the:
    A. IS curve and the LM curve.
    B. IS curve and the aggregate demand curve.
    C. LM curve and the aggregate demand curve.

35. A decrease in the nominal money supply would *most likely* shift the:
    A. IS curve and the LM curve.
    B. IS curve and the aggregate demand curve.
    C. LM curve and the aggregate demand curve.

36. A decrease in the price level would *most likely* shift the:
    A. IS curve.
    B. LM curve.
    C. Aggregate demand curve.

37. As the price level increases along the aggregate demand curve, the interest rate is *most likely* to:
    A. decline.
    B. increase.
    C. remain unchanged.

**LO.g: Explain the aggregate supply curve in the short run and long run.**

38. Two analysts make the following statements:
    Analyst 1: The short run aggregate supply curve is vertical and the long run aggregate supply curve is upward sloping.
    Analyst 2: The short run aggregate supply curve is upward sloping and the long run aggregate supply curve is vertical.
    Which analyst is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

39. If rents were automatically adjusted for changes in the price level, the short-run aggregate supply curve would *most likely* be:
    A. flatter.
    B. steeper.
    C. unchanged.

40. In the short run, the aggregate supply curve is *best* described as:
    A. flat because the price is more flexible than output in the short run.
    B. flat because output is as flexible as prices in the short run.
    C. upward sloping because input prices do not fully adjust to the price level in the short run.

**LO.h: Explain causes of movements along and shifts in aggregate demand and supply curves.**

41. The table below presents several combinations of a factor affecting the aggregate demand curve and the associated shift in AD curve. Which of the following relationships is *least accurate*?

| | Increase in factor | Shifts the AD curve | Reason |
|---|---|---|---|
| A. | Housing prices | Rightward | Lower investment |
| B. | Stock prices | Rightward | Higher consumption |
| C. | Exchange rate | Leftward | Lower exports and higher imports |
| | *Exchange rate is foreign currency per unit of domestic currency | | |

42. The short run aggregate supply curve (SRAS) will *most likely* shift to the right due to an increase in:
    A. supply of human capital.
    B. nominal wages.

C. business taxes.

43. The aggregate demand curve will *most likely* shift to the right due to a(n):
    A. boom in the stock market.
    B. increase in taxes.
    C. decrease in real estate values.

44. Which of the following is *most likely* to cause a decrease in aggregate demand?
    A. A weak domestic currency.
    B. A decrease in interest rates.
    C. Expectations of lower inflation rates in the near future.

45. Which of the following is *most likely* to cause the long-run aggregate supply curve to shift to the right?
    A. A decline in productivity.
    B. An increase in productivity.
    C. An increase in corporate taxes.

46. Decreased household wealth will *most likely* cause a decrease in:
    A. household saving.
    B. investment expenditures.
    C. consumption expenditures.

**LO.i: Describe how fluctuations in aggregate demand and aggregate supply cause short-run changes in the economy and the business cycle.**

47. A decrease in aggregate demand will *least likely*:
    A. lower real GDP.
    B. increase unemployment rate.
    C. raise price level.

48. Which of the following conditions is *least likely* to occur if the economy is in expansion caused by an increase in AD?
    A. Corporate profits will rise.
    B. Commodity prices will decline.
    C. Interest rates will rise.

49. An increase in aggregate supply will *most likely*:
    A. raise real GDP.
    B. increase unemployment rate.
    C. raise price level.

**LO.j: Distinguish between the following types of macroeconomic equilibria: long-run full employment, short-run recessionary gap, short-run inflationary gap, and short-run stagflation.**

50. Shifts in aggregate demand will *least likely* cause:
    A. a recessionary gap.
    B. an inflationary gap.
    C. stagflation.

51. Which of the following *best* describes a recessionary gap?
    A. Aggregate demand has increased and real GDP is more than potential GDP.
    B. Aggregate demand has decreased and real GDP is less than potential GDP.
    C. Aggregate demand has increased and real GDP is less than potential GDP.

52. If the economy is in an inflationary gap, the short run aggregate supply curve will *most likely*:
    A. decrease.
    B. increase.
    C. remain the same.

53. Which of the following *best* describes an inflationary gap?
    A. Aggregate demand has increased and real GDP is more than potential GDP.
    B. Aggregate demand has decreased and real GDP is less than potential GDP.
    C. Aggregate demand has increased and real GDP is less than potential GDP.

**LO.k: Explain how a short-run macroeconomic equilibrium may occur at a level above or below full employment.**

54. The government of a country experiencing full employment depreciates its currency in order to reduce a trade deficit. As a result, which of the following will *most likely* cause the country's domestic spending to decline relative to income?
    A. income effect.
    B. substitution effect.
    C. wealth effect.

**LO.l: Analyze the effect of combined changes in aggregate supply and demand on the economy.**

55. If both aggregate supply and aggregate demand increase, then:
    A. inflation increases.
    B. unemployment decreases.
    C. nominal GDP increases.

56. If both aggregate supply and aggregate demand decrease, then:
    A. real GDP decreases.
    B. employment increases.
    C. inflation increases.

**LO.m: Describe sources, measurement, and sustainability of economic growth.**

57. The growth of the economy will *least likely* be affected by:
    A. the workforce attending an average of 50 hours of training per year.
    B. an increase in the labor force that is offset by a decrease in the average hours worked per worker, making the total hours worked unchanged.
    C. when capital depreciation exceeds gross investment within the economy.

58. Which of the following is the *most* practical approach to estimate sustainable growth rate?
    A. Weighted average of capital and labor growth rates.
    B. Growth in labor force plus growth of labor productivity.
    C. Growth in total factor productivity plus growth in the capital-to-labor ratio.

59. Which of the following can *least likely* be measured directly?
    A. Potential GDP.
    B. Labor productivity.
    C. Capital productivity.

**LO.n: Describe the production function approach to analyzing the sources of economic growth.**

60. Consider the following Solow growth accounting equation:
    Potential output growth = 2.0 + 0.8 * Growth of Labor + 0.3 * Growth of capital
    The intercept (2.0) in this equation is *best* interpreted as:
    A. the long-run sustainable growth rate.
    B. the growth rate of total factor productivity
    C. above trend economic growth that is unlikely to be sustained.

61. Consider the following Solow growth accounting equation:
    Potential output growth = 2.0 + 0.8 * Growth of Labor + 0.3 * Growth of capital
    The coefficient on the growth rate of labor (0.8) in this equation is *best* interpreted as:
    A. the labor force participation rate.
    B. the marginal productivity of labor.
    C. the share of income earned by labor.

**LO.o: Distinguish between input growth and growth of total factor productivity as components of economic growth.**

62. In the neoclassical model, a decrease in total factor productivity reflects a decrease in:
    A. returns to scale.
    B. output for given inputs.
    C. the sustainable growth rate.

63. The main factor affecting economic growth in developed countries is the:
    A. increase in supply of physical capital.
    B. increase in availability of natural resources.
    C. advances in technology.

64. The income differences between emerging market countries and developed countries will converge over time *most likely* due to:
    A. diminishing overall productivity.
    B. diminishing marginal productivity of labor.
    C. diminishing marginal productivity of capital.

## Solutions

1. B is correct. With no foreign sector, GDP is calculated as Y = C + I + G
   Y = 3,500 - 9 * T + 700 – 35 * r + 1,100
   Y = 3,500 - 9 * (350 + 2 * r) + 700 – 35 * r + 1,100
   Y = 2150 – 53 * r
   If r = 2%, then Y = 2150 – 53 * 0.02 = 2149.

2. B is correct. Using the expenditures approach:
   GDP = Consumer spending on goods and services + Business gross fixed investment + Change in inventories + Government spending on goods and services + Government gross fixed investment + Exports – Imports + Statistical discrepancy
   GDP = 986,070 + 397,500 – 79,600 + 416,700 + 95,230 + 329,900 – 360,990 – 3,960 = 1,780,850

3. A is correct. The value of labor used in activities not sold in the market (such as commuting) and the by-products of production process that do not have an explicit market value (such as environmental damage caused by production) are excluded from GDP.

4. C is correct. GDP is most appropriately described as the aggregate income earned by all households, all companies, and the government within the economy in a given period of time. Option A is not correct because it does not indicate 'final goods and services'. It also does specify the time period.

5. C is correct. Environmental damages caused by manufacturing activity are by-products, which do not have any explicit market value, so these are not included in GDP.

6. C is correct. Government transfer payments are excluded from GDP. An increase in imports decreases GDP. Investment in capital goods, increases a country's GDP.

7. A is correct. Chinese GDP is the total market value of all final goods and services produced in a given time period within China. The rice was produced in China and counts towards Chinese GDP.

8. B is correct. The value added by the sculptor is $3,000 - $1,000 = $2,000.

9. C is correct. GDP includes only the value of final goods and ignores intermediate goods to avoid double counting.

10. B is correct. The value added by the final step is: $8,000 – $3,000 = $5,000.

11. C is correct.

| | Nominal GDP | Real GDP |
|---|---|---|

| | | |
|---|---|---|
| 2013 | 3,900 * 10 + 3,000 * 58 = 213,000 | 213,000 |
| 2014 | 4,100 * 11 + 2,800 * 62 = 218,700 | 4,100 * 10 + 2,800 * 58 = 203,400 |

GDP deflator = Nominal GDP / Real GDP * 100
= value of current output at current prices/ value of current output at base year prices * 100
= 218,700 / 203,400 * 100 = 107.5

12. B is correct.
Nominal GDP (2014) = 253 * 11 + 174 * 6.5 = 3914
Real GDP (2014) = Nominal GDP / GDP deflator * 100 = 3914/103.5 * 100 = 3781.64
Real GDP (2014) = $P^A_{2013} * Q^A_{2014} + P^B_{2013} * Q^B_{2014}$
3781.64 = $10.5 * 253 + P^B_{2013} * 174$
$P^B_{2013}$ = 6.46.

13. A is correct. $(192.7/185)^{1/2} - 1 = 2.06\%$.

14. B is correct. The GDP Deflator = Nominal GDP/Real GDP. To get a ratio greater than 1, nominal GDP exceeds real GDP, which indicates that prices have increased and, accordingly, inflation has occurred. Stagflation refers to a situation where economic growth has stagnated and there is inflation.

15. A is correct. Nominal GDP is described as a measure of total expenditures at current prices.

16. A is correct. Real GDP in the first year was 75/1.2 = 62.5 billion. In the last year it was 150/1.8 = 83.33 billion. (83.33 – 62.5)/62.5 = 0.33 or 33.33%.

17. C is correct. GDP deflator = (Value of current year output at current year prices / the value of current year output at base year prices) *100.

18. B is correct. GDP = Consumption + Gross private domestic investment + Government spending + Exports – Imports
= 26.0 + 3.0 + 6.5 + 2.5 – 2.7 = 35.3.
National income = GDP – CCA – Statistical discrepancy = 35.3 – 1.2 – 0.4 = 33.7

19. C is correct. Personal income = National income – indirect business taxes – Corporate income taxes – Undistributed corporate profits + Transfer payments
= 300.0 – 17.8 – 24.2 – 59.6 + 18.5 = 216.9.

20. A is correct. Personal income = National income – indirect business taxes – Corporate income taxes – Undistributed corporate profits + Transfer payments
= 300.0 – 17.8 – 24.2 – 59.6 + 18.5 = 216.9.
Personal disposable income = Personal income – personal taxes
= 216.9 – 44.4 = 172.5.

21. C is correct. National income = Compensation of employees + Corporate and government profit before taxes + Interest income + Unincorporated business net income proprietor's income + Rent + Indirect business taxes less subsidies
= 200.0 + 298.6 + 45.6 + 32.5 + 49.5 +25.5 = 651.7

22. A is correct. GDP = Consumption + Gross private domestic investment + Government Spending + Exports – Imports = 30 + 8 + 7.6 + 3 - 3.4 = 45.2
National income = GDP – CCA – Statistical discrepancy = 45.2 – 3 – 1 = 41.2

23. A is correct. Personal income = National income − Indirect business taxes − Corporate income taxes − Undistributed corporate profits + Transfer payments.

24. A is correct. A fiscal deficit [(G – T) > 0] implies that the private sector must save more than it invests [(S – I) > 0] or the country must run a trade deficit [(X – M) < 0]

25. B is correct. S = I + (G – T) + (X – M). Savings = Investment spending + Government deficit + Net exports.

26. A is correct. S = I + (G – T) + (X – M). I = 100 – 56 – 32 = 12.

27. A is correct. S = I + (G – T) + (X – M). S = 200 + (-16) + (-18) = 166.

28. B is correct. The fundamental relationship between saving, investment, the fiscal balance, and the trade balance is S = I + (G – T) + (X – M). Given the levels of output and investment spending, a decrease in saving (increase in consumption) must be offset by either a decrease in the fiscal deficit or a decrease in net exports. Decreasing the fiscal deficit is not one of the choices, so a decrease in net exports and corresponding decrease in net capital outflows (decreased lending to foreigners and/or decreased purchases of assets from foreigners) is the correct response.

29. B is correct. The IS curve represents combinations of income and the real interest rate at which planned expenditure equals income.

30. B is correct. The LM curve represents combinations of income and the interest rate at which the demand for real money balances equals the supply.

31. B is correct. IS curve shows an inverse relationship between income and the real interest rate. When interest rates are high, investments fall and therefore income must fall as well.

32. A is correct. The LM curve shows an upward sloping relationship between i and Y. The increase in income causes the demand for money to increase. However, the money supply is unaffected by the increase in income. The only way that money demand and money supply can be equal again is if interest rates also increase to reduce money demand.

33. B is correct. The AD curve depicts an inverse relationship between the price level and real income/output. When price level decreases, the quantity of goods and services demanded increases.

34. B is correct. The IS curve represents the combinations of income and the real interest rate at which planned expenditure equals income. Equivalently, it represents combinations such that S (Y) = I (r) + (G – T) + (X – M), where S (Y) indicates that planned saving is a (increasing) function of income and I (r) indicates that planned investment is a (decreasing) function of the real interest rate.

    To maintain this relationship, a decrease in government spending (G) requires a decrease in saving at any given level of the interest rate (r). This implies a decrease in income (Y) at each interest rate level—a leftward shift of the IS curve. Unless the LM curve is vertical, the IS and LM curves will intersect at a lower level of aggregate expenditure/income. Since the LM curve embodies a constant price level, this implies a decrease in aggregate expenditure at each price level—a leftward shift of the Aggregate Demand curve.

35. C is correct. The LM curve represents the combinations of income and the interest rate at which the demand for real money balances equals the supply. For a given price level, a decrease in the nominal money supply is also a decrease in the real money supply. To decrease the demand for real money balances, either the interest must rise or income must decrease. Therefore, at each level of the interest rate, income (= expenditure) must decrease—a leftward shift of the LM curve.

    Since the IS curve is downward sloping (higher income requires a lower interest rate), a leftward shift in the LM curve means that the IS and LM curves will intersect at a lower level of aggregate expenditure/income. This implies a lower level of aggregate expenditure at each price level—a leftward shift of the Aggregate Demand curve.

36. B is correct. The LM curve represents the combinations of income and the interest rate at which the demand for real money balances equals the supply. For a given nominal money supply, a decrease in the price level implies an increase in the real money supply. To increase the demand for real money balances, either the interest must decrease or income must increase. Therefore, at each level of the interest rate, income (= expenditure) must increase—a rightward shift of the LM curve.

37. B is correct. An increase in the price level decreases the real money supply and shifts the LM curve to the left. Since the IS curve is downward sloping, the IS and LM curves will intersect at a lower level of income and a higher interest rate.

38. B is correct. The short run aggregate supply curve is upward sloping and the long run aggregate supply curve is vertical.

39. B is correct. The slope of the short-run aggregate supply curve reflects the extent to which rents and other input costs adjust to the overall price level. Automatic adjustment of rent

would reduce the impact of price changes on profitability. Hence, the firms would not adjust output as much in response to changing output prices – the SRAS curve would be steeper.

40. C is correct. The short run aggregate supply curve is upward sloping because input prices do not fully adjust to the price level in the short run.

41. A is correct. If housing prices rise, the aggregate demand curve will shift to the right because of higher consumption (wealth effect), not lower investments.

42. A is correct. An increase in the supply of human capital will increase the resource base and cause the SRAS to shift to the right.

43. A is correct. A boom in the stock market increases the value of financial assets and household wealth. An increase in household wealth increases consumer spending and shifts the aggregate demand curve to the right.

44. C is correct. Expectations of lower inflation rates in the near future will entice the household sector to decrease consumption expenditures in the present which decreases the aggregate demand.

45. B is correct. An increase in productivity shifts the long-run aggregate supply curve to the right.

46. C is correct. As asset values decrease, consumers save more and spend less out of current income since they will not be able to meet their wealth accumulation goals. Therefore, a decrease in household wealth results in a leftward shift in the aggregate demand curve.

47. C is correct. A decrease in AD lowers real GDP, increases the unemployment rate and decreases the price level.

48. B is correct. If the economy is in expansion caused by an increase in AD, then commodity prices will increase.

49. A is correct. An increase in AS raises real GDP, lowers the unemployment rate and the aggregate level of prices.

50. C is correct. A right-shift in aggregate demand can result in an inflationary gap. A left-shift in aggregate demand can result in a recessionary gap. Stagflation is most likely caused due to a sudden change in short-run aggregate supply.

51. B is correct. When aggregate demand has decreased it is referred to as a recessionary gap because the real GDP is less than potential GDP.

52. A is correct. In an inflationary gap, there is an upward pressure on input prices. As input prices increase, SRAS decreases.

53. A is correct. When aggregate demand has increased, it is referred to as an inflationary gap because the real GDP is more than the potential GDP.

54. C is correct. At full employment, a weaker currency reduces the purchasing power of all domestic currency denominated assets. Households respond by reducing general expenditures and increasing savings. This is known as the wealth effect.

55. B is correct. Higher aggregate demand and higher aggregate supply raise real GDP and lower unemployment.

56. A is correct. Lower aggregate demand and lower aggregate supply lower the real GDP.

57. B is correct. The total hours worked remains unchanged so the growth of the economy will not change.

58. B is correct. Output growth is equal to the growth rate of labor force plus the growth rate of labor productivity i.e. output per worker. Unlike total factor productivity, output per worker is observable, so this is the most practical way to approach estimation of sustainable growth rate.

59. A is correct. Labor and capital productivity can be measured directly.

60. B is correct. The intercept is the growth rate of total factor productivity.

61. C is correct. In the standard Solow growth accounting equation, the coefficient on each factor's growth rate is its share of income.

62. B is correct. TFP is a scale factor primarily reflecting technology. A decrease in TFP implies the output decreases for any level of factor inputs.

63. C is correct. Technology is the main factor affecting economic growth in developed countries.

64. C is correct. The benefit of an additional unit of capital in emerging market countries is much higher than the benefit of an additional unit of capital in developed countries. This is because developed countries have a much higher level of capital relative to emerging market countries.

**LO.a: Describe the business cycle and its phases.**

1. Assume economic activity is decelerating, inflation is accelerating, and businesses have slowed their rate of hiring. The economy is *most likely* in which phase of the business cycle?
   A. Peak.
   B. Late expansion.
   C. Early expansion.

2. Two analysts make the following statements:
   Analyst 1: Recessions start when the central bank runs out of foreign reserves.
   Analyst 2: Recessions start when real GDP has two consecutive quarters of negative growth.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Both.

3. During the early expansion phase of a business cycle, inflation is *most likely* to:
   A. pick up modestly.
   B. decelerate but with a lag.
   C. remain moderate and may continue to fall.

4. A recession is *least likely* associated with:
   A. rising unemployment.
   B. declining capital spending.
   C. stable inflation.

5. In a business cycle, a trough is *most likely* to be followed by a/an:
   A. contraction.
   B. expansion.
   C. peak.

6. The unemployment rate is *most likely* to rise during which phase of the business cycle?
   A. contraction.
   B. early expansion.
   C. peak.

7. An analyst states that 'Inflation picks up modestly during this phase of the business cycle.' Which phase is she *most likely* referring to?
   A. Contraction
   B. Early expansion
   C. Late expansion

8. Which of the following statements with respect to the boom phase of the economic cycle are *most likely* correct?
   I. Demand for factors of production may exceed supply and hence the economy may experience shortages.

II. Companies might over-invest in production capacity and this could possibly trigger the next recession.

A. Statement I.
B. Statement II.
C. Both.

**LO.b: Describe how resource use, housing sector activity, and external trade sector activity vary as an economy moves through the business cycle.**

9. Which of the following goods is *most likely* to have the most pronounced cyclical behavior?
   A. Durable goods.
   B. Non-durable goods.
   C. Services

10. Analysts closely follow new orders for capital equipment to understand an economy's trend, but exclude defense and aircraft orders. The *most likely* reason is:
    A. to avoid double counting.
    B. the military is considered public sector.
    C. defense and airlines tend to place large infrequent orders delivered over multiple years, which create a false signal for the index.

11. Construction orders are less sensitive to business cycles as compared to equipment orders because:
    A. business values light equipment less than structures and heavy machinery.
    B. they are difficult to cancel as compared to equipment orders.
    C. businesses are uncertain about cyclical directions.

12. Inventories can reflect growth because they:
    A. determine the availability of goods for sale.
    B. fluctuate dramatically over the business cycle.
    C. reflect general business sentiment.

13. Two analysts made the following statements:
    Analyst 1: Inventories tend to rise when inventory-sales ratios are low.
    Analyst 2: Inventories tend to rise when inventory-sales ratios are high.
    Which analyst is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither .

14. Inventory levels decline early in a recovery because:
    A. businesses increase production because of increased economic activity.
    B. sales outstrip production.
    C. businesses need profit.

15. Which of the following goods have a *longer* useful life?

A. Appliances.
B. Medicine.
C. Clothing.

16. Temporary earnings fluctuations *least likely* provide a guide to:
    A. savings rate.
    B. spending on services.
    C. spending on durable goods.

17. Housing sector is *more* sensitive than other sectors to which of the following?
    A. Interest rates.
    B. Government spending.
    C. Permanent income.

18. Buying a house *most likely* reflects:
    A. Affordability, the rate of family formation and speculation on housing prices.
    B. the rate of family formation.
    C. speculation on housing prices.

19. Imports *most likely* respond to:
    A. pace of global growth.
    B. the level of exports.
    C. pace of domestic GDP growth.

20. Exports *most likely* respond to:
    A. the level of imports.
    B. pace of global growth.
    C. pace of domestic GDP growth.

**LO.c: Describe theories of the business cycle.**

21. The real business cycle (RBC) model *most likely* suggests that:
    A. monetary variables have a major impact on GDP growth.
    B. individuals are unemployed because their asking wages are too high.
    C. governments should intervene when the economy is in contraction.

22. Which of the following is the main difference between New Classical and Neo-Keynesian models?
    A. New Classical models are monetarist, whereas Neo-Keynesian models are not.
    B. New Classical models use utility-maximizing agents, whereas Neo-Keynesian does not.
    C. New Classical models assume that prices adjust quickly to changes in supply and demand, whereas Neo-Keynesians assume that prices adjust slowly.

23. Two analysts make the following statements:
    Analyst 1: The Austrian economic school attributes the primary cause of business cycle to misguided government intervention.

Analyst 2: The Austrian economic school attributes the primary cause of business cycle to sticky price wage and wage expectations that exaggerate trends.
The statement made by which analyst is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

24. Which of the following business cycle models suggests that government should not intervene with monetary and fiscal policy?
A. Neoclassical model.
B. Keynesian model.
C. Monetarist model.

25. Monetarists advocate a very limited role for the government because they believe:
A. firms take time to adjust to systemic shocks to the economy.
B. government policies operate with a lag.
C. resource use is efficient with marginal revenue and cost equal.

26. Which of the following causes persistent unemployment in a basic RBC model?
A. Contractionary monetary policy causes a shock to real variables.
B. An individual's utility function who prefers leisure over consumption.
C. The economy returns to equilibrium promptly, thus persistent unemployment does not exist.

27. Which of the following concepts was covered by the Austrian school of thought, but not by the Neoclassical school of thought to explain the business cycle?
A. Interest for capital.
B. Money as a medium of exchange.
C. Wages paid to labor.

28. Which of the following is *most likely* a concept covered by the original Keynesian school of thought and not by the Neoclassical school?
A. Animal spirit.
B. Domino effect.
C. Sticky wages.

29. Which of the following is *least likely* to be a criticism of the Keynesian fiscal policy?
A. Government finances can move out of control due to greater debt.
B. Keynesian polices focus on the longer term.
C. Fiscal policy takes time to implement.

30. The Monetarists are *least likely* to criticize which of the following with respect to the Keynesian school of thought?
A. Keynesian model fails to recognize the importance of money supply.
B. Keynesian short term view fails to account for the long term costs of government intervention.

C. Keynesian policies fail to stimulate the economy even in the short-term.

**LO.d: Describe types of unemployment and measures of unemployment.**

31. Assuming that the working-age population is constant, if the labor force participation ratio declines while the number of people employed remains unchanged, the unemployment rate will most likely:
   A. increase.
   B. decrease.
   C. remain unchanged.

32. The following information applies to an economy:

| | |
|---|---|
| Total population | 2,200 |
| Working age population | 1,950 |
| Labor force | 1,500 |
| Underemployed | 240 |
| Unemployed | 190 |
| Discouraged workers | 160 |
| Frictionally unemployed | 50 |
| Voluntarily unemployed | 80 |

   The unemployment rate in the economy is *closest* to:
   A. 9.7%.
   B. 12.6%.
   C. 16.0%.

33. The unemployment rate is *best* described as the ratio of unemployed to:
   A. labor force minus frictionally unemployed.
   B. total population of people who are of working age.
   C. labor force.

34. Two analysts make the following statements:
   Analyst 1: Comparisons of unemployment among countries are impossible.
   Analyst 2: Comparisons of unemployment among countries must take into account different unemployment measurement methods.
   Which analyst's statement is *most likely* true?
   A. Analyst 1.
   B. Analyst 2.
   C. Neither.

35. Which of the following is the *most* appropriate reason why unemployment lags business cycle?
   A. Businesses are reluctant to dismiss and hire workers.
   B. Workers must give notice to employers before quitting jobs.
   C. It takes time to compile the employment data.

36. In a downturn, productivity *most likely*:
    A. falls.
    B. rises.
    C. remains the same.

37. The activity or participation ratio is a ratio of:
    A. labor force to total population of working age.
    B. employed population to total population of working age.
    C. actively seeking employment population to total population of working age.

38. Hidden unemployment is *least likely* to include:
    A. discouraged workers.
    B. underemployed workers.
    C. voluntarily unemployed.

**LO.e: Explain inflation, hyperinflation, disinflation, and deflation.**

39. Observations of inflation rate alone cannot be used to determine:
    A. deflation.
    B. stagflation.
    C. hyperinflation.

40. A decline in inflation, but still above zero level, is *best* known as :
    A. deflation.
    B. stagflation.
    C. disinflation.

41. Which of the following terms *best* describe a situation when inflation rate is less than zero percent?
    A. deflation.
    B. stagflation.
    C. disinflation.

42. Cordoba's economy slowed down due to a high inflation rate and a high level of unemployment. Which of the following did the economy of Cordoba *most likely* experience?
    A. Disinflation.
    B. Hyperinflation.
    C. Stagflation.

**LO.f: Explain the construction of indices used to measure inflation.**

43. The table below shows data of consumption baskets and prices for two years 2013 and 2014:

| **Goods** | **2013** | | **2014** | |
|---|---|---|---|---|
| | **Quantity** | **Price** | **Quantity** | **Price** |
| 1 lb tea | 100 lb | $3.6 | 130 lb | $3.9 |
| 1 l milk | 900 l | $2.5 | 950 l | $3.2 |

| | | | | |
|---|---|---|---|---|
| Apple (each) | 300 | $3.1 | 300 | $3.3 |

The value of the Paasche index is *closest* to:

A. 120.24.
B. 120.28.
C. 120.33.

44. The table below shows data of consumption baskets and prices for two years 2013 and 2014:

| **Goods** | **2013** | | **2014** | |
|---|---|---|---|---|
| | **Quantity** | **Price** | **Quantity** | **Price** |
| 1 lb tea | 100 lb | $3.6 | 130 lb | $3.9 |
| 1 l milk | 900 l | $2.5 | 950 l | $3.2 |
| Apple (each) | 300 | $3.1 | 300 | $3.3 |

The Laspeyres index is *closest* to:

A. 120.24.
B. 120.28.
C. 120.33.

45. The table below shows consumption baskets and prices for two years 2013 and 2014:

| **Goods** | **2013** | | **2014** | |
|---|---|---|---|---|
| | **Quantity** | **Price** | **Quantity** | **Price** |
| 1 lb tea | 100 lb | $3.6 | 130 lb | $3.9 |
| 1 l milk | 900 l | $2.5 | 950 l | $3.2 |
| Apple (each) | 300 | $3.1 | 300 | $3.3 |

The Fisher index is *closest* to:

A. 120.24.
B. 120.28.
C. 120.33.

46. A price index created by holding the composition of the consumption basket constant in an inflationary environment tends to:

A. overstate the actual cost of living.
B. understate the actual cost of living.
C. accurately track the actual cost of living.

47. The use of a fixed basket of goods and services to measure price indices will *least likely* result in:

A. Quality bias.
B. Quantity bias.
C. Substitution bias.

48. Which of the following statements regarding price indices is *least likely* correct?

A. The Fisher index is an arithmetic mean of the Laspeyres index and the Paasche index.

B. The Laspeyres index is a price index created by using a fixed basket of goods and services.
C. An upward bias in the inflation rate is created when new products are not included in the fixed basket of goods and services.

**LO.g: Compare inflation measures, including their uses and limitations.**

49. Policymakers often focus on core inflation when evaluating trends in the economy and making policy decisions. This is because:
    A. core inflation is less volatile compared to headline inflation.
    B. core inflation includes energy and food prices.
    C. is a better indicator of overall price changes compared to headline inflation.

50. Which of the following statements is *least accurate*?
    A. The PPI category weights can vary more widely than analogous CPI terms.
    B. The PPI can influence the future CPI.
    C. The PPI is used more frequently than CPI as a benchmark for adjusting labor contract payments.

**LO.h: Distinguish between cost-push and demand-pull inflation.**

51. In the short –run, a demand-pull inflation will *most likely* result in an increase in:
    A. employee wages.
    B. finished good prices.
    C. commodity prices.

52. A disease that increases employee illness will *most likely* increase:
    A. demand-pull inflation.
    B. cost-push inflation
    C. cost-pull inflation.

53. Two analysts made the following statements:
    Analyst 1: Cost-push inflation most likely occurs when unemployment rates are low.
    Analyst 2: Cost-push inflation most likely occurs when unemployment rate are high.
    Which analyst is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

54. Which of the following factors contribute the *most* towards cost push inflation?
    A. Capital expenditure.
    B. Raw material cost.
    C. Wages.

**LO.i: Describe economic indicators, including their uses and limitations.**

55. Which of the following would be *most* useful as a leading indicator to signal the start of an economic recovery?
    A. An increase in the industrial production index.
    B. An increase in the S&P 500 stock index.
    C. A decrease in the inventory – sales ratio.

56. Which of the following is *not* thought to be a lagging indicator for the US economy?
    A. Unit labor costs.
    B. Commercial and industrial loans.
    C. Average weekly initial claims for unemployment insurance.

57. A wider interest rate spread between 10-year treasury yields and overnight borrowing rates indicate an economic:
    A. upswing.
    B. downswing.
    C. stability.

58. Which of the following statements about economic indicators is *most likely* true?
    A. Inventory sales ratio is considered a coincident indicator because inventories start accumulating even with a slight dip in sales.
    B. Money supply is considered a lagging indicator because monetary policy takes time to be implemented.
    C. The stock index level is considered a leading indicator because stock movements offer a useful early signal on economic cycles.

## Solutions

1. A is correct. The peak phase is characterized by deceleration of economic activity, acceleration of inflation and a slowdown in hiring rate.

2. B is correct. Recessions start when real GDP has two consecutive quarters of negative growth.

3. C is correct. During the early expansion phase of a business cycle, inflation remains moderate and may continue to fall.

4. C is correct. A recession is associated with decelerating inflation.

5. B is correct. A trough is followed by an expansion.

6. A is correct. The unemployment rate rises in contraction, remains high in early expansion, and falls during peak.

7. C is correct. Inflation remains moderate but may fall during an early expansion. Generally, inflation picks up modestly during a late expansion, and decelerates with a lag during a contraction.

8. C is correct. Both statements are correct. The economy may face shortages because the demand for factors of production exceeds the supply. Furthermore, companies might overinvest in production capacity which can result in idling machines and workers if the economic growth slows down.

9. A is correct. Durable goods have a long useful life in comparison to non-durables and services. Therefore, consumers tend to delay purchase when economic outlook is not favorable.

10. C is correct. Business cycle indicators need to represent the activities in the whole economy and this should not be influenced by some particular sectors that may have uncorrelated fluctuations.

11. B is correct. It usually takes much longer time to plan and complete large construction projects than for equipment orders.

12. B is correct. Inventory level tend to forcefully move up or down.

13. A is correct. When the economy starts to recover, sales of inventories can outpace production, which results in low inventory-sales ratios. Companies then need to build inventory to meet demand.

14. B is correct. Companies are slow to increase production in early recovery phase because they want to first confirm that the recession is over.

15. A is correct. Appliances are durable goods whose life span can be extended with repairs. So consumers tend to delay replacement when the economic outlook is not favorable. Food and clothing are non-durable goods.

16. B is correct. Households adjust services consumption based on perceived permanent income level rather than temporary earning fluctuations. Savings rate and durable good consumption are more related to the short-term uncertainties caused by recession.

17. A is correct. Real estate purchases are usually financed with mortgage loans hence interest rate changes directly influence the monthly payment amounts.

18. A is correct. Family formation constitutes the actual need for housing, whereas speculation on housing prices reflects the fact that real estate has investment value.

19. C is correct. Imports reflect the domestic needs for foreign goods, which vary together with domestic economic growth.

20. B is correct. Exports reflect the foreign demands on domestic output, which depend on the conditions of global economy.

21. B is correct. As suggested by the earliest RBC models, a person is unemployed because he or she is asking for wages that are too high.

22. C is correct. A key feature of Keynesian macroeconomics is the stickiness of prices. In contrast, Classical views assume flexible price adjustments that ensure market clearing.

23. A is correct. The Austrian economic school attributes the primary cause of business cycle to misguided government intervention.

24. A is correct. The recommended policy of the Neoclassical model is that government should not intervene with monetary and fiscal policy.

25. B is correct. Monetarists believe that policy effects typically occur long after the need for which they were implemented. By the time the policy has an impact the original issue might no longer be relevant.

26. B is correct. This is because shocks in the standard New Classical model can only have a temporary effect. Unemployment can still exist when the labor market is cleared.

27. B is correct. The Austrian school shared some views with the Neoclassical school but also addressed two additional areas: 1) role of government and 2) money as a medium of exchange.

28. C is correct. Sticky wages was a concept covered by the Keynesian school of thought.

29. B is correct. Keynesian cyclical policies are focused on the short-term, not the long-term. The other two options represent valid criticisms.

30. C is correct. Monetarists are likely to raise the criticisms expressed in options A and B.

31. B is correct. For a given working-age population, a decline in the labor force participation rate, which is often the result of an increase in discouraged workers, reduces the labor force. If the number of people employed remain the same while the labor force is smaller, the number of workers defined to be unemployed must be smaller and the unemployment rate lower.

32. B is correct. Unemployment rate = Unemployed/Labor force * 100 = 190/1500 * 100 = 12.6%.

33. C is correct. The unemployment rate is the ratio of unemployed to labor force.

34. B is correct. Different countries use different statistical scope and ratio definitions and these differences have to be reconciled before meaningful conclusions can be made from cross-country comparisons.

35. A is correct. To reduce costs related to hiring and firing, businesses are reluctant to dismiss and hire workers.

36. A is correct. Because employers like to keep the workforce relatively stable, productivity falls as output declines in a downturn because it is measured as the ratio of output over hours worked.

37. A is correct. Activity ratio is the ratio of labor force (employed + actively seeking employment) to total population of working age.

38. C is correct. Hidden unemployment includes discouraged workers and underemployed workers. It does not include voluntarily unemployed.

39. B is correct. A high inflation rate alone does not indicate stagflation, which happens if high unemployment occurs together with high inflation.

40. C is correct. Disinflation is known as reduction of inflation from a higher to lower, but still above zero, level.

41. A is correct. Deflation corresponds to a negative inflation rate.

42. C is correct. Stagflation is an economic state resulting from a combination of a high inflation rate and a high level of unemployment.

43. A is correct. The Paasche index uses the current consumption of the basket.
= (130 * 3.9 + 950 * 3.2 + 300 * 3.3) / (130 * 3.6 + 950 * 2.5 + 300 * 3.1) * 100 = 120.24.

44. C is correct. The Laspeyres index assumes that the composition of consumption basket is constant.
    = (100 * 3.9 + 900 * 3.2 + 300 * 3.3) / (100 * 3.6 + 900 * 2.5 + 300 * 3.1) * 100 = 120.33.

45. B is correct.
    Fisher index is the geometric mean of Laspeyres and Paasche index
    The Laspeyres index assumes that the composition of consumption basket is constant.
    = (100 * 3.9 + 900 * 3.2 + 300 * 3.3) / (100 * 3.6 + 900 * 2.5 + 300 * 3.1) * 100 = 120.33.

    The Paasche index uses the current consumption of the basket.
    = (130 * 3.9 + 950 * 3.2 + 300 * 3.3) / (130 * 3.6 + 950 * 2.5 + 300 * 3.1) * 100 = 120.24.

    Fisher index = $(120.33 * 120.24)^{0.5}$ = 120.28.

46. A is correct. In a Laspeyres index upward biases such as substitution bias and quality bias tend to overstate the actual cost of living.

47. B is correct. Using a fixed basket of goods and services to measure price indices results in three biases: substitution bias, quality (not quantity) bias, and new product bias.

48. A is correct. The Fisher index is a geometric mean of the Laspeyres index and the Paasche index.

49. A is correct. Core inflation excludes food and energy prices. It is therefore less volatile compared to headline inflation.

50. C is correct. The CPI is typically used for this purpose, while the PPI is more closely connected to business contracts.

51. C is correct. The effect of demand-pull inflation is an increase in the aggregate demand, which in turn, leads to an increase in commodity prices in the short run.

52. B is correct. By increasing employee illness, the disease will decrease the output per hour per worker, which will increase the unit labor cost. As, the unit labor cost increases, cost-push inflation increases.

53. A is correct. When unemployment is below NAIRU, there is a shortage of labor that pushes up labor cost.

54. C is correct. This is because wages generally represent the biggest cost for most business. Cost-push inflation is also known as wage-push inflation.

55. B is correct. S&P 500 index is a leading indicator of economic activity and an increase in it is an indicator of rehiring at the start of a recovery.

56. C is correct. The average weekly initial claims for unemployment insurance is a leading indicator.

57. A is correct. Because long-term yields express market expectations about the direction of short-term interest rates, and rates ultimately follow the economic cycle up and down, a wider spread, by anticipating short rate increases, also anticipates an economic upswing.

58. C is correct. The stock prices are based on expected future performance.  Inventory sales ratio is a lagging indicator because inventories accumulate as sales initially decline and become depleted as sales pick up. Money supply is a leading indicator measuring the tightness or looseness of monetary policy.

**LO.a: Compare monetary and fiscal policy.**

1. Two analysts make the following statements:
   Analyst 1: Monetary policy seeks to influence the macro economy by influencing the quantity of money and credit in the economy. On the other hand, fiscal policy involves the use of government spending and taxation to influence economic activity.
   Analyst 2: Fiscal policy seeks to influence the macro economy by influencing the quantity of money and credit in the economy. On the other hand, monetary policy involves the use of government spending and taxation to influence economic activity.
   Which analyst is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Neither.

2. Which of the following is *most likely* to be a goal of fiscal policy?
   A. Influencing credit in the economy.
   B. Redistribution of wealth and income.
   C. Using taxes to influence economic activity.

**LO.b: Describe functions and definitions of money.**

3. To fulfill its role as a medium of exchange, money should *least likely*:
   A. have a known value.
   B. have a low value relative to its weight.
   C. be easily divisible.

4. Money is used to buy goods and services, does not perish physically, and defines the price of goods and services. The *most appropriate* terms for these functions of money are:
   A. medium of exchange, unit of account and store of wealth respectively.
   B. unit of account, medium of exchange and store of value respectively.
   C. medium of exchange, store of wealth and unit of account respectively.

5. The term used to describe notes and coins in circulation in an economy, plus other very highly liquid deposits is *most likely*:
   A. Broad money.
   B. Narrow money.
   C. Bank money.

6. To act as a liberating medium of exchange, money should *least likely* be:
   A. Easily divisible.
   B. Easy to counterfeit.
   C. High value relative to weight.

**LO.c: Explain the money creation process.**

7. If the reserve requirement for banks in an economy is 8%, the total money created from a deposit of $100 into an account is *closest* to:
   A. $800.
   B. $1,050.
   C. $1,250.

8. Given that the reserve requirement in an economy is 10 percent for banks, how much money can be created with a deposit of $200?
   A. $220.
   B. $1,800.
   C. $2,000.

**LO.d: Describe theories of the demand for and supply of money.**

9. The speculative demand for money refers to the demand to hold money:
   A. to use in the purchase of goods and services.
   B. as a buffer against unforeseen events.
   C. based on the opportunity or risks inherent in other financial instruments.

10. If the expected return on other assets fall, the speculative demand for money will:
    A. increase.
    B. decrease.
    C. remain unaffected.

11. A contraction in the money supply would *most likely*:
    A. lead to an increase in nominal interest rates.
    B. lead to a decrease in nominal interest rates.
    C. increase the equilibrium amount of money that economic agents would wish to hold.

12. As the gross domestic product (GDP) grows over time:
    A. transactions money balances increase and precautionary money balances decrease.
    B. transactions money balances decrease and precautionary money balances increase.
    C. both transactions and precautionary money balance increase.

13. Which of the following is *most likely* correct about the quantity equation of exchange?
    A. The velocity of money is assumed to be approximately constant.
    B. The spending, P * V, is approximately proportional to quantity of money, M.
    C. If money neutrality holds, an increase in the money supply, M, affects Y, real output.

14. Money balances held based on the potential opportunities or risks of other financial instruments are known as:
    A. transactions money balances.
    B. precautionary money balances.
    C. speculative money balances.

**LO.e: Describe the Fisher effect.**

15. According to the Fischer effect, a decrease in expected inflation will *most likely* decrease:
    A. both nominal and real interest rates.
    B. the nominal interest rate.
    C. the real interest rate.

16. Nominal interest rate *least likely* comprises:
    A. Real Interest rate.
    B. Actual Inflation.
    C. Risk premium.

**LO.f: Describe roles and objectives of central banks.**

17. The main long-run objective of most central banks is:
    A. fast economic growth.
    B. price stability.
    C. current account surplus.

18. The following table lists some responsibilities:

| | Responsibility |
|---|---|
| i | Conductor of monetary policy |
| ii | Lender of last resort |
| iii | Monopoly supplier of currency |
| iv | Supervisor of payments system |

    Which of the above *most likely* include the responsibilities of a central bank?
    A. i and ii.
    B. i, ii and iii.
    C. All of them.

**LO.g: Contrast the costs of expected and unexpected inflation.**

19. Due to high inflation, businesses constantly have to change the advertised prices of their goods and services. This is *best* described as:
    A. menu costs.
    B. shoe leather costs.
    C. inflation uncertainty.

20. Unexpected inflation *least likely*:
    A. leads to inequitable transfers of wealth between borrowers and lenders.
    B. gives rise to risk premia in borrowing rates and the prices of other assets.
    C. increases the information content of market prices.

21. Which of the following is *least likely* a cost associated with expected inflation?
    A. Demand costs.
    B. Menu costs.

C. Shoe leather costs.

**LO.h: Describe tools used to implement monetary policy.**

22. If a central bank announces an increase in its official interest rate, the money supply will *most likely*:
    A. increase.
    B. decrease.
    C. remain unaffected.

23. Assume that the central bank increases the reserve requirement. The *most likely* effect will be:
    A. a decrease in the money multiplier.
    B. an increase in the money supply.
    C. an increase in new deposits.

24. According to the monetary transmission mechanism, implementation of the monetary policy is *most likely* to work through the economy via:
    A. bank lending rates.
    B. exchange rates.
    C. both bank lending rates and exchange rates.

**LO.i: Describe the monetary transmission mechanism.**

25. A change in a central bank's policy rate will affect:
    A. asset prices only.
    B. expectations about future interest rates only.
    C. both asset prices and expectations about future interest rates.

26. Suppose that a central bank announces an increase in its official interest rate. What is the *most likely* effect of this announcement on inflation?
    A. Upward pressure on inflation.
    B. Downward pressure on inflation.
    C. No effect on inflation.

**LO.j: Describe qualities of effective central banks.**

27. The credibility of a central bank is important because:
    A. it is the lender of last resort.
    B. its targets can become self-fulfilling prophecies.
    C. it is the monopolistic suppliers of the currency.

28. A central bank determines the definition of inflation that it targets, the rate of inflation that it targets, and the horizon over which the target is to be achieved. It also decides the level of interest rates. The central bank is:
    A. operationally independent.

B. target independent.
C. both operationally and target independent.

29. The central bank in Sweden is tasked to hit a level of inflation determined by the government. This bank is *most likely* to be:
    A. operationally independent, but not target independent.
    B. target independent, but not operationally independent.
    C. Both operationally and target independent.

**LO.k: Explain the relationships between monetary policy and economic growth, inflation, interest, and exchange rates.**

30. If a central bank increases the money supply, this move will *most likely* lead to a:
    A. decline in nominal interest rates and a rise in aggregate price level.
    B. rise in nominal interest rate and a decline in aggregate price level.
    C. decline in nominal interest rates and decline in aggregate price level.

31. A decrease in a central bank's policy rate might be expected to increase inflationary pressure by:
    A. increasing consumer demand.
    B. increasing the foreign exchange value of the currency.
    C. driving down asset prices leading to a decrease in personal sector wealth.

32. An increase in the growth rate of money supply will:
    A. cause the domestic currency to appreciate relative to those of the country's trading partners.
    B. cause the domestic currency to depreciate relative to those of the country's trading partners.
    C. will have no effect on the exchange rate.

33. Demand shocks are a rise in inflation caused by:
    A. an increase in the cost of production.
    B. an increase in investment growth rates.
    C. a decline in consumers' confidence.

34. When the demand for money is infinitely elastic, further injections of money into the economy fails to affect real activity. This is known as:
    A. Bond market vigilante.
    B. Liquidity trap.
    C. Supply shock.

**LO.l: Contrast the use of inflation, interest rate, and exchange rate targeting by central banks.**

35. Central banks targeting low inflation usually do not set the inflation target at 0%. The *most likely* reason is:
    A. some inflation is viewed as being good for an economy.
    B. targeting zero percent inflation runs a higher risk of a deflationary outcome.
    C. it is very difficult to eliminate all inflation from a modern economy.

36. The *most likely* benefit of adopting an exchange rate target is:
    A. freedom to pursue redistributive fiscal policy.
    B. freedom to set interest rates according to domestic conditions.
    C. to “import” the inflation experience of the economy whose currency is being targeted.

37. Which of the following is *least likely* a feature of an inflation-targeting framework?
    A. A commitment to transparency.
    B. A central bank which is closely aligned with the government.
    C. A clear medium-term inflation target.

**LO.m: Determine whether a monetary policy is expansionary or contractionary.**

38. In an effort to influence the economy, a central bank conducted open market activities by buying government bonds. This implies that the central bank is *most likely* attempting to:
    A. expand the economy by increasing bank reserves.
    B. contract the economy through a higher policy interest rate.
    C. expand the economy through a higher policy interest rate.

39. Which of the following actions on the part of the central bank is *most* consistent with a contractionary monetary policy?
    A. Decreasing reserve requirements.
    B. Buying securities in the open market.
    C. Selling securities in the open market.

40. Monetary policy is most likely to be contractionary for:

| | **GDP growth rate** | **Inflation Target** | **Policy Rate** |
|---|---|---|---|
| A. | 3% | 2% | 6% |
| B. | 1% | 4% | 5% |
| C | 2% | 3% | 4% |

**LO.n: Describe limitations of monetary policy.**

41. Monetary policy is limited because central bankers:
    A. cannot control the inflation rate perfectly.
    B. are appointed by politicians and are therefore never truly independent.
    C. cannot control the amount of money that economic agents put in banks, nor the willingness of banks to make loans.

42. Which of the following statements about quantitate easing (QE) is *most* accurate? QE helps revive an ailing economy from:
    A. a liquidity trap.
    B. a deflationary trap.
    C. declining bank reserves and economic activity.

**LO.o: Describe roles and objectives of fiscal policy.**

43. Which of the following is *not* an objective of fiscal policy?
    A. Allocating resources among economic agents and sectors in the economy.
    B. Controlling level of money supply and interest rates.
    C. Influencing the level of economic activity and aggregate demand.

44. A government has a budget surplus when:
    A. tax revenues exceed government spending.
    B. government spending exceeds tax revenue.
    C. tax revenue is equal to government spending.

**LO.p: Describe tools of fiscal policy, including their advantages and disadvantages.**

45. If a government increases its spending on domestically produced goods and increases taxes by the same amount, the aggregate demand will *most likely*:
    A. increase.
    B. decrease.
    C. remain unchanged.

46. Which of the following is *not* a fiscal policy tool?
    A. A decrease in social transfer payment.
    B. An increase in value added taxes
    C. An increase in deposit requirements for the buying of houses.

47. Which of the following is difficult to change without giving considerable notice?
    A. Excise duty
    B. Value-added tax
    C. Employment taxes.

48. Pam explains to her colleagues that government borrowing may divert private sector investment from taking place. Which of the following is she *most likely* referring to?
    A. Crowding out effect.
    B. Expansionary fiscal policy.
    C. Ricardian equivalence.

49. Which of the following will *most likely* be levied a direct tax?
    A. Fuel.
    B. Inheritance.
    C. Gambling.

50. Which of the following is *least likely* to be a desirable attribute of a tax policy?
    A. Fairness.
    B. Revenue sufficiency.
    C. Transparency.

51. Which of the following is *least likely* to be an advantage of using fiscal policy tools?
    A. Capital spending is formulated and implemented with ease.
    B. Indirect taxes can generate revenue at little or no cost.
    C. Social policies can be adjusted instantly by increasing taxes.

52. Which of the following statements is *most likely* correct?
    Statement I: Discretionary fiscal policy requires timely decisions.
    Statement II: Non-discretionary fiscal policy refers to automatic stabilizers built into the system.
    Statement III: Discretionary policy deals with government spending while non-discretionary policy deals with taxes.
    A. Statements I and II.
    B. Statements I and III.
    C. Statements II and III.

**LO.q: Describe the arguments about whether the size of a national debt relative to GDP matters.**

53. A rise in government borrowing that reduces the ability of the private sector to access investment funds is *most likely* known as:
    A. Ricardian equivalence.
    B. crowding-out effect.
    C. Fisher effect.

54. The theory that private savings rise in anticipation of the need to repay principal on government debt is *most likely* known as:
    A. Ricardian equivalence.
    B. crowding-out effect.
    C. Fisher effect.

**LO.r: Explain the implementation of fiscal policy and difficulties of implementation.**

55. In an economy the marginal propensity to consume is 86% and the tax rate is 30%. If planned government expenditures are expected to increase by $2 billion, the increase in total incomes and spending ($ in billions) is *closest* to:
    A. $2.0.
    B. $2.5.
    C. $5.0.

56. During recession, the *most likely* steps implemented under fiscal policy would be to:
    A. decrease government spending or increase taxes.
    B. decrease government spending and decrease taxes.
    C. increase government spending or decrease taxes.

57. Given that the tax rate is 20% and the marginal propensity to spend is 85%, the fiscal multiplier is *closest* to:
    A. 1.20.
    B. 1.47.
    C. 3.13.

**LO.s: Determine whether a fiscal policy is expansionary or contractionary.**

58. An expansionary fiscal policy is *most likely* associated with:
    A. an increase in government spending on social benefits.
    B. crowding out of private investments.
    C. a decrease in capital gains tax rates.

59. A contractionary fiscal policy is *least likely* to include a decrease in:
    A. budget deficit.
    B. tax rates.
    C. government expenditures.

60. Which of the following statements is *most likely* correct?
    A. An expansionary fiscal policy followed by a tight monetary policy results in higher output and higher interest rates.
    B. A tight fiscal policy accompanied by an easy monetary policy causes the private sector to shrink.
    C. An easy fiscal policy and an easy monetary policy results in growing public sector, but shrinking private sector.

61. The Congo government decreased the reserve requirement. This is *most likely* to be an example of a/an:
    A. contractionary monetary policy.
    B. expansionary monetary policy.
    C. neutral monetary policy.

**LO.t: Explain the interaction of monetary and fiscal policy.**

62. What is the *most likely* economic outcome if expansionary fiscal policy is combined with contractionary monetary policy?
    A. Higher aggregate demand and higher interest rates, government spending increases.
    B. Lower aggregate demand, higher interest rates, and government spending decreases.
    C. Higher aggregate demand, lower interest rates, and government spending increases.

63. What is the *most likely* economic outcome if contractionary fiscal policy is combined with expansionary monetary policy?
    A. Higher interest rates and decreased government spending along with low private sector growth.
    B. Higher interest rates and increased government spending along with low private sector growth.
    C. Lower interest rates and decreased government spending along with high private sector growth.

64. What is the *most likely* economic outcome if contractionary fiscal policy is combined with contractionary monetary policy?
    A. Lower interest rates, higher GDP and contracted private sector.
    B. Higher interest rates, lower GDP and contracted private sector.
    C. Higher interest rates, lower GDP and expanded private sector.

65. The economy of Zimbabwe is slowing but policymakers take time to realize that. The data appears with considerable time lag and may be subject to revision. The lag described in this scenario is *most likely* a/an:
    A. Action lag.
    B. Impact lag.
    C. Recognition lag.

## Solutions

1. A is correct. Monetary policy seeks to influence the macro economy by influencing the quantity of money and credit in the economy, while fiscal policy involves the use of government spending and taxation to influence economic activity.

2. C is correct. The primary goal of a fiscal policy is to use taxation and spending to influence the economic activity.

3. B is correct. To fulfill its role as a medium of exchange, money should have a high value relative to its weight.

4. C is correct. Money can buy goods and services – medium of exchange.
   Money does not perish physically – acts as a store of wealth.
   Money can define price of goods and services – unit of account.

5. B is correct. Narrow money generally means notes and coins in circulation in an economy, plus other very highly liquid deposits.

6. B is correct. Money should be difficult to counterfeit for it to act as a liberating medium of exchange.

7. C is correct. The increase in money from an additional deposit in the banking system = new deposit/reserve requirement. = \$100/0.08 = 1250.

8. C is correct.
   $$\text{Money created} = \frac{\text{Deposit}}{\text{Reserve Requirement}} = \frac{200}{0.1} = 2{,}000$$

9. C is correct. Speculative demand for money relates to the demand to hold speculative money balances based on the potential opportunities or risks that are inherent in other financial instruments.

10. A is correct. If the expected return on other assets falls, then the opportunity cost of holding money also falls and can, in turn, lead to an increase in the speculative demand for money.

11. A is correct. Decreasing the supply of money, all other things being equal, will increase its "price," that is, the interest rate on money balances.

12. C is correct. As the gross domestic product (GDP) grows over time, both transactions and precautionary money balances increase.

13. A is correct. B is incorrect because the spending, P * Y, is approximately proportional to quantity of money, M. C is incorrect because if money neutrality holds, an increase in the money supply, M, does not affect Y, real output.

14. C is correct. The speculative demand for money relates to demand to hold speculative money balances based on the potential opportunities or risks that are inherent in other financial instruments.

15. B is correct. The Fisher effect states that the nominal interest rate is the sum of the real interest and the expected rate of inflation over a given time horizon. A decrease in expected inflation will result in a lower nominal rate.

16. B is correct. The three components of nominal interest rate are, compensation for expected inflation, real interest rate, and risk premium.

17. B is correct. Central banks normally have a variety of objectives, but the overriding one is nearly always price stability.

18. C is correct. All responsibilities given in the table are those of the central bank.

19. A is correct. The costs described are known as menu costs.

20. C is correct. Unexpected inflation reduces the information content of market prices.

21. A is correct. The costs associated with inflation are menu costs and shoe leather costs.

22. B is correct. Generally speaking, the higher the policy rate, the higher the potential penalty that banks will have to pay to the central bank. If they run short of liquidity, the greater will be their willingness to reduce lending, and the more likely that broad money growth will shrink.

23. A is correct. Increasing the reserve requirement will decrease the money supply, money multiplier and new deposits.

24. C is correct. In accordance to the monetary transmission mechanism, implementation of the policy is most likely to work through the economy via four channels i.e. bank lending rates, exchange rates, asset prices, and expectations or confidence.

25. C is correct. A change in a central bank's policy rate will affect both asset prices and expectations about future interest rates.

26. B is correct. The central bank's policy rate works through the economy via interconnected channels. An increase in the official interest rate will put a downward pressure on inflation.

27. B is correct. If a central bank operates within an inflation-targeting regime and if economic agents believe that it will achieve its target, this expectation will become embedded into wage negotiations, for example, and become a self-fulfilling prophecy.

28. C is correct. Central banks that are both operationally and target independent, not only decide the level of interest rates, but they also determine the definition of inflation that they target, the rate of inflation that they target, and the horizon over which the target is to be achieved.

29. A is correct. Banks tasked to hit a definition and level of inflation determined by the government are operationally independent. Target independent banks also determine the definition of inflation, the rate of inflation, and the horizon over which the target is achieved.

30. A is correct. An increase in the money supply leads to a decrease in nominal rates. Furthermore, on the basis of quantity theory of money, an increased money supply makes money less valuable, which increases aggregate price levels.

31. A is correct. If a decrease in the central bank's policy rate is successfully transmitted via the money markets to other parts of the financial sector, consumer demand might increase as the rate of interest on mortgages and other credit declines. This will put an upward pressure on consumer prices.

32. B is correct. An increase in the growth rate of money supply will cause the domestic currency to depreciate relative to those of the country's trading partners.

33. B is correct. Demand shocks cause a rise in inflation resulting from increased consumer confidence leading to more consumption as well as increased investment growth rates.

34. B is correct. A liquidity trap occurs when further injection of money into the economy does not affect real activity.

35. B is correct. When the bank targets inflation, the actual inflation may vary by some percentage. If it goes below zero percent, it results in negative inflation called deflation, which is not good for any economy.

36. C is correct. Note that interest rates have to be set to achieve this target and are therefore subordinate to the exchange rate target and partially dependent on economic conditions in the foreign economy.

37. B is correct. Inflation targeting requires an independent and credible central bank. A and C are features of an inflation-targeting framework.

38. A is correct. Buying government bonds results in an increase of the bank's reserves and increases banks' ability to lend, causing an increase in money growth through the multiplier mechanism and results in an expansion in the economy.

39. C is correct. When a central bank sells securities, bank reserves decrease. So the banks have to decrease their lending, thereby decreasing the money supply.

40. A is correct. Monetary policy is contractionary when the policy rate is above the neutral rate. Hence, when policy rate is 6% and neutral rate is 5% (3% + 2%), the policy is contractionary.

41. C is correct. Central bankers do not control the decisions of individuals and banks that can influence the money creation process.

42. C is correct. QE is an unconventional approach to monetary policy and is operationally similar to open market purchase operations, but conducted on a much larger scale. The idea is that additional reserves created by central banks would kick-start lending, which would eventually lead to an increase in real economic activity.

43. B is correct. Controlling level of money supply and interest rates is not an objective of fiscal policy.

44. A is correct. A government has a budget surplus when tax revenues exceed government spending.

45. A is correct. Aggregate spending will fall less than the tax rise by a factor of c (where c is the marginal propensity to consume). This additional output will, in turn, lead to further increases in income and output through the multiplier effect.

46. C is correct. Rises in deposit requirements for house purchases are intended to reduce the demand for credit for house purchases and hence would be considered a tool of monetary policy.

47. C is correct. Employment taxes apply to labor income and are direct taxes. Hence, they are difficult to change without giving considerable notice.

48. A is correct. Government borrowing may divert private sector investment from taking place. This effect is called the crowding out effect.

49. B is correct. Inheritance tax is a direct tax; fuel duties and taxes on gambling are indirect taxes.

50. C is correct. The four desirable attributes of a tax policy include fairness, revenue sufficiency, efficiency, and simplicity.

51. A is correct. Capital spending takes longer to formulate and implement, which makes it a disadvantage as a fiscal policy tool.

52. A is correct. Statement III is incorrect because government spending and taxes are tools of fiscal policies.

53. B is correct. A rise in government borrowing that reduces the ability of the private sector to access investment funds is known as crowding out effect.

54. A is correct. Ricardian equivalence states that private savings rise in anticipation of the need to repay principal on government debt.

55. C is correct. The fiscal multiplier is 1/ [1 – c*(1-T)] = 1/ [1 - 0.86 (1-0.3)] = 2.5.
    With government expenditure of $2 billion, total income and spending will rise by $2 billon * 2.5 = $ 5.0 billion.

56. C is correct. During a recession, the government will either increase government spending or decrease taxes.

57. C is correct.

$$\text{Fiscal Multiplier} = \frac{1}{[1 - c(1 - t)]} = \frac{1}{[1 - 0.85(1 - 0.2)]} = 3.13$$

58. B is correct. Expansionary policy increases government borrowing, which may divert private sector investment from taking place. This is known as the crowding out effect.

59. B is correct. A contractionary fiscal policy means that the government decreases its purchases of goods and services and/or raises taxes to decrease aggregate demand. A decrease in budget deficit would be associated with a contractionary fiscal policy.

60. A is correct. B is incorrect because a tight fiscal policy accompanied by an easy monetary policy causes the public sector to shrink. C is incorrect because an easy fiscal policy and an easy monetary policy results in growing public and private sector.

61. B is correct. A lower reserve requirement increases the money supply in the economy. This is an example of an expansionary monetary policy.

62. A is correct. Expansionary fiscal policy combined with contractionary monetary policy results in higher aggregate demand, higher interest rates and increased government spending as a part of GDP.

63. C is correct. Contractionary fiscal policy combined with expansionary monetary policy results in lower interest rates and decreased government spending along with high private sector growth.

64. B is correct. Contractionary fiscal policy combined with contractionary monetary policy results in higher interest rates and contracted private sector along with lower GDP.

65. C is correct. Recognition lag is the time lag due to late realization and data collection. Action lag is the time taken to implement policies. Impact lag is the time taken for actions to become evident.

**LO.a: Compare gross domestic product and gross national product.**

1. The income of a country's citizens working abroad is included in it:
   A. GNP, but not in GDP.
   B. GDP, but not in GNP.
   C. GDP and GNP.

2. Income to capital in the domestic country that is owned by foreigners is included in its:
   A. GNP, but not in GDP.
   B. GDP, but not in GNP.
   C. GDP and GNP.

3. Which of the following is *least likely* correct about international trade terminology?
   A. The difference between gross domestic product and gross national product is that GDP includes, while GNP excludes the production of goods and services by foreigners within that country.
   B. The difference between terms of trade and net exports is that the terms of trade is the ratio of the price of exports to the price of imports, whereas net exports is the difference between the value of a country's exports and the value of its imports.
   C. The difference between an autarkic economy and an open economy is that an autarkic economy has limited trade with only its neighboring countries, while an open economy can trade with any country of the world.

**LO.b: Describe benefits and costs of international trade.**

4. Which of the following is *not* a benefit of international trade?
   A. Greater variety of products available to households and firms.
   B. Increased competition and more efficient allocation of resources.
   C. Countries receive lower prices for their exports and pay higher prices for imports.

5. Consider two countries that each produce two goods: tea and sugar. Suppose the cost of producing tea relative to sugar is lower in Tealand than in Sugarland. If the two countries start trading with each other, which of the following industries will *not* benefit from the trade in the short run?
   A. Sugar industry in Tealand.
   B. Tea industry in Tealand.
   C. Sugar industry in Sugarland.

6. Which of the following is *least likely* to be a benefit of international trade?
   A. Free flow of technical expertise.
   B. Greater income inequality.
   C. Increased efficiency.

**LO.c: Distinguish between comparative advantage and absolute advantage.**

7. For a country to gain from trade it must have:
   A. an absolute advantage.
   B. a comparative advantage.
   C. economies of scale or lower labor costs.

8. Three countries produce cloth and leather, and the output per worker per day in each country is as follows:

| **Country** | **Cloth** | **Leather** |
|---|---|---|
| A | 6 | 8 |
| B | 4 | 6 |
| C | 5 | 7 |

Which country *most likely* has the greatest comparative advantage for producing cloth?
   A. Country A.
   B. Country B.
   C. Country C.

9. Three countries produce cloth and leather, and the output per worker per day in each country is as follows:

| Country | Cloth | Leather |
|---|---|---|
| A | 6 | 8 |
| B | 4 | 6 |
| C | 5 | 7 |

Which country *most likely* has the absolute advantage for producing leather?
   A. Country A.
   B. Country B.
   C. Country C.

10. Pakistan exports cotton to Bangladesh and imports rice from Bangladesh. The following shows details of the output per worker per day:

| | Cotton | Rice |
|---|---|---|
| Pakistan | 6 | 12 |
| Bangladesh | 3 | 24 |

   Which country has an absolute advantage as well as a comparative advantage in cotton?
   A. Pakistan.
   B. Bangladesh.
   C. Neither Pakistan nor Bangladesh.

**LO.d: Explain the Ricardian and Heckscher–Ohlin models of trade and the source(s) of comparative advantage in each model.**

11. Consider two countries, X and Y. Country X is a closed country with a relative abundance of labor and holds a comparative advantage in the production of leather. Country Y has a relative abundance of capital. When the leather trade is opened between the two countries, Country X will *most likely* experience a favorable impact on:
    A. labor.
    B. capital.
    C. both capital and labor.

12. Statement 1: In the Ricardian trade model, a country captures more of the gains from trade if the terms of trade are closer to its autarkic prices than to its partner's autarkic prices.
    Statement 2: In the Ricardian trade model, a country captures more of the gains from trade if the terms of trade are closer to its partner's autarkic prices than to its autarkic prices.
    Which statement about the Ricardian model is *most likely* correct?
    A. Statement 1.
    B. Statement 2.
    C. None.

13. 'If a country did not have an absolute advantage in the production of any good, it could still gain trade if it had a comparative advantage in the production of a good, with labor being the only variable factor of production.'
    The economist who made the above statement is *most likely:*
    A. Adam Smith.
    B. Heckscher-Ohlin.
    C. David Ricardo.

14. According to David Ricardo, comparative advantage is determined by:
    A. exchange rate.
    B. net exports.
    C. labor productivity.

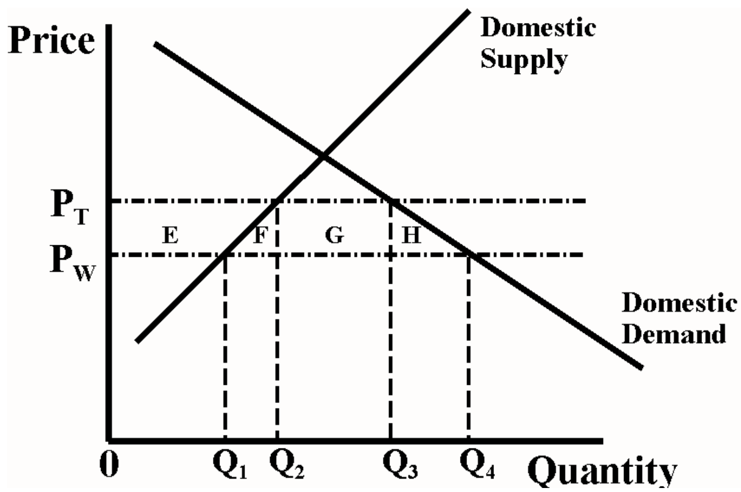
**LO.e: Compare types of trade and capital restrictions and their economic implications.**

15. A small country has a comparative advantage in the production of wine. The government establishes an export subsidy for wine to promote economic growth. Which of the following will be the *most likely* result of this policy?
    A. As new domestic producers enter the wine market, supply will increase and domestic prices will decline.
    B. The increase in the domestic producer surplus will exceed the sum of the subsidy and the decrease in the domestic consumer surplus.

C. Although domestic producers will receive a net benefit, the policy will give rise to inefficiencies that cause a deadweight loss to national welfare.

16. A large country wants to increase its national welfare by imposing a tariff. Assuming its trading partner does not retaliate, which of the following conditions *must* hold in order for the large country to achieve its objective?
A. It must have a comparative advantage in the production of the imported good.
B. The deadweight loss must be smaller than the benefit of its improving terms of trade.
C. It must auction the import licenses for a fee to offset the decline in the consumer surplus.

17. The diagram below shows the domestic demand and supply curves for a country that imports tea. $P_w$ is the world price of tea and $P_T$ is the domestic price of tea after imposition of a tariff.




The total tariff revenue collected by the government is *best* described by the area(s):
A. E.
B. G.
C. F+H.

18. The restriction on the quantity of goods traded imposed by an exporting country is known as:
A. quota.
B. tariff.
C. voluntary export restraint.

**The following information is for questions 19 - 21**

Singapore manufactures 200,000 yards of cloth, but has a domestic demand of 325,000 yards of cloth. The world price of cloth is $8 per yard and Singapore shall import 125,000 yards of cloth from the world market at free trade prices. The Singaporean government decides to impose a 20 percent tariff and the prices would increase to $9.6 per yard. As a result, the domestic production will increase to 225,000 yards of cloth, while domestic demand will come down to 300,000 yards.

19. The gain in producer surplus is *closest* to:
    A. $120,000.
    B. $340,000.
    C. $500,000.

20. The gain in government revenue is *closest* to:
    A. $120,000.
    B. $340,000.
    C. $500,000.

21. The deadweight loss arising from the imposition of this tariff is *closest* to:
    A. $40,000.
    B. $80,000.
    C. $120,000.

22. Which of the following statements is *most likely* correct about the effects of the alternative trade policies?
    A. An export subsidy decreases producer surplus.
    B. An import quota increases producer surplus.
    C. A tariff decreases government revenue.

23. Which of the following is *most likely* to decrease as a result of tariff?
    A. Domestic consumption.
    B. Domestic production.
    C. Price.

**LO.f: Explain motivations for and advantages of trading blocs, common markets, and economic unions.**

24. Three countries operate within a free trade area. One country proposes moving to a customs union structure. What additional level of economic integration between the countries would *most likely* arise if this change took place? They would:
    A. establish common trade barriers against non-members.
    B. begin to allow free movement of the factors of production.
    C. establish common economic institutions and coordination of economic policies.

25. Which of the following provisions is *not* included in a common market agreement?
    A. All countries adopt a common set of trade restrictions with non-members.
    B. All barriers to import and export of goods and services among the countries are removed.
    C. Member countries establish common institution and economic policy for the union.

26. If India and China have free trade with each other, a common trade policy against all other countries and free movement of factors of production between them, then India and China are part of a:
    A. free trade area.
    B. customs union.
    C. common market.

27. Which of the following is *most likely* correct regarding trade blocs?
    A. A customs union extends a common market by creating a common trade policy against non-members.
    B. An economic union requires common economic institutions and coordination of economic policies among members.
    C. A monetary union may or may not have a common currency.

**LO.g: Describe common objectives of capital restrictions imposed by governments.**

28. Analyst 1: Capital restrictions protect developing economies from large swings in asset prices.
    Analyst 2: Capital restrictions cause large swings in asset prices in developing economies.
    Which analyst is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

29. Which of the following is *least likely* a capital restriction?
    A. Taxes on the income earned on domestic investments by domestic citizens.
    B. Constraints on repatriation of earnings of foreign entities operating in a country.
    C. Prohibition of foreign investment in certain domestic industries.

30. Trade diversion occurs when:
    A. the higher cost domestic production is replaced by lower cost imports from other members.
    B. lower cost imports from nonmember countries are replaced by higher cost imports from members.
    C. lower cost imports from member countries are replaced by lower cost domestic production.

**LO.h: Describe the balance of payments accounts including their components.**

31. Country A has a current account deficit. It will *most likely* still be able to consume more output than it produces by:
    A. increasing its net foreign liabilities.

B. restricting foreign direct investment.
C. adjusting interest rates to stimulate higher domestic savings.

32. An Indian firm purchases a patent for INR 25,000 and machinery for INR 30,000 from a U.S. firm. The impact of these transactions on the capital account of India (in INR) is *closest* to:
A. 25,000.
B. 30,000.
C. 55,000.

33. A country's international transactions accounts data for last year are presented below in its domestic currency:

| **Transaction** | **Amount** |
|---|---|
| Exports of goods and services | 1.000 |
| Import of goods and services | 1,400 |
| Investment income payments made to foreigners | 250 |
| Investment income received from foreigners | 340 |
| Net change in assets owned abroad | 150 |
| Net change in foreign-owned assets domestically | 490 |
| Unilateral current transfers received | 34 |
| Unilateral current transfers paid | 110 |
| Statistical discrepancy | 64 |

The current account balance is *closest* to:
A. -322.
B. -386.
C. -450.

34. During the last month, a pharmaceutical company located in India had the following transactions:

| Transaction | Amount (INR millions) |
|---|---|
| Bought raw material from Pakistan | 500 |
| Sold products to United States | 650 |
| Received royalty fees from its branch in Sri Lanka | 5 |
| Donated to a charitable institution in Africa | 1 |
| Borrowed from a bank in the United Kingdom | 2 |
| Paid legal fees to its U.S. legal consultant company | 12 |
| Received interest coupon from its investment in Eurobonds | 8 |

These transactions will *most likely* increase the Indian current account (in INR millions) by:

A. 170.
B. 150.
C. 140.

35. Which of the following is *most likely* to be credited in a Balance of Payments account?
    A. Payment of debt by foreigners.
    B. Purchase of foreign financial asset.
    C. Value of imported goods and services.

**LO.i: Explain how decisions by consumers, firms, and governments affect the balance of payments.**

36. Which of the following statements about current account surplus/deficit is *most likely* correct?
    A. Low private saving tends to produce a current account deficit that is financed through high investment.
    B. A current account surplus is balanced by net capital exports.
    C. Current account deficit countries tend to enjoy lower risk premiums.

37. A country implements policies that are expected to increase taxes by €200 million, increase government spending by €100 million, and reduce investments and private sector savings by €50 million each. As a result, the country's current account balance will *most likely*:
    A. increase by €100 million.
    B. decrease by €100 million.
    C. increase by €200 million.

38. Low private savings and/or high investment tend to:
    A. produce a current account surplus that must be balanced by net capital exports
    B. produce a current account deficit that must be balanced by net capital exports.
    C. produce a current account deficit that must be balanced by net capital imports.

39. Analyst 1: All else equal, current account surplus countries tend to enjoy lower risk premiums than current account deficit countries.
    Analyst 2: All else equal, current account deficit countries tend to enjoy lower risk premiums than current account surplus countries.
    Which analyst is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

**LO.j: Describe the functions and objectives of the international organizations that facilitate trade, including the World Bank, the International Monetary Fund, and the World Trade Organization.**

40. The International Monetary fund *most likely*:
    A. provides low interest rate loans to developing countries.
    B. lends foreign currency on a temporary basis to address balance of payment issues.
    C. provides a major institutional and regulatory framework of global trade rules.

41. The World Bank *most likely*:
    A. provides low interest rate loans to developing countries.
    B. lends foreign currency on a temporary basis to address balance of payment issues.
    C. provides a major institutional and regulatory framework of global trade rules.

42. The World Trade Organization *most likely*:
    A. provides low interest rate loans to developing countries.
    B. lends foreign currency on a temporary basis to address balance of payment issues.
    C. provides a major institutional and regulatory framework of global trade rules.

43. Which of the following international organizations provides a regulatory framework of global trade rules?
    A. International Monetary Fund.
    B. World Bank.
    C. World Trade Organization.

44. Which of the following organizations helps developing countries in fighting poverty?
    A. International Monetary Fund.
    B. World Bank.
    C. World Trade Organization.

## Solutions

1. A is correct. The income of a country's citizens working abroad is included in its GNP, but not in its GDP.

2. B is correct. Income to capital in the domestic country that is owned by foreigners is included in its GDP, but not in GNP.

3. C is correct. An autarkic economy is a closed economy and does not trade with any country.

4. C is correct. Due to international trade, countries receive higher prices for their exports and pay lower prices for imports.

5. A is correct. The sugar industry in Tealand would not benefit from trade, at least in the short run. Since sugar is relatively expensive to produce in Tealand, the domestic sugar industry will shrink as sugar is imported from Sugarland.

6. B is correct. Greater income inequality is a cost of international trade.

7. B is correct. Even if a country does not have an absolute advantage in producing any goods, it can still gain from trade by exporting the goods in which it has a comparative advantage.

8. A is correct. A country has a comparative advantage if its opportunity cost of producing a product is less than the opportunity cost of its trading partners.

| Country | Cloth | Leather | Comparative advantage (Leather/cloth) |
|---|---|---|---|
| A | 6 | 8 | 1.33 |
| B | 4 | 6 | 1.50 |
| C | 5 | 7 | 1.40 |

9. A is correct. A country is said to have an absolute advantage in the production of a good if it can produce the good at a lower cost, in terms of resources than another country. County A has the highest output per unit of labor.

10. A is correct. Pakistan has an absolute advantage in producing cotton because it produces more cotton per worker per day (6) compared to Bangladesh (3). Pakistan also has a comparative advantage in producing cotton because the opportunity cost of cotton in Pakistan (12/6 = 2) is lower than the opportunity cost of cotton in Bangladesh (24/3 = 8).

11. A is correct. As a country opens up to trade, the benefit accrues to the abundant factor, which is labor in Country X.

12. B is correct. In the Ricardian trade model, a country captures more of the gains from trade if the terms of trade are closer to its partner's autarkic prices than to its autarkic prices.

13. C is correct. David Ricardo extended Adam Smith's theory and made the given statement. According to Heckscher-Ohlin, capital and labor are both variable factors of production.

14. C is correct. According to David Ricardo, the comparative advantage is determined by differences in labor productivity due to differences in technology.

15. C is correct. Export subsidies interfere with the functioning of the free market and result in a deadweight loss to society. On the producer side, higher subsidized prices cause inefficient producers to remain in the market. On the consumer side, a higher price causes those that would have purchased at the lower price to be shut out of the market.

16. B is correct. The large country is able to cause the foreign exporter to reduce prices in order to retain market share. In the large country, domestic producers gain from higher volume and the government gains from collecting the tariff. The sum of these two gains must exceed the deadweight loss to domestic consumers to achieve a national welfare gain.

17. B is correct. The total tariff revenue collected by the government is represented by area G.

18. C is correct. A voluntary export restraint is imposed by the exporting country to restrict the quantity of goods traded.

19. B is correct.

$$\text{Gain in producer surplus} = \frac{1}{2} * 1.6 * (225{,}000 - 200{,}000) + 200{,}000 * 1.6 = \$340{,}000$$

20. A is correct.

$$\text{Gain in government revenue} = (\$1.6) * (300{,}000 - 225{,}000) = \$120{,}000$$

21. A is correct.

$$\text{Dead weight loss} = \frac{1}{2} * 1.6 * (225{,}000 - 200{,}000) + \frac{1}{2} * 1.6 * (325{,}000 - 300{,}000) = 40{,}000$$

22. B is correct. An export subsidy increases producer surplus, while a tariff increases government revenue.

23. A is correct. The domestic consumption decreases as a result of tariff. Domestic production and price increase due to tariff.

24. A is correct. A customs union structure incorporates all aspects of the free trade area and extends it by establishing common trade barriers against non-members.

25. C is correct. Member countries establish common institution and economic policy for the union is a provision included in an Economic union.

26. C is correct. A common market allows free movement of goods and services among members, a common trade policy against non-members and free movement of factors of production among members.

27. B is correct. A is incorrect because a customs union extends a free trade area by creating a common trade policy against non-members. C is incorrect because a monetary union adopts a common currency.

28. A is correct. Capital restrictions protect developing economies from large swings in asset prices.

29. A is correct. Taxes on the income earned on foreign investment by domestic citizens would be an example of capital restriction.

30. B is correct. Trade diversion occurs when lower cost imports from nonmember countries are replaced by higher cost imports from members.

31. A is correct. A current account deficit must be offset by a capital account surplus. Only by borrowing money from foreigners can a country have a current account deficit and consume more output than it produces. An increase in net foreign liabilities is the result of borrowing from foreigners.

32. A is correct. The purchase of machinery is an import and affects the current account, not the capital account, so it is ignored. The purchase of a non-produced, non-financial asset (such as a patent) affects the capital account.

33. B is correct.

| **Transaction** | **Amount** | **Totals** |
|---|---|---|
| **Export of goods and services and income receipts** | | 1,340 |
| Export of goods and services | 1,000 | |
| Investment income received from foreigners | 340 | |
| | | |
| **Import of goods and services and income payments** | | -1,650 |
| Import of goods and services | -1,400 | |
| Investment income payments made to foreigners | -250 | |

| | | |
|---|---|---|
| | | |
| **Net unilateral current transfers** | | -76 |
| Unilateral current transfers received | 34 | |
| Unilateral current transfers paid | -110 | |
| | | |
| **Current account balance** | | -386 |

34. B is correct.

| **Transaction** | **Amount (INR millions)** |
|---|---|
| Bought raw material from Pakistan | -500 |
| Sold products to United States | 650 |
| Received royalty fees from its branch in Sri Lanka | 5 |
| Donated to a charitable institution in Africa | -1 |
| Borrowed from a bank in the United Kingdom | Omit |
| Paid legal fees to its U.S. legal consultant company | -12 |
| Received interest coupon from its investment in Eurobonds | 8 |
| **Total** | **150** |

35. A is correct. Payment of debt by foreigners results in a decrease in assets and hence is credited in the balance of payment account. Purchase of foreign financial assets and value of imported goods and services is debited in the balance of payment account.

36. B is correct. A is incorrect because low private saving tends to produce a current account deficit that is financed through net capital imports. C is incorrect because current account surplus countries tend to enjoy lower risk premiums.

37. A is correct.
$CA = S_p – I + (T – G - R)$
Where CA = Current account balance, $S_p$ = Private sector savings, I = Investments, T = Taxes, G = Government spending and R = Transfers
$\Delta CA = -50 – (-50) + (200 – 100 – 0) = 100$

38. C is correct. Low private savings and/or high investment tend to produce a current account deficit that must be balanced by net capital imports.

39. A is correct. All else the same, a sustained current account deficit contributes to a rise in the risk premium for the financial assets of the deficit country.

40. B is correct. The IMF lends foreign currency on a temporary basis to address balance of payment issues.

41. A is correct. The World Bank provides low interest rate loans to developing countries.

42. C is correct. The World Trade Organization’s mission is to foster free trade by providing a major institutional and regulatory framework of global trade rules.

43. C is correct. The World Trade Organization provides a regulatory framework of global trade rules.

44. B is correct. The World Bank helps developing countries fight poverty.

**LO.a: Define an exchange rate, and distinguish between nominal and real exchange rates and spot and forward exchange rates.**

1. Consider an exchange rate quote of 1.5062 USD/EUR. Which of the following statements is *most* accurate?
   A. USD is the price currency and EUR is the base currency. One EUR equals to 1.5062 USD.
   B. EUR is the price currency and USD is the base currency. One USD equals to 1.5062 EUR.
   C. USD is the price currency and EUR is the base currency. One USD equals to 1.5062 EUR.

2. Assume that the nominal spot exchange rate (USD/EUR) increases by 7.2%, the Eurozone price level decreases by 3%, and the U.S. price level increases by 2%. The change in the real exchange rate (%) is *closest* to:
   A. 0.21%.
   B. 1.94%.
   C. -2.52%.

3. A US firm exports goods to Japan. The company receives payments in JPY after a credit period of 60 days. To reduce its foreign exchange risk, the US firm will *most likely* initiate a:
   A. spot transaction.
   B. forward contract.
   C. real exchange rate contract.

4. An increase in the real exchange rate (quoted in terms of domestic currency per unit of foreign currency) is *most likely* to be associated with a decrease in which of the following?
   A. Foreign price level.
   B. Domestic price level.
   C. Nominal exchange rate.

5. The base period CPI is 100 for US and India and the current exchange rate is 62 INR/USD. After two years, the exchange rate is 65 INR/USD. The CPI in US is 105 and in India it is 109. The real exchange rate is *closest* to:
   A. 62.61 INR/USD.
   B. 67.48 INR/USD.
   C. 69.20 INR/USD.

6. Which of the following statements is *most likely* correct about currency exchange rates?
   A. An exchange rate is the number of units of base currency that one unit of a price currency will buy.
   B. A decline in USD/Euro means that USD is appreciating against the Euro.
   C. The theory of purchasing power parity (PPP) describes the long term equilibrium of real exchange rates.

7. Which of the following is *least likely* to be the reason for why purchasing power parity does not hold?
   A. Each country has its own method to determine the real exchange rate.
   B. Many goods and services are not traded internationally.
   C. There are trade barriers and transaction costs.

8. The following data is given: the nominal spot exchange rate for PKR/AUD is 28, the consumer price index in Pakistan is 108 and the consumer price index in Australia is 101. The real PKR/AUD exchange rate is *closest* to:
   A. 26.
   B. 28.
   C. 30.

9. As the spot USD/GBP exchange rate decreases, which of the following is *most likely* to happen?
   A. USD depreciates against the GBP.
   B. The purchasing power of a UK client increases.
   C. The real exchange rate, USD/GBP, reduces.

10. Which of the following statements is/are *most likely* correct?
    Statement I: Forward contracts trade in OTC markets, while futures contracts trade on exchanges.
    Statement II: Forward contracts are only available for fixed contract amounts and fixed settlement dates.
    Statement III: Forward contracts offer more flexibility relative to futures contracts.
    A. Statements I and II.
    B. Statements I and III.
    C. Statements I, II, and III.

**LO.b: Describe the functions of and participants in the foreign exchange market.**

11. Which of the following is *least likely* a buy side foreign exchange market participant?
    A. Corporations.
    B. Governments.
    C. Multinational banks.

12. In order to minimize the foreign exchange exposure on a dollar-denominated receivable due from an American company in 200 days, a Chinese company would *most likely*:
    A. sell USD spot.
    B. buy USD forward
    C. sell USD forward.

13. A European investor wants to invest in risk free, one-year, USD-denominated zero coupon bonds. Over a one-year horizon, the exchange rate risk for the investment is determined by uncertainty over:
    A. USD/EUR spot rate one year from now.

B. USD/EUR forward rate one year from now.
C. USD/EUR forward rate today.

14. Which of the following statements is *least likely* to be true?
    A. A central bank intervenes in the FX market to manage the country's FX reserves.
    B. A central bank intervenes in the FX market when FX markets become dysfunctional and corporations cannot conduct FX transactions.
    C. A central bank intervenes in the FX market when the domestic currency becomes weak and it undercuts the country's export competitiveness.

**LO.c: Calculate and interpret the percentage change in a currency relative to another currency.**

15. A decrease in the USD/EUR exchange rate from 1.44 to 1.42 represents a (n):
    A. appreciation of EUR relative to USD of 1.39%.
    B. depreciation of EUR relative to USD of 1.39%.
    C. depreciation of USD relative to EUR of 1.39%.

16. A decrease in the USD/EUR exchange rate from 1.44 to 1.42 represents a change of USD relative to EUR of:
    A. -1.41%.
    B. 1.39%.
    C. 1.41%.

17. If the domestic currency depreciates, the direct exchange rate quote will *most likely*:
    A. increase.
    B. decrease.
    C. remain the same.

18. A Chicago-based dealer provides a spot exchange rate quote of 4.5640 GBP/USD to a client in UK. Which of the following is *most likely* to be correct from the perspective of a UK client?
    A. The indirect exchange rate quotation is 4.5640.
    B. The direct exchange rate quotation is 4.5640.
    C. The direct exchange rate quotation is 0.2191.

19. A dealer gives the following quote for PKR/IND: 1.1228 – 1.1236. What is the bid-offer quote in IND/PKR terms?
    A. 0.8906 – 0.8900.
    B. 0.8900 – 0.8906.
    C. 0.8902 – 0.8902.

**LO.d: Calculate and interpret currency cross-rates.**

20. In early 2014, a European traveler returned from India with INR5,000. A foreign exchange dealer provided the traveler with the following quotes:

| Ratio | Spot Rates |
|---|---|
| USD/INR | 0.0167 |
| EUR/USD | 0.9392 |
| USD: US Dollar | |

The amount of Euros (EUR) that the traveler would receive for INR 5,000 is *closest* to:
A. 65.
B. 78.
C. 82.

21. A report produced by a dealer includes the following exchange rates:

| | Spot Rate | Expected Spot Rate in One Year |
|---|---|---|
| USD/EUR | 1.285 | 1.275 |
| USD/CAD | 1.122 | 1.141 |
| EUR/GBP | 1.174 | 1.168 |

The *most* accurate calculation of the expected depreciation (%) of the British pound (GBP) relative to the Canadian dollar (CAD) is:
A. 0.5%.
B. 2.9%.
C. 2.1%.

22. If the MXN/USD quote is 12.3 and the USD/EUR quote is 1.45, then the MXN/EUR cross rate is *closest* to:
A. 17.83.
B. 8.48.
C. 0.11.

23. The table below shows the spot exchange rates.

| | **Spot Rate** |
|---|---|
| USD/EUR | 1.5602 |
| MXN/USD | 2.0880 |
| MXN/GBP | 2.1097 |

Which of the following is *most likely* to be the spot USD/GBP cross-rate?
A. 0.9897.
B. 1.0104.
C. 1.4107.

**LO.e: Convert forward quotations expressed on a points basis or in percentage terms into an outright forward quotation.**

24. The current spot rate for the USD/EUR is 0.7400. The forward rate for the EUR/Australian dollar (AUD) is 1.3300, which represents a 300 point forward premium to the spot rate (scaled up by four decimal places). The USD/AUD spot rate is *closest* to:
A. 0.8842.
B. 0.9620.

C. 1.0142.

25. A forward exchange rate quote of +26.8 points when the USD/EUR spot rate is 1.3047 means that the forward exchange rate is *closest* to:
   A. 1.3020 USD/EUR.
   B. 1.3074 USD/EUR.
   C. 1.3095 USD/EUR.

26. A forward exchange rate quote of +1.576% when the USD/EUR spot rate is 1.3047 means that the forward exchange rate is *closet* to:
   A. 1.3124 USD/EUR.
   B. 1.3205 USD/EUR.
   C. 1.3253 USD/EUR.

27. A dealer quotes a CAD/USD spot rate to be 1.1468. Given that the 6-month forward rate is 1.1527, the 6-month forward points are *most likely* to be:
   A. -59.
   B. +51.
   C. +59.

28. A dealer quotes a three month forward exchange rate for ZAR/SEK at 1.1430. He also quotes the 3-month forward premium in percentage terms at 7.2%. Which of the following is *most likely* to be ZAR/SEK spot rate?
   A. 1.061.
   B. 1.066.
   C. 1.225.

**LO.f: Explain the arbitrage relationship between spot rates, forward rates, and interest rates.**

29. The JPY/AUD spot exchange rate is 81.31, the JPY interest rate is 0.14%, and the AUD interest rate is 4.84%. If the interest rates are quoted on the basis of a 360-day year, the 360 day JPY/AUD forward rate would be *closest* to:
   A. 77.66.
   B. 79.56.
   C. 81.48.

30. The JPY/AUD spot exchange rate is 81.31, the JPY interest rate is 0.14%, and the AUD interest rate is 4.84%. If the interest rates are quoted on the basis of a 360-day year, the 90-day JPY/AUD forward rate would be *closest* to:
   A. 77.66.
   B. 79.56.
   C. 80.37.

31. If the 270-day Libor rates (annualized) for the EUR and GBP are 1.260% and 1.214%, respectively, and the spot GBP/EUR exchange rate is 0.7378, then the 270-day forward rate ($F_{GBP/EUR}$) is *closest* to:
    A. 0.7312.
    B. 0.7375.
    C. 0.7434.

**LO.g: Calculate and interpret a forward discount or premium.**

32. The base currency will trade at a forward premium if:
    A. the interest rate in the price currency is higher than the interest rate in the base currency.
    B. the interest rate in the base currency is higher than the interest rate in the price currency.
    C. the interest rate in the price currency is equal to the interest rate in the base currency.

33. The base currency will trade at forward discount if:
    A. the interest rate in the price currency is higher than the interest rate in the base currency.
    B. the interest rate in the base currency is higher than the interest rate in the price currency.
    C. the interest rate in the price currency is equal to the interest rate in the base currency.

34. Which of the following is *least likely* to be correct?
    A. The base currency is said to be trading at a forward premium if the forward points are positive.
    B. The base currency is said to be trading at a forward premium if the forward rate is above the spot rate.
    C. The base currency is said to be trading at a forward premium if it is the currency with the higher interest rate.

**LO.h: Calculate and interpret the forward rate consistent with the spot rate and the interest rate in each currency.**

35. In early 2014, the British pound (GBP) to New Zealand dollar (NZD) spot exchange rate was 2.1986. LIBOR interest rates, quoted on a 360-day year basis, were 1.5051% for the British pound and 3.8085% for the New Zealand dollar. The 180-day forward points (scaled up by four decimal places) in GBP/NZD would be *closest* to:
    A. -248.0.
    B. -168.0.
    C. 165.0.

36. An investor examines the following rate quotes for the Thailand Bhat and the Indian Rupee.

| | | | |
|---|---|---|---|
| Spot rate INR/THB | 2.1026 | INR 1-year interest rate | 4.6% |
| Forward rate INR/THB | 2.1287 | THB 1-year interest rate | 3.5% |

If the investor shorts INR500,000 he will achieve a risk-free arbitrage profit (in INR) *closest* to:
    A. 856.

B. 924.
C. 1035.

37. The exchange rate for CDF/IND is 10.2562. The one year risk-less interest rate in CDF is 9%. What is the risk-less interest rate in IND if the no arbitrage one year forward rate is 10.4479?
A. 7%.
B. 10%.
C. 5%.

**The following information is to be used for questions 38-39**
The following table provides information about an exchange rate as well as interest rates.

| | |
|---|---|
| JPY/GBP spot exchange rate | 66.45 |
| JPY interest rate | 0.42% |
| GBP interest rate | 5.88% |

Assume that the interest rates are quoted on the basis of a 360-day year.

38. The 90-day forward exchange rate JPY/GBP is *most likely* to be:
A. 65.56.
B. 66.31.
C. 67.37.

39. The 90-day forward points in JPY/GBP are *most likely* to be:
A. -89.
B. -14.
C. +92.

**LO.i: Describe exchange rate regimes.**

40. Which of the following statements about a currency board system (CBS) is *most* accurate?
A. A CBS has a discretionary target level of foreign exchange reserves.
B. A CBS can peg to a basket of currencies, but a fixed-rate system cannot.
C. The monetary authority within a CBS does not act as a traditional lender of last resort.

41. Based solely on the exchange rate risk, what is the correct ranking (from most to least risky) of the following exchange rate regimes?
A. Dollarization, Floating exchange rate, Currency board.
B. Floating exchange rate, Currency board, Dollarization.
C. Currency board, Dollarization, Floating exchange rate.

42. Which of the following exchange rate regimes is *least likely* to import inflation or deflation from the target currency?
A. Floating exchange rate.
B. Dollarization.
C. Currency board.

43. Which of the following statements about exchange rate regimes is *most likely* correct?
    A. In dollarization, unlike in the currency board system, the monetary authority can earn a profit by paying little or no interest on its liability and can earn a market rate on its asset.
    B. A target zone regime has a floating parity with horizontal intervention bands that can be adjusted.
    C. Dirty floating invites trading partners to respond likewise with their exchange rate policy and potentially decreases stability in foreign exchange markets as a whole.

**LO.j: Explain the effects of exchange rates on countries' international trade and capital flows.**

44. An analyst uses the following data to estimate the effects of the changes in the INR exchange rate on India's balance of trade.

| | Volume (INR billions) | Demand elasticity |
|---|---|---|
| Exports | 250 | 0.7 |
| Imports | 300 | 0.9 |

A depreciation of the INR will *most likely*:
    A. reduce the trade deficit.
    B. increase the trade deficit.
    C. have no effect on the trade deficit.

45. An analyst uses the following data to estimate the effects of the changes in the THB exchange rate on Thailand's balance of trade.

| | Volume (THB billions) | Demand elasticity |
|---|---|---|
| Exports | 250 | 0.2 |
| Imports | 300 | 0.3 |

A depreciation of the THB will *most likely*:
    A. reduce the trade deficit
    B. increase the trade deficit.
    C. have no effect on the trade deficit.

46. The J-curve effect refers to the fact that a depreciation of the domestic currency:
    A. may increase a trade deficit in the short run even though it will eventually reduce the trade deficit.
    B. may decrease a trade deficit in the short run even though it will eventually increase the trade deficit.
    C. may increase a trade deficit in the short run even though it will have no effect in the long run.

## Solutions

1. A is correct. In case of an exchange rate quote of 1.5062 USD/EUR, USD is the price currency and EUR is the base currency. 1 EUR equals to 1.5062 USD.

2. B is correct. Here EUR is the base currency. The real exchange rate = nominal exchange rate * price level in EUR / price level in USD. Assume that initially the nominal exchange rate = 1, the price level in EUR = 1 and the price level in USD = 1. Hence the real exchange rate = 1. After the changes the real exchange rate = [(1 + 0.072) * (1 – 0.03)] / (1 + 0.02) = 1.0194. This represents a change of 1.94% relative to the initial value of 1.

3. B is correct. To reduce its foreign exchange risk, the US firm will initiate a forward contract to sell JPY at an exchange rate agreed today.

4. B is correct.
   Real exchange rate = Nominal spot exchange rate * CPI of the foreign country / CPI of the domestic country
   As the domestic price level decreases, the real exchange rate increases.

5. A is correct. Real exchange rate = $(\text{Nominal exchange rate}) * \left(\frac{\text{CPI}_{\text{foreign}}}{\text{CPI}_{\text{domestic}}}\right)$
   $= 65 \ * \left(\frac{105}{109}\right) = 62.61$

6. B is correct. A is incorrect because an exchange rate is the number of units of price currency that one unit of the base currency will buy. C is incorrect because the theory of purchasing power parity (PPP) describes the long term equilibrium of nominal exchange rates.

7. A is correct. Purchasing power parity is not concerned with real exchange rates.

8. A is correct.
   $$\text{Real Exchange Rate} = (\text{Spot rate})_{\text{p/b}} * \frac{\text{CPI}_{\text{b}}}{\text{CPI}_{\text{p}}} = 28 * \frac{101}{108} = 26.18$$

9. C is correct. As the spot USD/GBP exchange rate decreases, USD appreciates against the GBP, the purchasing power of a US client increases, and the real USD/GBP exchange rate reduces.

10. B is correct. Statement I and III are correct. Statement II is incorrect because forward contracts can be of any size and settlement date that the two counterparties agree upon.

11. C is correct. Multinational banks are sell side market participants.

12. C is correct. The receivable is due in 200 days. To reduce the risk of currency exposure, the Chinese company would initiate a forward contract to sell dollars at an exchange rate agreed to today.

13. A is correct. Exchange rate risk is defined by the uncertainty over future spot rates.

14. C is correct. The correct statement is 'The central bank intervenes in the FX market when the domestic currency becomes so strong that it undercuts the country's export competitiveness'.

15. B is correct. A decrease in the USD/EUR exchange rate represents a depreciation of the EUR by 1.42/1.44 -1 = -0.0139.

16. C is correct. To calculate the appreciation of USD, we first convert the quotes to EUR/USD. The initial rate becomes 1/1.44 = 0.6944 EUR/USD and later the rate becomes 1/1.42 = 0.7042 EUR/USD. The change in value of USD = 0.7042/0.6944 – 1 = 0.0141.

17. A is correct. In the case of a direct exchange rate, the domestic currency is the price currency (the numerator) and the foreign currency is the base currency (the denominator). If the domestic currency depreciates, then the exchange rate (domestic per foreign) increases.

18. B is correct. The direct exchange rate quotation uses the domestic currency as the price currency and the foreign currency as the base currency. So, for a UK client a direct quote will have USD as the base currency and GBP as the price currency.

19. B is correct. The IND/PKR bid is the reciprocal of the PKR/IND offer: 1/1.1236 = 0.8900. The IND/PKR offer is the reciprocal of the PKR/IND bid: 1/1.1228 = 0.8906. Note that the bid always has to be lower than the offer.

20. B is correct.
    The EUR/INR cross rate = $\frac{\text{EUR}}{\text{USD}} * \frac{\text{USD}}{\text{INR}}$= 0.9392 * 0.0167 = 0.0157.
    The traveler will receive 0.0157 EUR per INR; 0.0157 * 5,000 = 78.5 EUR.

21. B is correct.
    $$\frac{\text{CAD}}{\text{GBP}} = \left(\frac{\text{USD}}{\text{EUR}}\right) * \frac{\frac{\text{EUR}}{\text{GBP}}}{\frac{\text{USD}}{\text{CAD}}}$$
    Spot rate of $\frac{\text{CAD}}{\text{GBP}} = 1.285 * \frac{1.174}{1.122} = 1.344$
    Expected spot rate of $\frac{\text{CAD}}{\text{GBP}} = 1.275 * \frac{1.168}{1.141} = 1.305$
    The expected depreciation of the GBP relative to CAD = $\frac{1.305}{1.344} - 1$ = - 2.90%

22. A is correct. MXN/EUR = MXN/USD * USD/EUR = 12.3 * 1.45 = 17.83.

23. B is correct.
    $$\frac{\text{USD}}{\text{GBP}} = \frac{\text{USD}}{\text{MXN}} * \frac{\text{MXN}}{\text{GBP}} = \frac{1}{2.0880} * 2.1097 = 1.0104$$

24. B is correct.
    Step 1: Find the spot rate for the EUR/AUD

Spot = Forward rate – Points = 1.3300 – 300/10,000 = 1.3000.
Step 2: Calculate the cross rate

$$\frac{\text{USD}}{\text{AUD}} = \frac{\text{USD}}{\text{EUR}} * \frac{\text{EUR}}{\text{AUD}} = 0.7400 * 1.300 = 0.9620.$$

25. B is correct. The forward exchange rate is 1.3047 + 26.8 / 10,000 = 1.3074.

26. C is correct. The forward exchange rate is 1.3047 (1 + 0.01576) = 1.3253.

27. C is correct.
Forward basis points

$$= (\text{Forward Rate} - \text{Spot Rate}) * 10{,}000 \text{ (For a currency with 4 decimal point convention)}$$
$$= (1.1527 - 1.1468) * 10{,}000 = 59$$

28. B is correct.
Forward rate = Spot rate ∗ (1 + forward premium)
1.1430 = Spot rate ∗ (1 + 0.072)
Spot rate = 1.066

29. A is correct. Forward rate = Spot rate $* \frac{1 + i_{\text{price}}\text{currency}}{1 + i_{\text{basecurrency}}}$

$$= 81.31 * \frac{1 + 0.0014}{1 + 0.0484} = 77.66$$

30. C is correct. Forward rate = Spot rate $* \frac{1 + i_{\text{price}}\text{currency}}{1 + i_{\text{basecurrency}}}$

$$= 81.31 * \frac{1 + 0.0014 * \frac{90}{360}}{1 + 0.0484 * \frac{90}{360}}$$
$$= 81.31 * \frac{1.00035}{1.0121} = 80.37.$$

31. B is correct. . Forward rate = Spot rate $* \frac{1 + i_{\text{price}}\text{currency}}{1 + i_{\text{basecurrency}}}$

$$= 0.7378 * \frac{1 + 0.01214 * \frac{270}{360}}{1 + 0.0126 * \frac{270}{360}}$$
$$= 0.7378 * \frac{1.009105}{1.00945} = 0.7375.$$

32. A is correct. The base currency will trade at a forward premium if the interest rate in the price currency is higher than the interest rate in the base currency.

33. B is correct. The base currency will trade at a forward discount if the interest rate in the base currency is higher than the interest rate in the price currency.

34. C is correct. The base currency is said to be trading at a forward premium if it is the currency with the lower interest rate.

35. A is correct. Covered interest arbitrage will ensure identical terminal values by investing the same initial amounts at the respective country's domestic interest rates:
    GBP investment: $£2.1986 * \left(1 + 0.015051 * \frac{180}{360}\right)$ = £2.2151
    NZD investment: $NZ\$1 * \left(1 + 0.038085 * \frac{180}{360}\right)$ = NZ\$1.0190
    The forward rate is determined by equating these two terminal amounts:
    GBP/NZD forward Rate = $\frac{£2.2151}{NZ\$1.0190}$= £2.1738/NZ\$
    Forward points = (Forward – Spot) * 10,000 = (2.1738– 2.1986) * 10,000 = –248.0.

36. B is correct. In this question we are told that the investor shorts INR which means that he sells INR and gets THB: 500,000 / 2.1026 = THB 237,800.82
    This money is invested at 3.5%: THB 237,800.82 * 1.035 = THB 246,123.85
    Since the investor sold INR in the spot market he will buy INR in the forward market to take advantage of the arbitrage opportunity: 246,123.85 * 2.1287 = 523,923.84
    Arbitrage profit = INR 523,923.84 – INR 523,000 = 924 (approx.).

37. A is correct. Forward rate = Spot rate $* \frac{1 + i_{price}\text{currency}}{1 + i_{basecurrency}}$.
    $10.4479 = 10.2562 * \frac{1.09}{1 + x}$ = 1.07. This implies a risk-less interest rate of 7% in IND.

38. A is correct.

$$F_{JPY/GBP} = 66.45\left(\frac{1 + 0.0042\left(\frac{90}{360}\right)}{1 + 0.0588\left(\frac{90}{360}\right)}\right) = 65.56$$

39. A is correct.

$$\text{Forward basis points} = (\text{Forward Rate} - \text{Spot Rate}) * 100 \text{ (For a 2 decimal place convention)}$$
$$= (65.56 - 66.45) * 100 = -89$$

40. C is correct. In a CBS, the monetary authority has an obligation to maintain 100% foreign currency reserves against the monetary base. It thus cannot lend to troubled financial institutions.

41. B is correct. From an exchange rate risk perspective a floating exchange rate is most risky followed by a currency board. In dollarization there is no exchange rate risk.

42. A is correct. In a floating exchange rate regime the central bank is able to adjust monetary policy to maintain price stability. A currency board or dollarization exchange rate regime does not allow the central bank to exercise independent monetary policy to buffer its economy from inflation or deflation of the target currency.

43. C is correct. A is incorrect because it is the currency board system (not dollarization) where the monetary authority can earn a profit by paying little or no interest on its liability while paying a market rate on its assets. B is incorrect because a target zone regime has a fixed parity with horizontal intervention bands.

44. A is correct. If the Marshall-Lerner condition is satisfied, a depreciation of the domestic currency will reduce an existing trade deficit.
$\omega_X\varepsilon_X + \omega_M(\varepsilon_M - 1) > 0.$
$\left(\frac{250}{550}\right) * 0.7 + \left(\frac{300}{550}\right) * -0.1 = 0.318 - 0.054 = 0.264 > 0.$

45. B is correct. If the Marshall-Lerner condition is not satisfied, a depreciation of the domestic currency will increase an existing trade deficit.
$\omega_X\varepsilon_X + \omega_M(\varepsilon_M - 1) > 0.$

$\left(\frac{250}{550}\right) * 0.2 + \left(\frac{300}{550}\right) * -0.7 = 0.091 - 0.382 = -0.291 < 0.$

46. A is correct. The J-curve effect refers to the fact that depreciation of the domestic currency may increase a trade deficit in the short run even though it will eventually reduce the trade deficit.

**LO.a: Describe the roles of financial reporting and financial statement analysis.**

1. Providing information about the performance of a company, its financial position, and changes in financial position are *best* described as a role of:
   A. auditor's report.
   B. financial reporting.
   C. financial statement analysis.

2. Which of the following is *most likely* to be the role of financial reporting?
   A. Provide information about a company's performance, financial position, and changes in financial position that is useful to a wide range of users.
   B. Use financial statements to evaluate the past, present, and future performance of the company for the purpose of making investment decisions.
   C. Obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement.

**LO.b: Describe the roles of the key financial statements (statement of financial position, statement of comprehensive income, statement of changes in equity, and statement of cash flows) in evaluating a company's performance and financial position.**

3. An analyst wants to study the changes that have occurred in a company's retained earnings over the year. The financial statement that would be helpful in this situation is the statement of:
   A. changes in equity.
   B. comprehensive income.
   C. financial position.

4. A financial analyst wishes to evaluate a company's current financial position. Which of the following financial statements is he *most likely* to use?
   A. Balance sheet.
   B. Income statement.
   C. Statement of cash flows.

5. James Calloway, an equity analyst, wants to find out the basic and diluted earnings per share of a company. In which of the following financial statements is he *most likely* to find this information?
   A. Income statement.
   B. Statement of cash flows.
   C. Statement of changes in equity.

6. Amber Reza is concerned about whether her business is generating enough cash. She has to pay off short term debts, utility bills, and other miscellaneous expenses. The ability of her firm to meet short term obligations is known as:
   A. liquidity.
   B. profitability.
   C. solvency.

7. Samantha Stoser is a financial analyst. She wishes to analyze the changes in the owners' investment in the business over time. Which of the following financial statements is Stoser *most likely* to use for her analysis?
   A. Statement of changes in equity.
   B. Statement of comprehensive income.
   C. Statement of financial position.

8. The owner's equity is:
   A. excess of liabilities over assets.
   B. excess of assets over liabilities.
   C. sum of assets and liabilities.

9. Sanjeev Dugar is an accountant at Yellow Cabs Ltd. The company disposed of some fixed assets during the year. Dugar wishes to account for this in the cash flow statement. Which of the following categories would he *most likely* record this transaction in?
   A. Financing activities.
   B. Investing activities.
   C. Operating activities.

**LO.c: Describe the importance of financial statement notes and supplementary information—including disclosures of accounting policies, methods, and estimates—and management's commentary.**

10. Which of the following is *most likely* to be included in the financial notes and supplementary schedules?
    A. Critical performance measures.
    B. Future economic outlook.
    C. Revenue recognition policy.

11. Management discussion and analysis is *least likely* to include information on:
    A. future outlook.
    B. planned expenditures.
    C. related-party transactions.

12. The information on a company's risks and resources is *most likely* found in which of the following sources?
    A. Auditor's report.
    B. Financial notes and supplementary schedules.
    C. Management's discussion and analysis.

13. Which of the following will *most likely* have information about a company's planned capital expenditures?
    A. Management discussion and analysis.
    B. Notes to the financial statements.
    C. Proxy statement.

14. Which of the following is *most likely* to appear in a company's management discussion and analysis (MD&A)?
    A. Compensation arrangements for management and directors.
    B. Potential conflicts of interest between management, directors, and shareholders.
    C. Significant events and contingencies that may affect future operations.

15. Which of the following is *least likely* to be included in the financial notes and supplementary schedules?
    A. Depreciation method for new assets.
    B. Future economic outlook.
    C. Revenue recognition policy.

16. Which of the following statements is *most* accurate about notes to the financial statements? Notes:
    A. Disclose the basis of preparation for financial statements.
    B. Provides a written opinion on the financial statements.
    C. Provides information on the nature of the business and future outlook.

**LO.d: Describe the objective of audits of financial statements, the types of audit reports, and the importance of effective internal controls.**

17. An analyst, while reviewing the audit report, comes across an additional paragraph that explains an exception to an accounting standard. This additional paragraph can be *best* described as a(n):
    A. adverse opinion.
    B. disclaimer of opinion.
    C. qualified opinion.

18. Artie Sorensen, an investment manager is explaining the responsibilities of an auditor for a publicly traded firm in the United States. Which of his statements is *most accurate*? The auditor:
    A. assures the reader that the financial statements are free from error, fraud, or illegal acts.
    B. must express an opinion about the effectiveness of the company's internal control systems.
    C. must state that he prepared the financial statements according to generally accepted accounting principles.

19. Jim Jonathan is an auditor employed by a large accounting firm. While auditing the books of Simba Fans Ltd, Jonathan gave a qualified opinion. Which of the following is *most likely* to be true?
    A. Jonathan believes that the financial statements give a true and fair view.
    B. Jonathan believes that there is some scope limitation or exception to accounting standards.
    C. Jonathan believes that the financial statements materially depart from the accounting standards and are not fairly represented.

**LO.e: Identify and describe information sources that analysts use in financial statement analysis besides annual financial statements and supplementary information.**

20. Which of the following reports is *most likely* to be filed with the SEC?
    A. Audited quarterly financial statements.
    B. Proxy statement.
    C. Annual report.

21. Interim reports are:
    A. Audited versions of the four basic financial statements.
    B. Provided either quarterly or semi-annually.
    C. All financial statements and comprehensive notes.

**LO.f: Describe the steps in the financial statement analysis framework.**

22. Which of the following is *least likely* to be an output of the "process data" phase of the financial statement analysis framework?
    A. Analytical results.
    B. Common-size statements.
    C. Forecasts.

23. Which of the following activities is *least likely* a part of the "processing phase" of a financial analysis?
    A. Analyzing the prospects of the industry.
    B. Making adjustments for different accounting policies.
    C. Preparing common-sized financial statement data.

24. Graphs and forecasts are *most likely* an output of which step in the financial analysis framework?
    A. Collect data.
    B. Process data.
    C. Analyze/interpret data.

25. Which of the following activities is a part of the "collect data" phase of the financial analysis framework?
    A. Preparing common-sized financial statement data.
    B. Analyzing the prospects of the industry.
    C. Making adjustments for different accounting policies.

26. When analysts collect data, they *least likely* do which of the following?
    A. Gain an understanding of the macroeconomic environment.
    B. Determine the prospects of the company within the industry as well as the environment.
    C. Conduct an in-depth analysis of whether the data collected in the form of financial statements are in accordance with the international accounting standards.

27. Ratios is *most likely* an output of which step of financial statement analysis?
    A. Collect data.
    B. Process data.
    C. Interpret data.

28. Which of the following is *least likely* a step in the financial statement analysis framework?
    A. Articulate the purpose.
    B. Verify management commentary.
    C. Follow up.

**Solutions**

1. B is correct. The role of financial reporting is to provide information about the performance of a company, its financial position, and changes in financial position that is useful to a wide range of users in making economic decisions.

2. A is correct. The role of financial reporting is to provide information about a company's performance, financial position, and changes in financial position that is useful to a wide range of users.

3. A is correct. The statement of changes in equity reports the changes in the components of shareholders' equity over the year, which would include the retained earnings account.

4. A is correct. The balance sheet (also called the statement of financial position or statement of financial condition) presents a company's current financial position

5. A is correct. Basic and diluted earnings per share are presented on the income statement.

6. A is correct. The ability to meet short term obligations is known as liquidity.

7. A is correct. The statement of changes in equity provides information regarding the changes in the owners' investment in the business over time. The statement of financial position only gives the company's financial position on a particular date.

8. B is correct. Owner's equity is excess of assets over liabilities.

9. B is correct. Cash flows from investing activities are associated with the acquisition and disposal of long term assets, such as property and equipment.

10. C is correct. A company's significant accounting choices, such as how it recognizes its revenues, must be discussed in the notes to the financial statements

11. C is correct. Related-party transaction information is found in the notes to the financial statements.

12. C is correct. The management commentary or MD&A includes information on the company's significant resources, risks and relationships.

13. A is correct. A company's forward-looking information such as those about planned capital expenditures is typically provided in the management discussion and analysis (MD&A).

14. C is correct. Significant events, conditions, trends, and contingencies that may affect future operations are contained in the management discussion and analysis. Compensation agreements for directors and management, and their potential conflicts of interest are required in the proxy statement.

15. B is correct. Future economic outlook is provided in the Management's Discussion and Analysis (MD&A) rather than in the financial notes and supplementary schedules.

16. A is correct. Notes include disclosures on accounting methods, estimates, assumptions. They also disclose the basis of preparation for the financial statements.

17. C is correct. A qualified opinion is one in which there is some scope limitation or exception to accounting standards that is described in additional explanatory paragraphs.

18. B is correct. For a publicly traded firm in the United States, the auditor must express an opinion as to whether the company's internal control system is in accordance with the Public Company Accounting Oversight Board, under the Sarbanes–Oxley Act. This is done either as a final paragraph in the auditor's report or as a separate opinion.

19. B is correct. A qualified opinion means that the auditor believes that there is some scope limitation or exception to accounting standards.

20. B is correct. Proxy statements must be filed with the SEC. IAS No. 1 requires companies to file audited financial statement at least annually. The annual report is not a requirement of the SEC.

21. B is correct. A is incorrect because they are not audited. C is incorrect because they include condensed notes and only four basic financial statements.

22. A is correct. Analytical results is an output of the analyze the processed data phase.

23. A is correct. Analyzing the prospects of the industry would be done in the collect data phase of a financial analysis.

24. B is correct. Ratios, graphs and forecasts are an output of the process data step.

25. B is correct. Analyzing the prospects of the industry is a part of the data collection phase of financial analysis. On the other hand, preparing common-sized financial statements and making adjustments for different accounting policies would be done in the data processing phase.

26. C is correct. An in-depth analysis of whether the financial statements are in accordance with the international accounting standards is part of the auditor's scope. The analyst is required to check the audit report and the auditor's opinion before considering the data in the financial statements.

27. B is correct. Ratios are an output of the "process data" phase.

28. B is correct. Verification of the management commentary is not a step in the financial statement analysis framework.

**LO.a: Describe how business activities are classified for financial reporting purposes.**

1. AIM Inc. recently issued common stock. This transaction should *most likely* be classified as:
   A. financing.
   B. investing.
   C. operating.

2. XYZ Inc. is planning to sell its surplus equipment. This transaction should *most likely* be classified as:
   A. financing.
   B. investing.
   C. operating.

**LO.b: Explain the relationship of financial statement elements and accounts, and classify accounts into the financial statement elements.**

3. Which of the following is a residual claim on a company's resources?
   A. Assets.
   B. Liabilities.
   C. Owner's equity.

4. Unearned fees are *most likely* to be categorized as:
   A. an asset.
   B. a liability.
   C. owner's equity.

5. Which of the following is *least likely* to provide information regarding an activity during a period of time?
   A. Balance sheet.
   B. Income statement.
   C. Statement of cash flow.

6. Which of the following is *not* classified as a financial statement element?
   A. Net income.
   B. Asset.
   C. Revenue.

**LO.c: Explain the accounting equation in its basic and expanded forms.**

7. | | |
   |---|---|
   | Beginning retained earnings | $40,000 |
   | Ending retained earnings | $58,000 |
   | Dividends paid | $16,000 |

   Based on the information given above, the estimated net income is *closest* to:
   A. $2,000.
   B. $24,000.
   C. $34,000.

8. Given below is an excerpt from a company's financial statements:

| | |
|---|---|
| Assets, December 31, 2014 | $6,750,000 |
| Liabilities, December 31, 2014 | $3,250,000 |
| Contributed capital, December 31, 2014 | $1,300,000 |
| Retained earnings, January 1, 2014 | $700,000 |
| Dividends during 2014 | $200,000 |

The net income for 2014 would be *closest* to:
A. $400,000.
B. $800,000.
C. $1,700,000.

9. The table below presents information on a company (in '000s):

| | |
|---|---|
| Revenues for the year | 15,000 |
| Total expenses for the year | 12,500 |
| Total current assets at year-end | 8,500 |
| Total non-current assets at year-end | 13,750 |
| Contributed capital at the beginning of the year | 2,000 |
| Proceeds from shares issued during the year | 500 |
| Retained earnings at the beginning of the year | 7,750 |
| Total liabilities at year-end | 11,400 |

The amount of dividends declared (£ '000s) during the year is *closest* to
A. 1,400.
B. 1,450.
C. 1,900.

10. At the beginning of the year, a company had total shareholders' equity consisting of ¥500,000 in common share capital and ¥100,000 in retained earnings. Following details are given for the year:

| | |
|---|---|
| Net income reported | ¥35,000 |
| Dividends paid | 3,500 |
| Repurchase of company stock, to be held as treasury stock | 5,000 |

The total shareholders' equity at the end of the year is *closest* to:
A. ¥636,500.
B. ¥626,500.
C. ¥631,500.

11. The following information is available about a company:

| | |
|---|---|
| Contributed capital, beginning of the year | $ 60,000 |
| Retained earnings, beginning of the year | 250,000 |

| | |
|---|---|
| Sales revenues earned during the year | 400,000 |
| Investment income earned during the year | 9,000 |
| Total expenses paid during the year | 300,000 |
| Dividends paid during the year | 10,000 |
| Total assets, end of the year | 700,000 |

Total liabilities at the end of the year are *closest* to:
A. $290,000.
B. $291,000.
C. $300,000.

12. Which of the following relationships is most accurate?
A. Ending retained earnings = Beginning retained earnings – Expenses – Dividends.
B. Owners' equity = Contributed capital – Retained Earnings.
C. Assets = Liabilities + Contributed capital + Beginning retained earnings + Revenue – Expenses – Dividends.

13. Which of the following relationships is most accurate?
A. Owners' equity = Assets + Liabilities.
B. Owners' equity = Contributed capital – Retained earnings.
C. Liabilities = Assets - Owners' equity.

**LO.d: Describe the process of recording business transactions using an accounting system based on the accounting equation.**

14. At the start of a month, an auto retailer paid $50,000 in cash for different types of cars. He sold cars costing $25,000 for $35,000 during the month. The *most likely* effect of these transactions on the auto retailer's accounting equation for the month is that assets will:
A. be unchanged.
B. increase by $10,000.
C. decrease by $20,000.

15. A finance manager wants to look at the company's transactions by the order in which they occur. The accounting document that she would *most likely* refer to is the:
A. general journal.
B. general ledger.
C. trial balance.

16. A company purchases inventory with cash. What is the *most likely* effect of this transaction on the accounting equation?
A. Assets increase, and liabilities increase.
B. There is no effect on the accounting equation.
C. Assets decrease, and owners' equity decreases.

17. Jennifer Jones owns a bakery. On June 1 2013, Jones delivered 50 loaves of bread at a rate of $10 per loaf. The cost of each loaf is $8. The invoice attached with the delivery has the terms

that payment is due within 20 days. Which of the following accounting entries would Jones make in her books?

A. Increase in accounts receivable by $500, increase in revenue by $500.
B. Increase in cost of goods sold by $400, and decrease in inventory by $400.
C. Both A and B.

18. Data is sorted out by account rather than by date in the:

A. general ledger.
B. general journal.
C. adjusted trial balance.

19. Jonathan Trott is a manager at UFLP Ltd. He receives $1000 in cash for services which are to be delivered in the next period. In order to balance the accounting equation, which of the following is Trott *most likely* to do?

A. Record an asset.
B. Record a liability.
C. Record revenue.

**LO.e: Describe the need for accruals and other adjustments in preparing financial statements.**

20. Which of the following statements is *least accurate*?

A. Accrued revenue arises when revenue has been earned but not yet received.
B. A valuation adjustment for an asset converts its historical cost to its depreciated value.
C. Accrued expenses arise when a company incurs expenses that have not yet been paid at the end of accounting period.

21. In accrual accounting, an adjusting entry is made that resulted in the reduction of an asset and a recording of an expense. The originating entry was *most likely* a(n):

A. accrued expense.
B. deferred revenue.
C. prepaid expense.

22. David Retta is an accountant at G&P Ltd. The originating entry he makes is the establishment of a liability and record of an expense. Which of the following is *most likely* to be the nature of the activity for which Retta has made the entry?

A. Accrued expense.
B. Prepaid expense.
C. Unbilled revenue.

23. Which of the following entries *most likely* involves a valuation adjustment?

A. Record cash receipt and establish a liability for deferred revenue.
B. Increase an asset and record the gain on the income statement or increase in other comprehensive income.
C. Sell an asset; record cash receipt and revenue.

**LO.f: Describe the relationships among the income statement, balance sheet, statement of cash flows, and statement of owners' equity.**

24. The following information is available about XYX Company:

| | |
|---|---|
| Contributed Capital, beginning of the year | £ 100,000 |
| Retained earnings, beginning of the year | 450,000 |
| Sales revenues earned during the year | 900,000 |
| Investment income earned during the year | 10,000 |
| Total expenses paid during the year | 804,000 |
| Dividends paid during the year | 20,000 |
| Total assets, end of the year | 1,600,000 |

Total liabilities at the end of the year *closest* to:
A. £974,000.
B. £944,000.
C. £964,000.

25. Nina Nasser wants to estimate the worth of Lily Flowers Corporation's liabilities. She has the following information available.

**Income Statement Extract**

| | |
|---|---|
| Net Revenue | $5,000 |
| Net Expenses | $4,200 |
| Dividends Paid Out | $0 |

**Additional information**

| | |
|---|---|
| Assets at year end: | $12,000 |
| Capital at year beginning: | $5,000 |
| Retained earnings at year beginning: | $1,200 |

Which of the following is *most likely* to be Nasser's estimate of Lily Flowers Corporation's liabilities?
A. 5,000.
B. 7,000.
C. 19,000.

**LO.g: Describe the flow of information in an accounting system.**

26. A trial balance is *best* described as a document that:
A. contains business transactions recorded in the order in which they occur.
B. lists account balances at a particular point in time.
C. shows all business transactions by account.

**LO.h: Describe the use of the results of the accounting process in security analysis.**

27. In security valuation, analysts *least likely* use the financial statements to:
A. identify the type of accruals and valuation entry.
B. detect fraudulent accounting.
C. assess the performance of economy.

28. The use of estimates in financial reporting:
    A. is a limitation in the accounting model as they provide an opportunity for deliberate earnings manipulation.
    B. can be avoided by using complex accounting models.
    C. is an effort to misrepresent the economic performance of a company.

**Solutions**

1. A is correct. Issuing common stock is a form of financing activity as it is related to obtaining capital.

2. B is correct. Investing activities are those activities associated with acquisition and disposal of long-term assets.

3. C is correct. The owner's equity is a residual claim on a company's resources. Assets are the economic resources of a company. Liabilities are the creditors' claims on the resources.

4. B is correct. Unearned fees are a liability because the business has yet to earn it, while it has already received cash in advance.

5. A is correct. The balance sheet (statement of financial position) provides information at a point in time, whereas other statements provide information regarding the activity during a period of time.

6. A is correct. Financial statement elements are revenue, expenses, assets, liabilities, and owner's equity.

7. C is correct.
   $\text{Ending retained earnings} = \text{Beginning retained earnings} + \text{Net income} - \text{Dividends paid out}$
   $58{,}000 = 40{,}000 + \text{Net income} - 16{,}000$
   $\text{Net income} = \$34{,}000$

8. C is correct.
   Total assets = liabilities + owner's equity
   Owner's equity = 6,750,000 - 3,250,000 = 3,500,000
   Owner's equity = contributed capital + ending retained earnings
   Ending retained earnings = 3,500,000 – 1,300,000 = 2,200,000
   Ending retained earnings = beginning retained earnings + net income – dividends
   2,200,000 = 700,000 + NI – 200,000
   NI = 1,700,000.

9. C is correct.
   Equity = Current assets + Non-current assets – Total liabilities
   Year-End Equity = 8,500 + 13,750 – 11400 = 10,850.
   Retained earnings = Equity – Contributed capital
   Ending retained earnings = 10,850 – (2,000 + 500) = 8,350.
   Dividends = Beginning retained earnings + Net income – Ending retained earnings
   Dividends = 7,750 + (15,000 – 12,500) – 8,350 = 1900.

10. B is correct.

Shareholders' equity at the end of year = beginning shareholders' equity + net income + retained earnings – dividends – repurchase of stock = 500,000 + 100,000 + 35,000 – 3,500 – 5,000 = 626,500.

11. B is correct. Increase in retained earnings = Sales – total expenses + investment income – dividends paid.
    Increase in retained earnings = 400 – 300 + 9 – 10 = 99,000
    Ending owner's equity = contributed capital + initial retained earnings + increase in retained earnings
    Ending owner's equity = 60 + 250 + 99 = 409
    Total liabilities = 700 – 409 = 291,000.

12. C is correct. A is incorrect because revenue is not added.

13. C is correct. This based on the fundamental accounting relationship: Assets = Liabilities + Equity

14. B is correct. Buying \$50,000 of cars will decrease cash by \$50,000 and increase inventory by \$50,000. Selling \$25,000 of cars for \$35,000 will decrease inventory by \$25,000, and increase either cash (if cash collected in the same accounting period) or accounts receivable (if sold on credit) by \$35,000. The combined effect is an increase of \$10,000 in assets.

15. A is correct. The general journal records transactions in the order in which they occur (chronological order) and is, therefore, sorted by date.

16. B is correct. There would be no effect on the accounting equation because the company has exchanged one asset for another. Cash has decreased, and office equipment, a capital asset, has increased.

17. C is correct. The delivery results in a decrease in inventory, an increase in cost of goods sold, an increase in accounts receivable, and an increase in revenue. Therefore, Jennifer will record all four entries in her books.

18. A is correct. The general ledger sorts the data and shows all business transactions by account. The general journal has the same transactions recorded in chronological order rather than by account. The adjusted trial balance simply lists the balances of accounts.

19. B is correct. In order to balance the accounting transaction, Trott will record a liability (unearned revenue) so as to match against an increase in asset in the form of cash received.

20. B is correct. A valuation adjustment for an asset converts its historical cost to current market value.

21. C is correct. The adjusting entry to record the expiry of a prepaid expense is the reduction of an asset (the prepaid) and the recognition of the expense.

22. A is correct. This is the originating entry for an accrued expense. The expense has been incurred and is recorded. Because the payment is still due, a liability arises.

23. B is correct. Valuation adjustments are made to a company's assets or liabilities. When an asset's value increases, the gain is recorded as a gain on the income statement or other comprehensive income. When an asset's value decreases, the decrease is recorded as a loss on the income statement or decrease in other comprehensive income.

24. C is correct.

Assets = Liabilities + Equity.

First calculate ending equity (£636,000, see calculation below)

£1,600,000 = liabilities + £636,000, Total liabilities = **£964,000**

| | |
|---|---|
| Contributed capital | 100,000 |
| Initial retained earnings | 450,000 |
| | |
| Sales revenues | 900,000 |
| Investment income | 10,000 |
| Total expenses | (804,000) |
| Net income for the year | 106,000 |
| Dividends paid | (20,000) |
| Increase in retained earnings | 86,000 |
| Ending owners' equity | = Contributed Capital + Initial retained earnings + Increase in retained earnings = $636,000 |

25. A is correct.

$\text{Liabilities} = \text{Assets} - \text{Capital at year end}$

$\text{Capital at year end} = \text{Capital at year beginning} + \text{Ending retained earnings}$

$\text{Ending retained earnings} = \text{Beginning retained earnings} + \text{Net income} - \text{Dividends paid out}$

$\text{Ending retained earnings} = 1200 + (5000 - 4200) = 2{,}000$

$\text{Capital at year end} = 5{,}000 + 2{,}000 = 7{,}000$

$$\text{Liabilities} = 12{,}000 - 7000 = 5{,}000$$

26. B is correct. A trial balance is a document that lists account balances at a particular point in time.

27. C is correct.

28. A is correct.

**LO.a: Describe the objective of financial statements and the importance of financial reporting standards in security analysis and valuation.**

1. Cat Inc. and Kan Inc. are two companies that prepare financial statements in accordance with IFRS. They have identical transactions in FY 2014-15. The financial statements of the two companies will *most likely* be:
   A. Comparable.
   B. Identical.
   C. Consistent.

2. Financial reports *least likely* provide useful information that is directly used for:
   A. Asset valuation.
   B. Valuing a company or securities a company issues.
   C. Assess an economy's performance.

**LO.b: Describe roles and desirable attributes of financial reporting standard-setting bodies and regulatory authorities in establishing and enforcing reporting standards, and describe the role of the International Organization of Securities Commissions.**

3. Which of the following statements is *least accurate* with respect to financial reporting requirements?
   A. Standard-setting bodies are typically private sector, self-regulated organizations.
   B. Standard-setting bodies have authority because they are recognized by regulatory authorities.
   C. The requirement to prepare financial reports in accordance with specified accounting standards is the responsibility of standard-setting bodies.

4. Which of the following reports is *least likely* to be filed with the SEC?
   A. Annual report.
   B. Form 10-K.
   C. Proxy statement.

5. The role of International Organization of Securities Commissions (IOSCO) is *most likely* to:
   A. assist in attaining the goal of cross-border cooperation in combating violations of securities laws.
   B. be responsible for regulating financial markets of member nations.
   C. be the oversight body to which the International Accounting Standards Board (IASB) reports.

6. The recognition and enforcement of standards is *least likely* to be conducted by:
   A. Accounting and Corporate Regulatory Authority in Singapore.
   B. International Accounting Standards Board.
   C. Securities and Exchange Commission of Brazil.

7. Which of the following is *least likely* to be filed with the Securities and Exchange Commission?

A. Projected income statements for five years.
B. Proxy statement for annual and special meetings.
C. Securities offerings registration statement.

8. Which of the following statements is *not* true about the desirable attributes of accounting standards boards? Accounting standards boards should:
A. have adequate authority, resources, and competencies to fulfill its responsibilities.
B. have a clearly stated objective, and have clear and consistent processes.
C. operate in cooperation with industry leaders and adhere to their interests.

**LO.c: Describe the status of global convergence of accounting standards and ongoing barriers to developing one universally accepted set of financial reporting standards.**

9. The goal of establishing one set of universally accepted financial reporting standards can be *best* described as resulting in:
A. convergence of standards.
B. divergence of standards.
C. globalization of standards.

**LO.d: Describe the International Accounting Standards Board's conceptual framework, including the objective and qualitative characteristics of financial statements, required reporting elements, and constraints and assumptions in preparing financial statements.**

10. According to the IASB Conceptual Framework, the qualitative characteristic that different knowledgeable users agree on the information presented to be a faithful representation of the economic events is *best* described as:
A. comparability.
B. understandability.
C. verifiability.

11. According to the IFRS Conceptual Framework, the *least likely* feature underlying the preparation of financial statements is:
A. accrual basis.
B. matching.
C. materiality.

12. According to the IFRS framework, the qualitative characteristic that makes financial information useful is *least likely* to be:
A. comparability.
B. materiality.
C. understandability.

13. According to the IASB's Conceptual Framework for Financial reporting, the two fundamental qualitative characteristics that make financial information useful are *best* described as:
A. relevance and faithful representation.

B. timeliness and accrual accounting.
C. verifiability and understandability.

14. Under the IFRS Framework for the Preparation and Presentation of Financial Statements, to be recognized as a financial statement element, an element *most likely* needs to:
    A. have a cost or value that can be measured with reliability.
    B. normally be carried at historical cost, current cost or fair market value.
    C. provide certainty that any future economic benefit associated with the item will flow to or from the enterprise.

15. According to the IASB Conceptual Framework, the two fundamental qualitative characteristics that make financial information useful are *best* described as:
    A. timeliness and accrual accounting.
    B. relevance and faithful representation.
    C. understandability and verifiability.

16. The Conceptual Framework (2010) identifies several characteristics that enhance the usefulness of financial information. Which of the following is *least likely* a characteristic?
    A. Transparency.
    B. Understandability.
    C. Verifiability.

17. The amount of cash that could be obtained by selling an asset in an orderly disposal is *least likely* known as:
    A. amortized value.
    B. fair value.
    C. realizable value.

18. Which of the following is *least likely* to be presented on an accrual basis?
    A. Cash flow information.
    B. Net revenue information.
    C. Operating and non-operating expenses.

**LO.e: Describe general requirements for financial statements under International Financial Reporting Standards (IFRS).**

19. Which of the following is *least likely* a general feature underlying the creation of financial statements?
    A. Fair presentation.
    B. Going concern.
    C. Minimum specified information on the face of financial statements.

20. Which of the following is *most likely* represented as inflows of economic resources to a company under the IFRS framework?
    A. Assets.

B. Equity.
C. Revenues.

21. Under IFRS, which of the following is *least likely* one of the fundamental principles underlying the preparation of financial statements?
A. Consistency.
B. Materiality.
C. Reliability.

**LO.f: Compare key concepts of financial reporting standards under IFRS and US generally accepted accounting principles (US GAAP) reporting systems.**

22. A security analyst is comparing a company which prepares its financial statements according to IFRS to a company that follows the U.S. GAAP. The analyst is *most likely* to make an adjustment to:
A. realized losses.
B. unrealized gains and losses for trading securities.
C. unrealized gains and losses for available-for-sale securities.

**LO.g: Identify characteristics of a coherent financial reporting framework and the barriers to creating such a framework.**

23. Which of the following is *most likely* a characteristic of an effective financial reporting framework?
A. Comparability.
B. Comprehensiveness.
C. Understandability.

24. Which of the following is *least likely* a characteristic of an effective financial reporting framework?
A. Comparability.
B. Comprehensiveness.
C. Consistency.

25. An objective oriented standard setting approach is *most likely* to:
A. provide a broad financial reporting system with focus on principles.
B. provide a list of yes-or-no rules for classifying transactions.
C. include a framework of principles and rules for guidance.

26. The barriers to creating a single coherent financial reporting standard framework *least likely* include:
A. Comprehensiveness.
B. Standard-setting approach.
C. Valuation.

**LO.h: Describe implications for financial analysis of differing financial reporting systems and the importance of monitoring developments in financial reporting standards.**

27. The areas analysts need to be aware with respect to developments in financial reporting standards *least likely* include:
    A. New products or types of transactions.
    B. Company disclosures.
    C. Effect of evolving standards in the preparation of financial statements.

**LO.i: Analyze company disclosures of significant accounting policies.**

28. An analyst is reviewing disclosures of significant accounting policies of a company. He is *least likely* to analyze:
    A. Significant balances on the financial statements.
    B. Changes in disclosures from one year to the next.
    C. Policies that do not require significant estimates.

**Solutions**

1. A is correct. They need not be identical and not necessarily consistent.

2. C is correct.

3. C is correct. The requirement to prepare financial reports in accordance with specified accounting standards is the responsibility of regulatory authorities such as the SEC.

4. A is correct. The annual report is not a requirement of the SEC.

5. A is correct. The IOSCO is not a regulator of financial markets. To ensure consistent application of international financial standards, it is important to have uniform regulation and enforcement across national boundaries. IOSCO assists in attaining this goal of uniform regulation as well as cross-border co-operation in combating violations of securities and derivatives laws.

6. B is correct. The International Accounting Standards Board is a standard-setting body that sets the standards. The Accounting and Corporate Regulatory Authority and the Securities and Exchange Commission are regulatory bodies that recognize and enforce these standards.

7. A is correct. The projected income statements are not filed with the Securities and Exchange Commission.

8. C is correct. Accounting standards boards should operate independently and not succumb to external forces.

9. A is correct. The standards seem to be converging so as to result in a universally accepted set of standards. This is called convergence of standards.

10. C is correct. Under the International Accounting Standards Board's Conceptual Framework, verifiability is the qualitative characteristic that means that different knowledgeable and independent users would agree that the information presented faithfully represents the economic events that it is intended to represent.

11. B is correct. The IFRS Conceptual Framework specifies a number of general features underlying the preparation of financial statements, including materiality and accrual basis. Matching is not one of those general features; it is a general principle of expense recognition.

12. B is correct. The four principal qualitative characteristics that make financial information useful are understandability, relevance, reliability and comparability. Materiality relates to the level of detail of the information needed to achieve relevance – whether the omission or misstatement of the information would impact the decision maker's decision.

13. A is correct. Relevance and faithful representation are the two fundamental qualitative characteristics that make financial information useful, according to the IASB Conceptual Framework.

14. A is correct. For recognition in the financial statements, an element must have a cost or value that can be measured with reliability; certainty is not a requirement for economic benefits associated with an item to flow to or from the enterprise: all that is required is that it is probable that they will.

15. B is correct. Relevance and faithful representation are the two fundamental qualitative characteristics that make financial information useful according to the IASB Conceptual Framework.

16. A is correct. Transparency is not one of the characteristics. The characteristics are relevance, faithful presentation, comparability, timeliness, understandability and verifiability.

17. A is correct. Amortized value is based on the original cost and the amortization schedule.

18. A is correct. All financial statements should be presented on an accrual basis, except cash flow information.

19. C is correct. Fair presentation and going concern are features underlying the creation of financial statements. Minimum specified information on the face of financial statements falls under ‘Structure and Content’, and not under ‘General Features’.

20. C is correct. The financial statement elements under International Financial Reporting Standards (IFRS) are: assets, liabilities, owners’ equity, revenue, and expenses. Revenues are inflows of economic resources. Assets are economic resources, but not inflows.

21. C is correct. Based on International Accounting Standard (IAS), general requirements for financial statements, fundamental principles include fair presentation, going concern, accrual basis, consistency and materiality.

22. C is correct. IFRS makes a distinction between unrealized gains and losses on available-for-sale debt securities that arise as a result of exchange rate movements and requires these changes in value to be recognized in the income statement, whereas U.S. GAAP does not make this distinction.

23. B is correct. The characteristics of an effective financial reporting framework are transparency, comprehensiveness, and consistency. Comparability and understandability are general features of financial statements.

24. A is correct. The three characteristics of an effective financial reporting framework are transparency, comprehensiveness, and consistency.

25. C is correct. An objective oriented standard setting approach combines the principles and rules based approach, which includes a framework of principles as well as rules for guidance.

26. A is correct. The barriers to creating a coherent single financial reporting framework are valuation, standard-setting approach, and measurement. Transparency, comprehensiveness, and consistency are characteristics of the framework.

27. C is correct because it is from an accountant's perspective and not that of an analyst.

28. C is correct. Policies that require significant judgments and estimates are disclosed in MD&A and must be analyzed.

**LO.a: Describe the components of the income statement and alternative presentation formats of that statement.**

1. Angels Corporation incurs two types of depreciation expenses. Depreciation is charged on the factory machinery used for production purposes and for office equipment. The accountant of the firm presents both these expenses under a single heading, depreciation expense, in the income statement. This is *most likely* to be:
   A. grouping by function.
   B. grouping by nature.
   C. direct method.

2. The accountant at Demons Ltd. presents the subtotals for gross profit and operating profit in the income statement. The format adopted here is *most likely*:
   A. multi-step.
   B. single-step.
   C. indirect.

3. The income statement *least likely* includes which of the following elements?
   A. Operating income.
   B. Accounts receivable.
   C. Income before tax.

**LO.b: Describe general principles of revenue recognition and accrual accounting, specific revenue recognition applications (including accounting for long-term contracts, installment sales, barter transactions, gross and net reporting of revenue), and implications of revenue recognition principles for financial analysis.**

4. A company entered into a three-year construction project with a total contract price of $11.2 million and an expected total cost of $8.7 million. The following table provides cash flow information relating to the contract:

| All figures in millions | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Costs incurred and paid | $2.2 | $3.5 | $3.0 |
| Amounts billed and payments received | $3.5 | $4.1 | $3.6 |

   If the company uses the percentage-of-completion method, the amount of revenue recognized (in millions) in Year 2 is *closest* to:
   A. $4.5.
   B. $5.7.
   C. $7.6.

5. A customer orders customized industrial equipment from a manufacturing company in June. The equipment was shipped and delivered to the customer in August. The customer was invoiced in August and payment was made to the manufacturing company in September. The *most* appropriate month in which the manufacturing company should show the revenue is:

A. June.
B. August.
C. September.

6. Which of the following is *least likely* correct regarding revenue recognition principles?
   A. Revenue can only be recognized when cash is received.
   B. Under U.S. GAAP, the price needs to be either determined or determinable for revenue to be recognized.
   C. The IFRS criteria for recognizing royalties is that it is probable that the economic benefits associated with the transaction will flow to the entity and the amount of revenue can be reliably measured.

7. Telecom Ltd. has a four year license to provide communication services to a corporation. The total amount of the license fee that Telecom Ltd. will receive is $50,000. Revenue is recognized on a prorated basis as it is a long term contract. What revenue would Telecom Ltd. recognize at the end of year 1?
   A. $0.
   B. $12,500.
   C. $50,000.

8. Which of the following standards states that the revenue from barter transactions can be recognized at fair value only if the company has historically received cash payments for such services?
   A. IFRS.
   B. U.S. GAAP.
   C. Neither IFRS nor U.S. GAAP.

9. Under U.S. GAAP, which of the following is *not* a criterion for deciding whether to report gross revenues rather than net revenue?
   A. The company is a primary obligator under the contract.
   B. The company has reasonable latitude to establish the price.
   C. The company does not bear the inventory risk.

10. Under IFRS, which of the following is *not* a condition to recognize revenue from the sale of goods on the income statement?
    A. Amount of revenue can be measured reliably.
    B. Customer has made the payment.
    C. Entity has transferred the risk and rewards of ownership of goods to the buyer.

11. Under US GAAP, which of the following is *least likely* a criterion for determining when revenue is realized and earned?
    A. The price is determinable.
    B. The seller is reasonably sure of collecting the payment from the buyer.
    C. The product has been shipped, but not yet delivered.

12. Under US GAAP, a revenue recognition method used for long-term projects where the outcome cannot be measured reliably is *most likely* the:
    A. Percentage-of-completion method.
    B. Completed contract method.
    C. Cost recovery method.

13. During 2013, Company A sold a piece of land with a cost of $3 million to Company B for $5 million. Company B made a $1 million down payment with the remaining balance to be paid over the next 5 years. It has been determined that there is significant doubt about the ability and commitment of the buyer to complete all payments. Company A would *most likely* report a profit in 2013 of:
    A. $2 million using the accrual method.
    B. $0.4 million using the installment method.
    C. $1 million using the cost recovery method.

14. Ken Miller buys a house for $ 1 million with the payments spread over 10 years. His ability to complete the payments is doubtful. The *least* appropriate method to recognize revenue after the house is sold is:
    A. Installment method.
    B. Cost recovery method.
    C. Percentage of completion method.

**LO.c: Calculate revenue given information that might influence the choice of revenue recognition method.**

15. Dynamo Construction Company uses the percentage-of-completion method to recognize revenue from its long term construction contracts and estimates percent completion based on expenditures incurred as a percentage of total estimated expenditures. A three-year contract for €15 million was undertaken. The project is now at the end of its second year, and the following end-of-year information is available:

| | **Year 1** | **Year 2** |
|---|---|---|
| Costs incurred during year | 4,150,000 | 3,800,000 |
| Estimated total costs | 8,500,000 | 8,500,000 |

    The profit recognized in year 2 is *closest* to:
    A. €2.9 million.
    B. €3.0 million.
    C. €10.2 million.

16. A company entered into a three-year construction project with a total contract price (all figures in '000s $) of $5,000 and expected costs of $4,500. The company recognizes revenue using the percentage of completion method. The data below relate to the contract.

| (All figures in '000s $) | **Year 1** | **Year 2** | **Year 3** |
|---|---|---|---|
| Costs incurred and paid | 1,500 | 2,000 | 1,000 |

| | | | |
|---|---|---|---|
| Amounts billed and payments received | 1,000 | 2,000 | 2,000 |

The amount of revenue (in $‘000s) the company will recognize in Year 2 is *closest* to:
A. 2,222.
B. 2,865.
C. 3,890.

**LO.d Describe key aspects of the converged accounting standards issued by the International Accounting Standards Board and Financial Accounting Standards Board in May 2014.**

17. The core principle of the converged revenue recognition standard (issued by IASB and FASB) is that revenue should be recognized to “depict the transfer of promised goods or services to customers in an amount that reflects:
    A. the consideration that the entity has actually received in an exchange for those goods or services.”
    B. the consideration to which the entity expects to be entitled in an exchange for those goods or services.”
    C. the costs that the entity has incurred to produce those goods or services.”

18. Two analysts are discussing the converged standards issues by IASB and FASB in May 2014. Their comments are as follow: Analyst 1: Revenue recognition requires the application of a five-step process. The process includes identification of the contract with the customer and identification of performance obligations in the contract. Analyst 2: The performance obligations within a contract represent promises to transfer distinct goods or services.
    A. Analyst 1 is correct.
    B. Analyst 2 is correct.
    C. Both analysts are correct.

**LO.e: Describe general principles of expense recognition, specific expense recognition applications, and implications of expense recognition choices for financial analysis.**

19. Omega Enterprises is in the process of developing a more efficient production process for one of its primary products. If the company prepares its financial statements in accordance with IFRS, the *most* appropriate accounting treatment for those costs incurred in the project is to:
    A. expense them as incurred.
    B. capitalize costs directly related to the development.
    C. expense costs until technical feasibility has been established.

20. A company records a doubtful accounts expense of $4 million in 2015. What is the most appropriate interpretation of this expense?
    A. The expense represents credit losses on customer receivables in 2015.
    B. The expense represents an estimate of how much of the 2015 revenue will ultimately be uncollectible.

C. The net revenue shown on the income statement will be reduced by $4 million.

21. Tera Computers Company has switched to high margin premium-priced products with the most innovative features as part of its product differentiation strategy. Which of the following other changes is *most* consistent with this strategy?
    A. An increase in inventory levels.
    B. A decrease in R&D expenditures.
    C. An increase in advertising expenditures.

22. On 1 January 2011, a company issued €10,000,000 of bonds with a 10-year maturity paying annual coupon at 4% at an issue price of €96.04 per €100. Market interest rates at the time of issue were 4.5%. If the company uses IFRS, its interest expense in 2011 is *closest* to:
    A. €384,160.
    B. €432,180.
    C. €450,000.

23. Which of the following principles is followed for expense recognition?
    A. Going concern.
    B. Matching.
    C. Prudence.

24. Which inventory costing method is likely to have the highest ending inventory in a period of rising prices?
    A. FIFO.
    B. LIFO.
    C. Weighted average cost.

25. Mega Games Ltd. started business on January 1, 2012. On January 15, it purchased 1000 games at a cost of $75 each. 900 of these were sold in the first quarter at a price of $100 each. On April 1, more inventory was purchased comprising of 500 games at $80 each. In the second quarter, 550 games were sold. What is the ending inventory *most likely* to be if the inventory costing method followed is LIFO?
    A. $3,750.
    B. $4,000.
    C. $4,500.

26. Which of the following statements is *most likely* to be correct?
    A. The matching principle requires the adoption of the direct write-off method where a loss is only recognized when the customer actually defaults.
    B. A company estimates uncollectible accounts based on previous experience and this is recorded as a direct reduction of revenues.
    C. Under the matching principle, the estimated warranty expense is recognized in the period of the sale and not when the cost is actually incurred.

27. Lavish Leathers Ltd. purchased a machine worth $100,000. The machine will be used for five years. The estimated salvage value at the end of Year 5 is $15,000. The company

charges depreciation using the straight line method. Which of the following is *most likely* to be the net book value of the machine at the end of Year 3?
A. $17,000.
B. $40,000.
C. $49,000.

28. Lazy Leathers Ltd. purchased a machine worth $100,000.The machine will be used for five years. The estimated salvage value at the end of Year 5 is $15,000. The company charges depreciation using the double declining balance method. Which of the following is *most likely* to be the depreciation expense of the machine for Year 1?
A. $17,000.
B. $40,000.
C. $15,000.

**LO.f: Describe the financial reporting treatment and analysis of non-recurring items (including discontinued operations, extraordinary items, unusual or infrequent items) and changes in accounting standards.**

29. An analyst is estimating the net profit margin of a manufacturing company for next year. The method he adopts is to average the net profit margin for the past five years. Which of the following statements is *most likely* accurate with respect to the items used for his projections?
A. He must not include the gain on sale of investments, as it is a manufacturing firm.
B. He uses the most recent year's tax rate, which was only 60% of the previous two years' rate.
C. He must include the losses incurred due to discontinued operations in each of the five years.

30. Which of the following categories is *not* permitted under IFRS?
A. Discontinued operations.
B. Extraordinary items.
C. Unusual or infrequent items.

31. Retrospective application refers to:
A. correction of an error for a prior period.
B. changes in accounting estimates rather than accounting policies.
C. presentation of financial statements for previous fiscal years according to newly adopted principles.

**LO.g: Distinguish between the operating and non-operating components of the income statement.**

32. The following information for the current year is available for a company that prepares its financial statements in accordance with U.S. GAAP:

| | |
|---|---|
| Revenue | $500,000 |
| Cost of goods sold | $180,000 |
| Other operating expenses | $100,000 |

Restructuring costs $50,000
Interest expense $30,000
The company's operating profit is *closest* to:
A. $220,000.
B. $170,000.
C. $140,000.

33. ABC Manufacturing Company prepares its financial statements in accordance with U.S. GAAP. Data for ABC is presented below:

| | $000s |
|---|---|
| Revenue | 10,000 |
| Cost of goods sold | 6,000 |
| Other operating expenses | 1,500 |
| Restructuring costs (infrequent but not unusual) | 300 |
| Interest expense | 400 |

ABC's operating profit (in $000s) is *closest* to:
A. 2,200.
B. 1,900.
C. 2,100.

**LO.h: Describe how earnings per share is calculated and calculate and interpret a company's earnings per share (both basic and diluted earnings per share) for both simple and complex capital structures.**

34. The following information is available on a company for the current year:
Net Income: $2,500,000
Average number of shares outstanding: 150,000
Convertible preferred shares outstanding: 5,000
Preferred dividend per share: $5
Each preferred is convertible into 5 shares of common stock
Convertible bonds, $100 face value per bond at 6% coupon: $60,000
Each bond is convertible into 20 shares of common stock
Corporate tax rate: 35%
The diluted EPS is *closest* to:
A. $13.38.
B. $14.29.
C. $15.29.

35. Selected information of a company's common equity over the course of the year is presented below:
Outstanding shares, at the start of the year: 3,000,000
Stock options outstanding, at start and end of the year: 100,000; Exercise price: $10.00
Shares issued on April 1: 500,000
Shares repurchased (treasury shares) on July 1: 100,000

Average market price of common shares for the year: $20/share
If the company's net income for the year is $5,000,000, its diluted EPS is *closest* to:
A. $1.50.
B. $1.48.
C. $1.46.

36. Xander Inc.'s financial information is available at the end of the year:

| | **Share Information** | | |
|---|---|---|---|
| Security | Authorized | Issued & outstanding | Other features |
| Common Stock | 500,000 | 300,000 | Currently pays a dividend of $2 per share |
| Preferred stock, type A | 25,000 | 20,000 | Nonconvertible, cumulative; pays a dividend of $6 per share. |
| Preferred stock, type B | 25,000 | 15,000 | Convertible; pays a dividend of $7.50 per share. Each share is convertible into 2 common shares. |
| **Additional Information**:<br>Retained earnings at start of year = $5,000,000<br>Reported income for the year = $2,000,000 | | | |

The diluted EPS is *closest* to:
A. $5.70.
B. $6.12.
C. $6.23.

37. A company has earnings of 10 million for 2013. The preferred dividend for the year is 2 million and the common stock dividend is 1 million. The number of shares outstanding for the year is 20 million. What is the basic EPS?
A. 0.40.
B. 0.35.
C. 0.50.

38. Dan Motors reported a net income of $1 million for the year ended December 31, 2012. The company had 50,000 common shares outstanding for the year, and 15,000 shares of preferred stock paying $17 dividend per share. Each share is convertible into 1 share of common stock. What is the diluted EPS for the company?
A. 11.46.
B. 14.90.
C. 15.38.

**LO.i: Distinguish between dilutive and antidilutive securities, and describe the implications of each for the earnings per share calculation.**

39. Convertible securities are antidilutive if they result in a:

A. Diluted EPS higher than the basic EPS.
B. Diluted EPS lower than the basic EPS.
C. Diluted EPS the same as that of the basic EPS.

**LO.j: Convert income statements to common-size income statements.**

40. Which of the following statements regarding common size statements is *least* accurate? Common size statements:
A. highlight the differences in the companies' strategies.
B. help in performing cross-sectional analysis.
C. can be used to compare companies with different accounting policies.

41. The following data is available for a company:

| | $ (millions) |
|---|---|
| Total assets | 220 |
| Total revenues | 485 |
| Total expenses | 373 |
| R&D expenses | 35 |

Under a common-size analysis, the R&D expense is *closest* to:
A. 15.9%.
B. 9.38%.
C. 7.21%.

**LO.k: Evaluate a company's financial performance using common-size income statements and financial ratios based on the income statement.**

42. Income statements for two companies (A and B) and the common-sized income statement for the industry are provided below:

| **All $ figures in '000s** | **Company A** | **Company B** | **Industry** |
|---|---|---|---|
| Sales | 854 | 620 | 100% |
| Cost of goods sold | 548 | 394 | 73% |
| Selling, general, and administrative expenses | 213 | 143 | 12% |
| Interest expense | 85 | 72 | 9% |
| Pretax earnings | 8 | 11 | 6% |
| Taxes | 2 | 3 | 2% |
| Net earnings | 6 | 8 | 4% |

The *best* conclusion an analyst can make is that:
A. company B's interest rate is lower than the industry average.
B. both companies' tax rates are lower than the industry average.
C. company A earns a higher gross margin than both Company B and the industry.

43. The following table shows the income statements for three hypothetical companies.

| | A | B | C |
|---|---|---|---|
| Sales | 1,000,000 | 800,000 | 900,000 |
| Cost of sales | 750,000 | 600,000 | 650,000 |
| **Gross Profit** | 250,000 | 200,000 | 250,000 |
| Selling expenses | 75,000 | 60,000 | 80,000 |
| General expenses | 80,000 | 60,000 | 60,000 |
| **Operating Profit** | 95,000 | 80,000 | 110,000 |
| Finance expense | 20,000 | 20,000 | 20,000 |
| **Earnings before tax** | 75,000 | 60,000 | 90,000 |
| Tax | 30,000 | 24,000 | 36,000 |
| **Net Profit** | 45,000 | 36,000 | 54,000 |

Which of the following statements is *most likely* correct?

A. Company B has a greater profit margin compared to Company C and a lower profit margin compared to Company A.
B. The tax rate for Company A differs from that of Company B.
C. The operating profit margin for Company C is the highest.

**LO.l: Describe, calculate, and interpret comprehensive income.**

44. The following information is from a company's accounting records:

| | **€ millions** |
|---|---|
| Revenues for the year | 8,500 |
| Total expenses for the year | 6,900 |
| Gains from available-for-sale securities | 630 |
| Loss on foreign currency translation adjustments on a foreign subsidiary | 870 |
| Dividends paid | 500 |

The company's total comprehensive income (in € millions) is *closest* to

A. 860.
B. 1,100.
C. 1,360.

45. Under US GAAP, the change in equity during a period resulting from transactions and other events that are excluded from net income is best known as:

A. Total comprehensive income.
B. Unrealized gains and losses.
C. Translation adjustments.

**LO.m: Describe other comprehensive income, and identify major types of items included in it.**

46. Other comprehensive income *least likely* includes which of the following?
    A. Unrealized holding gains and losses on available-for-sale securities.
    B. Foreign currency translation adjustments.
    C. Unrealized gains and losses on held for trading securities.

47. The following information about a company is given:

| | **€ million** |
|---|---|
| Beginning shareholder's equity | 1,000 |
| Net income | 100 |
| Cash dividends paid | 20 |
| Ending shareholder's equity | 1200 |

    If no common stock was issued or repurchased, the other comprehensive income is *closest* to in (€ million):
    A. 80.
    B. 100.
    C. 120.

48. Other comprehensive income *least likely* includes which of the following? Gains and losses on:
    A. Foreign currency translation adjustments of subsidiaries.
    B. Derivative contracts accounted for as hedges.
    C. Sale of discontinued operations.

**Solutions**

1. B is correct. This is an example of grouping by nature.

2. A is correct. When subtotals are presented, the income statement follows a multi-step format.

3. B is correct. It is an element of the balance sheet.

4. A is correct. The revenue reported is equal to the percentage of the contract that is completed in that period, where percentage completion is based on costs.
   In Year 2: $\left(\frac{3.5}{8.7}\right) * 11.2 = 4.5$.

5. B is correct. The appropriate time to recognize revenue would be in the month of August; the risks and rewards have been transferred to the buyer (shipped and delivered), the revenue can be reliably measured, and it is probable that the economic benefits will flow to the seller.

6. A is correct. Receiving cash is not a pre-requisite for revenue recognition.

7. B is correct. The revenue recognized will be the total amount divided by the time period. Therefore, $\frac{\$50,000}{4}$ = $12,500.

8. B is correct. Under U.S. GAAP, revenue from barter transactions can be recognized at fair value only if the company has historically received cash payments for such services.

9. C is correct. Under U.S. GAAP, one of the criteria for deciding whether to report revenues gross or net is that the company *does* bear the inventory risk.

10. B is correct.

11. C is correct. Under US GAAP, revenue is recognized only when the product has been delivered, or the services have been rendered.

12. B is correct. When the outcome can be measured reliably the percentage-of-completion method is used. When the outcome cannot be measured reliably the completed contract method is used. The cost recovery method is used for installment sales, not for long-term projects.

13. B is correct. Under the installment method, the portion of the total profit that is recognized in each period is determined by the percentage of the total sales price for which the seller has received cash. For Company A, $\frac{2}{5} * 1 = \$0.4$ million. Note: cost recovery method could be used in this case, but the reported profit would be $0.

14. C is correct. Percentage of completion is used for long term contracts before the goods are delivered. After the goods are delivered, installment method and cost recovery methods are used.

15. A is correct. In year 2, the revenue is: 15 million * $\frac{3,800,000}{8,500,000}$ = 6,705,882. The profit is: $6,705,882 - 3,800,000 = 2,905,882$.

16. A is correct. (2,000 / 4,500) * 5,000 = 2,222

17. B is correct. The core principle of the converged standard is that revenue should be recognized to "depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in an exchange for those goods or services".

18. C is correct. Both analysts are correct. Analyst 1 has identified the first two steps in the process. Analyst 2 correctly elaborates on the second step.

19. C is correct. Under IFRS, research and development costs are expensed until certain criteria are met, including that technical feasibility has been established and the company intends to use it

20. B is correct. Option A depicts the 'direct write-off method' which is a violation of the matching principle. Option B is consistent with the matching principle. Option C is not correct because the doubtful accounts expense is shown as a separate expense on the income statement and not as a reduction in revenue.

21. C is correct. Expenditures on advertising and research are required to support a product differentiation strategy. The effect on inventory is uncertain.

22. B is correct. IFRS requires the effective interest method for the amortization of bond discounts/premiums. The bond is issued for 0.9604 * €10 million = €9.604 million.
Interest expense = Liability value * Market rate at issuance: 0.045 × €9.604 million = €432,180.

23. B is correct. The matching concept is followed for expense recognition, whereby revenues and expenses are matched.

24. A is correct. The FIFO costing method is first in, first out. Therefore, the ending inventory comprises of the latest items purchased which are likely to have greater prices. In a period of rising prices, FIFO has the highest ending inventory.

25. A is correct.
Quarter 1 inventory: (1000-900) * 75 = $7,500
Quarter 2 inventory: (1000-900-50) * 75 = $3,750
Inventory remaining: $3,750

This concept is covered in more detail in the reading on inventory.

26. C is correct. Statement A is incorrect because the matching principle requires the company to estimate the uncollectible accounts and not adopt the direct write off method. Statement B is incorrect because the estimate is recorded as an expense. Statement C is correct.

27. C is correct.
$$\text{Depreciation Expense} = \frac{\text{Purchase Price} - \text{Residual Value}}{\text{Life of Asset}} = \frac{100{,}000 - 15{,}000}{5} = 17{,}000$$
$$\text{Balance of machine after three years} = 100{,}000 - (17{,}000 * \ 3) = \$49{,}000$$

28. B is correct. With the double declining method, depreciation is twice that compared to straight line depreciation. Since the straight line depreciation would be 20%, the double declining method depreciation is 40%. Hence, the depreciation is 40,000 for Year 1.

29. A is correct. Investments are not part of the core business. Discontinued operations are non-recurring items.

30. B is correct. IFRS prohibits items to be categorized as extraordinary, while U.S. GAAP permits this categorization.

31. C is correct. Retrospective application applies to the presentation of financial statements for previous fiscal years, according to newly adopted principles.

32. B is correct.
Operating Profit = 500,000 – 180,000 – 100,000 – 50,000 = 170,000.

33. A is correct.

| | $’000s | |
|---|---|---|
| Revenue | 10,000 | |
| Less: Cost of goods sold | (6,000) | |
| Less: Other operating expenses | (1,500) | |
| Less: Restructuring costs | (300) | Restructuring charges are classified as operating items under U.S GAAP |
| Operating Profit | 2,200 | |

34. A is correct.

| | | | | |
|---|---|---|---|---|
| | Basic EPS | Diluted EPS: Bonds converted | Diluted EPS: Preferred converted | Diluted EPS: Both converted |
| NI | 2,500,000 | 2,500,000 | 2,500,000 | 2,500,000 |
| Preferred | (25,000) | (25,000) | | |

| | | | | |
|---|---|---|---|---|
| dividends | | | | |
| After-tax cost of interest .06 x 60,000 x (1-.35) | | 2,340 | | 2,340 |
| **Numerator** | 2,475,000 | 2,477,340 | 2,500,000 | 2,502,340 |
| Shares | 150,000 | 150,000 | 150,000 | 150,000 |
| Preferred converted | | | 25,000 | 25,000 |
| Bond converted | | 12,000 | | 12,000 |
| **Denominator** | 150,000 | 162,000 | 175,000 | 187,000 |
| EPS | 16.5 | 15.29 | 14.29 | 13.38 |

35. B is correct.

Incremental shares issued from stock option exercise (Treasury Stock Method):

100,000 shares – $\frac{100,000*10}{20}$ = 50,000 shares

Weighted average shares outstanding:
Original shares = 3,000,000 [3,000,000 shares × 12 months/12 months]
Incremental shares issued assuming options were exercised = 50,000 [50,000 shares × 12 months/12 months]
Shares issued, April 1 = 375,000 [500,000 shares × 9 months/12 months]
Shares repurchased, July 1 = (50,000) [100,000 shares × 6 months/12 months]
Weighted average shares outstanding = 3,375,000

***Diluted EPS***
5,000,000 / 3,375,000 = $1.48/share

36. A is correct.

| | | | |
|---|---|---|---|
| | Basic EPS | Diluted EPS | |
| NI | 2,000,000 | 2,000,000 | Currently pays a dividend of $2 per share |
| Preferred stock, type A | (120,000) | (120,000) | 20,000 * $6 |
| Preferred stock, type B | (112,500) | 0 | 15,000 * $7.5 |
| Earnings available to common shareholder | 1,767,500 | 1,880,000 | |
| Shares | 300,000 | 300,000 | |
| Shares, if converted | - | 30,000 | 2 * 15,000 |
| Weighted average common shares | 300,000 | 330,000 | |
| EPS | 5.89 | 5.70 | |

37. A is correct. Basic EPS $= \frac{(\text{Net Income – Preferred Dividend})}{\text{Number of shares outstanding}} = \frac{8}{20} = 0.40.$

38. B is correct.
Diluted earnings per share
$$= \frac{\text{Net income}}{\text{Weighted average number of shares outstanding} + \text{New common shares}}$$
$$\text{Diluted earning per share} = \frac{1{,}000{,}000}{50{,}000 + 15{,}000} = 15.38$$
$$\text{Basic earning per share} = \frac{\text{Net income} - \text{Preferred Dividends}}{\text{Weighted average number of shares outstanding}}$$
$$\text{Basic earning per share} = \frac{1{,}000{,}000 - 255{,}000}{50{,}000} = 14.9$$
Since the diluted EPS exceeds the basic EPS, the reported diluted EPS is equal to basic EPS.

39. A is correct. Diluted EPS will always be less than or equal to basic EPS. Convertible securities are not included in the calculation if they result in a higher diluted EPS than basic EPS.

40. C is correct. Since it is a ratio, differences in accounting policies and accounting calendars make comparison difficult.

41. C is correct. In a common-size income statement, each element is expressed as a percentage of revenue.

42. B is correct.
Tax rate for industry = 2/6 = 33.33%
Tax rate for Company A = 2/8 = 25%
Tax rate for Company B = 3/11 = 27%
Gross margin for industry = 100 – 73 = 27%
Gross margin for Company A = $\frac{854 - 548}{854}$ = 35.8%
Gross margin for Company B = $\frac{620 - 394}{620}$= 36.5%
The interest rate is not a function of sales and cannot be analyzed on a common-sized income statement.

43. C is correct. The profit margin for the company is given by $\frac{(\text{Net Profit})}{\text{Sales}} * 100\%$. The profit margins for Company A, B, and C are 4.5%, 4.5%, and 6% respectively. Therefore, statement A is incorrect.
The tax rate for the company is given by $\left(\frac{\text{Tax}}{\text{EBT}}\right) * 100\%$. The tax rate for the three companies is 40%. So, statement B is incorrect.
The operating profit margin for the company is given by $\frac{(\text{Operating Profit})}{\text{Sales}} * 100\%$. The operating profit margin for Company A, B, and C are 9.5%, 10%, and 12.2%. So, statement C is correct.

44. C is correct.
    Total comprehensive income = Net income + other comprehensive income
    Net income = Revenues – Expenses
    Other comprehensive income includes gains or losses on available-for-sale securities and translations adjustments on foreign subsidiaries.
    (Revenues – Expenses) + Gain on AFS – Loss on FX translation
    (8500 – 6900) + 630 – 870 = 1,360.

45. A is correct.

46. C is correct.

47. C is correct. Beginning Equity + Net Income + OCI – Dividend = Ending Equity. Hence: 1,000 + 100 + OCI – 20 = 1,200. OCI = 1200 – (1000 + 100 - 20) = 120.

48. C is correct.

**LO.a: Describe the elements of the balance sheet: assets, liabilities, and equity.**

1. Which of the following statements is *most* accurate?
   A. A classified balance sheet is one which departs materially from accounting standards as per an auditor's opinion.
   B. A classified balance sheet is grouped into current and non-current assets and liabilities.
   C. The excess of current assets over current liabilities is known as liquidity.

2. An asset or liability is created on the balance sheet when revenue is recognized before cash is received and vice versa. Which of the following combinations is *most* accurate regarding the creation of an asset or liability?

| Revenue recognized. Cash not received. | Cash received. Revenue not recognized. |
|---|---|
| A. Asset | Asset |
| B. Asset. | Liability. |
| C. Liability. | Asset. |

3. Balance sheet provides financial information of a company:
   A. For a particular period such as a quarter, or a year.
   B. At a specific point in time.
   C. In terms of two basic elements: assets and liabilities.

4. Which of the following statements is *most* accurate about balance sheets?
   A. Under US GAAP, intangibles are valued at historical cost.
   B. Under US GAAP, a classified balance sheet presents non-current liabilities after current liabilities.
   C. In a liquidity-based presentation, land use rights is ordered above bank deposits.

5. The balance sheet is based upon which of the following equations?
   A. Assets = Liabilities + Equity.
   B. Assets = Liabilities – Equity.
   C. Assets = Equity – Liabilities.

**LO.b: Describe uses and limitations of the balance sheet in financial analysis.**

6. Which of the following is *least likely* correct about balance sheets?
   A. Different assets and liabilities on the balance sheet have different measurement bases.
   B. Equity in the balance sheet is a measure of the intrinsic value of a company.
   C. Items on the balance sheet are measured at current value at the end of the reporting period that are subject to change.

**LO.c: Describe alternative formats of balance sheet presentation.**

7. A balance sheet format were assets and liabilities are categorized as current and non-current is referred to as the:

A. classified balance sheet format.
B. liquidity-based format.
C. standard format.

8. With of the following is *least likely* correct with respect to the liquidity-based balance sheet format?
   A. The liquidity-based format is more appropriate for a bank relative to a manufacturing company.
   B. With a liquidity-based format assets are presented from most liquid to least liquid.
   C. With a liquidity-based format liabilities are presented from least liquid to most liquid.

**LO.d: Distinguish between current and non-current assets, and current and non-current liabilities.**

9. Which of the following is *least likely* a criterion for classification of a liability as current?
   A. It is expected to be settled in the entity's normal operating cycle.
   B. It is expected to be settled in one year after the balance sheet date.
   C. The entity has an unconditional right to defer settlement of the liability for at least one year after the balance sheet date.

10. The excess of current assets over current liabilities is called:
    A. current ratio.
    B. net assets.
    C. net working capital.

11. Which of the following is *least likely* classified as a current asset?
    A. Prepaid expense.
    B. Marketable securities.
    C. Trades payable.

12. Which of the following is a contra asset account?
    A. Bad debt expense.
    B. Doubtful debt allowance.
    C. Trade receivables.

13. Which of the following is *least likely* a current liability?
    A. Deferred income.
    B. Income tax payable.
    C. Prepaid expense.

14. The following information is available for Melissa March Ltd.

| | |
|---|---|
| Trades receivable | $20,000 |
| Trades payable | $25,000 |
| Notes payable due in 2 years | $12,000 |

| | |
|---|---|
| Accrued expenses | $1,000 |
| Prepaid expenses | $1,500 |
| Deferred revenue | $1,000 |

What is the total value of the company's current liabilities?
A. $27,000.
B. $34,500.
C. $39,000.

15. Deferred income arises when:
    A. delivery of goods and services is done but payment is yet to be received.
    B. delivery of goods and services and payment are both due.
    C. delivery of goods and services is due and payment has been received.

**LO.e: Describe different types of assets and liabilities and the measurement bases of each.**

16. The value of inventory under U.S. GAAP is lower of the cost or the market value. This market value cannot exceed:
    A. net realizable value.
    B. net realizable value plus a normal profit margin.
    C. net realizable value minus a normal profit margin.

17. Which of the following methods is *least likely* to be used to value investment property?
    A. Cost model.
    B. Fair value model.
    C. Retail method.

18. Which of the following statements is correct regarding intangible assets?
    A. An intangible asset with an indefinite useful life is amortized rather than tested for impairment.
    B. IFRS requires that the costs associated with research phase are capitalized.
    C. Start up and training costs are expensed under IFRS and U.S. GAAP.

19. When making adjustments for goodwill an analyst should most likely:
    A. exclude goodwill from the balance sheet data but consider goodwill impairment on the income statement.
    B. keep goodwill on the balance sheet data but exclude goodwill impairment from the income statement.
    C. exclude goodwill from the balance sheet data and also exclude goodwill impairment from the income statement.

20. Which of the following financial assets is *least likely* to be measured at cost or amortized cost?
    A. Available-for-sale security.
    B. Held-to-maturity security.
    C. Unquoted equity instruments.

21. Which of the following is *least likely* to be true for long-term financial liabilities?
    A. They are due after one accounting period, usually after a year.
    B. Loans payable and bonds payable are usually reported at amortized cost on the balance sheet.
    C. At maturity, the carrying amount differs from the face value of the bond.

22. Which of the following is *least likely* to be the cause of deferred tax liabilities?
    A. Temporary timing differences between a company's income as reported for tax purposes and income as reported for financial statement purposes.
    B. When items of expense are included in taxable income in later periods than for financial statement net income.
    C. When items of income are included in taxable income for later periods.

23. An analyst included in his presentation below accounting treatment for marketable securities under IAS No. 39.

| **Category** | **Measurement Method** | **Realized Gains & Losses Reported In** |
|---|---|---|
| Trading | Fair Value | Income Statement |
| Held to maturity | Amortized Cost | Income Statement |
| Available for sale | Fair Value | Equity |

The treatment for which category is *least likely* accurate?
A. Trading.
B. Held to maturity.
C. Available for sale.

24. Alpha-Sine Corporation has the following portfolio of marketable securities which was acquired at the end of 2012:

| **Category** | **Original Cost in € as at the Year End, 2012** | **Fair Market Value in € as at the Year End, 2013** |
|---|---|---|
| Held for trading | 10,000,000 | 10,500,000 |
| Available for sale | 5,000,000 | 5,500,000 |

If the company reports under IFRS instead of U.S. GAAP, its net income will *most likely* be:
A. the same.
B. €500,000 lower.
C. €500,000 higher.

25. The following information is from a company's investment portfolio:

**Investment**

| Classification | Held-to-maturity |
|---|---|
| Market value, 31 Dec 2009 | $ 10,000 |
| Cost/Amortized cost 31 Dec 2009 | 12,000 |
| Market value, 31 Dec 2010 | 9,000 |
| Cost/Amortized cost 31 Dec 2010 | 10,000 |

If the investment is reclassified as available-for-sale as of 31 December 2010, the balance sheet carrying value of the company's investment portfolio would *most likely*:

A. remain the same.
B. decrease by $1,000.
C. decrease by $2,000.

26. Which of the following assets are *most likely* tested for impairment annually?
    A. A patent with a legal life of 15 years.
    B. A copyright with an expected indefinite life.
    C. Land.

**LO.f: Describe the components of shareholders' equity.**

27. Which of the following statements is *least accurate*?
    A. Treasury stock is non-voting and receives dividends.
    B. Minority interest on the balance sheet represents the proportion of ownership of a subsidiary not held by the parent company.
    C. A classified balance sheet is one organized to group various assets and liabilities into subcategories.

28. Which of the following components does not comprise of equity attributable to owners of the parent company?
    A. Non-controlling interest.
    B. Retained earnings.
    C. Other comprehensive income.

29. Which of the following shares is non-voting and does not receive any dividends declared by the company?
    A. Common stock.
    B. Preferred stock.
    C. Treasury stock.

30. Perpetual, non-redeemable preferred shares are classified as:
    A. Equity.
    B. Financial liabilities.
    C. Assets.

**LO.g: Convert balance sheets to common-size balance sheets and interpret common-size balance sheets.**

31. In order to analyze what portion of company's assets are liquid, an analyst is *most likely* to use:
    A. cash ratio.
    B. common-size balance sheet.
    C. current ratio.

32. In a vertical common size balance sheet analysis, each balance sheet item is presented as a percentage of:
    A. fixed assets.
    B. total sales.
    C. total assets.

**LO.h: Calculate and interpret liquidity and solvency ratios.**

33. Which of the following is *least likely* to be a solvency ratio?
    A. Acid test.
    B. Financial leverage.
    C. Long term debt-to-equity.

34. The following table is an extract from the balance sheet of Bell Ltd for the years 2011 and 2012.

| | **2012** | **2011** |
|---|---|---|
| **Current Assets** | | |
| Cash and other equivalents | $130,000 | $160,000 |
| Marketable securities | $75,000 | $75,000 |
| Accounts receivable | $80,000 | $60,000 |
| Inventories | $56,000 | $68,000 |
| Deferred tax asset | $15,000 | $14,000 |
| **Current Liabilities** | | |
| Accounts payable | $90,000 | $70,000 |
| Accrued expenses | $50,000 | $39,000 |
| Short term debt | $80,000 | $78,000 |

Which of the following statements is true?
    A. The current ratio has improved over the year.
    B. The quick ratio in 2012 was greater than the quick ratio in 2011.
    C. The cash ratio was 0.93 for 2012 and 1.26 for 2011.

35. Which of the following is *least likely* a limitation of cross-section financial ratio analysis?
    A. Differences in accounting methods.
    B. Companies with a similar line of business.
    C. Judgement in interpreting the specific ratios.

36. The following data is available for a company:

| | |
|---|---|
| Cash | 7,000 |
| Marketable securities | 31,000 |
| Accounts receivable | 274,000 |
| Inventory | 301,000 |

| | |
|---|---|
| Total current assets | 549,000 |
| Current liabilities | 307,000 |

The company's quick ratio is *closest* to:
A. 0.12.
B. 0.90.
C. 1.02.

37. Which of the following ratios *best* represent a company's liquidity?
A. Quick ratio.
B. Cash ratio.
C. Current ratio.

38. Which of the following ratios is a good measure of financial risk and financial leverage?
A. Acid test ratio.
B. Quick ratio.
C. Debt-to-equity ratio.

39. Cash ratio is *best* described as:
A. $\frac{\text{Cash+Marketable securities}}{\text{Current liabilities}}$
B. $\frac{\text{Cash+Marketable securities+Receivables}}{\text{Current liabilities}}$
C. $\frac{\text{Current assets}}{\text{Current liabilities}}$

**Solutions**

1. B is correct. Excess of current assets over current liabilities is known as working capital.

2. B is correct. Recognizing revenue before receiving cash creates an account receivable, an asset. Receiving cash before recognizing revenue creates a liability.

3. B is correct. Balance sheet provides information about a company at a specific point in time. C is incorrect because there are three elements: assets, liabilities, and equity.

4. B is correct. C is incorrect because in a liquidity-based presentation, assets are ordered in decreasing order of liquidity. Less liquid items appear near the bottom of the listing.

5. A is correct. The accounting equations is Assets = Liabilities + Equity.

6. B is correct. Equity is a not a measure of the company's intrinsic value because different items are measured differently, such as historical cost, fair value.

7. A is correct. A balance sheet where assets and liabilities are classified as current and non-current is called a classified balance sheet.

8. C is correct. With a liquidity-based format assets and liabilities are presented from most liquid to least liquid. Such a presentation is appropriate for banks.

9. C is correct. With a liquidity-based presentation assets and liabilities are presented from most liquid to least liquid. Such a presentation is appropriate for banks but not for manufacturing companies.

10. C is correct. The excess of current assets over current liabilities is called net working capital.

11. C is correct. Trade payable is a current liability.

12. B is correct. Allowance for doubtful debt is a contra asset account because it is netted against the balance of trade receivables.

13. C is correct. Prepaid expense is a current asset and not a current liability.

14. A is correct. Current liabilities will comprise of accounts payable, accrued expenses, and deferred revenue. Therefore $25,000 + $1,000 + $1,000 = $27,000.

15. C is correct. Deferred income arises when the delivery of goods and services is due and the payment has been received.

16. A is correct. The market value cannot exceed the net realizable value and cannot be lower than the net realizable value minus a normal profit margin.

17. C is correct. The retail method is used to value inventories and not an investment property.

18. C is correct. Statement A is incorrect because an intangible asset with an indefinite useful life is not amortized and rather tested for impairment. Statement B is incorrect because IFRS requires that the costs associated with research phase are expensed. Statement C is correct.

19. C is correct. When making adjustments for goodwill, an analyst should exclude goodwill from the balance sheet and also exclude goodwill impairment from the income statement.

20. A is correct. Available-for-sale security is measured at fair value.

21. C is correct. At maturity, the carrying amount is equal to the face value of the bond.

22. B is correct. Deferred tax liability arises when items of expense are included in taxable income in earlier periods than for financial statement net income. *Note: This topic will be covered in the reading on income taxes.*

23. C is correct. All categories treat realized gains or losses in the same way - they are reported on the income statement. It is the unrealized gains and losses that are included in other comprehensive income (in owner's equity) for available for sale securities carried at market value.

24. A is correct. Whether securities are classified as held for trading or available for sale, they are measured at their fair value on the balance sheet, but all gains/losses on held for trading securities are reported on the income statements. The unrealized gains/losses on available for sale securities are reported as part of equity. However, this treatment is the same under both IFRS and U.S. GAAP.

25. B is correct. Held-for-trading and available-for-sale securities are carried at market value, whereas held-to-maturity securities are carried at amortized cost. If the investment is reclassified as available-for-sale in 2010, the carrying amount should be adjusted to its market value, which is $9,000. Compared with the amortized cost of $10,000, it is a decrease of $1,000.

26. B is correct. Intangible assets with indefinite lives are tested for impairment annually.

27. A is correct. Treasury stock is non-voting and does not receive dividends.

28. A is correct. Non-controlling interests are equity interests of minority shareholders in the subsidiary companies that have been consolidated by the parent company, but that are not wholly owned by the parent company.

29. C is correct. Common stockholders get dividends once preferred stockholders have been paid. They enjoy voting rights. Preferred stockholders do not have voting rights, but do get dividends. Treasury stockholders do not have voting rights and do not get dividends.

30. A is correct. Preferred shares with mandatory redemption are classified as financial liabilities.

31. B is correct. A common-size balance sheet expresses all balance sheet accounts as a percentage of total assets and provides insight into what portion of a company's assets is liquid. In contrast, cash and current ratios measure liquidity relative to current liabilities, not relative to total assets.

32. C is correct. In a vertical common size balance sheet analysis, each balance sheet item is presented as a percentage of total assets.

33. A is correct. Acid test ratio, also called the quick ratio, is a liquidity ratio.

34. C is correct.

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Marketable Securities}}{\text{Current Liabilities}}$$

$$\text{Cash Ratio for 2012} = \frac{130{,}000 + 75{,}000}{90{,}000 + 50{,}000 + 80{,}000} = 0.93$$

$$\text{Cash Ratio for 2011} = \frac{160{,}000 + 75{,}000}{70{,}000 + 39{,}000 + 78{,}000} = 1.26$$

35. B is correct. Lack of homogeneity of a company's operations can limit comparability. A company with different lines of business will have different industry-specific ratios.

36. C is correct.

$$\text{Quick ratio} = \frac{\text{Cash+Marketable securities+Accounts receivable}}{\text{Current liabilities}} = \frac{7{,}000+31{,}000+274{,}000}{307{,}000} = 1.02.$$

37. B is correct. The cash ratio is the best indicator of a company's near-term obligations.

38. C is correct. Debt-to-equity is a solvency ratio which measures financial leverage.

39. A is correct. The cash ratio = (cash + marketable securities) / current liabilities.

**LO.a: Compare cash flows from operating, investing, and financing activities and classify cash flow items as relating to one of those three categories given a description of the items.**

1. Which of the following activities will *most likely* increase the cash from investing activities for a company which manufactures and sells computers?
   A. Proceeds from issuance of corporate bonds.
   B. Proceeds from sale of manufacturing equipment.
   C. Proceeds from sale of computers.

2. A company recorded the following events in 2012:

| | |
|---|---|
| Purchase of securities for trading purposes | $250,000 |
| Proceeds from the sale of trading securities | $300,000 |
| Proceeds from issuance of bonds | $500,000 |
| Purchase of 30% of the shares of an affiliated company | $375,000 |

   On the 2012 statement of cash flows, the company's net cash flow from investing activities (in $'000s) is *closest* to:
   A. -375.
   B. -325.
   C. 125.

3. In 2012, Nerosoft Co. recorded unearned revenue related to their latest operating system license, which the company will recognize as revenue in 2013. Ignoring income taxes, this recognition of the operating system revenue will *most likely* have which of the following effects on cash from operations in 2012?
   A. No effect.
   B. A decrease.
   C. An increase.

4. A company's operating cash flow will *most likely* increase with an increase in:
   A. days sales payable.
   B. gains on the sale of long-term assets.
   C. use of operating leases versus financing leases.

5. A company entered into a financing arrangement with a bank, which allows the company to settle the amount owed to its suppliers through the bank. The company repays that amount to the bank in the following period. The motivation for the company's behavior is *most likely* to:
   A. improve its current ratio.
   B. improve its relations with its suppliers.
   C. manage the timing of operating cash flows.

6. Selected data of a company's operations is presented below:

| | |
|---|---|
| Net Income | $150,000 |

| | |
|---|---|
| Increase in Accounts receivable | 20,000 |
| Increase in Accounts payable | 12,000 |
| Depreciation and amortization | 5,000 |

The cash flow from operations is *closest* to:
A. $147,000.
B. $153,000.
C. $155,000.

7. Which of the following *least likely* represents a financing activity?
   A. Repayment of a long-term debt.
   B. Issuance of new equity.
   C. Payment to reduce a company's accounts payable balance.

8. MNC Corporation recorded the following events in 2011:

| | |
|---|---|
| Purchase of securities for trading purposes | $ 480,000 |
| Proceeds from the sale of trading securities | 600,000 |
| Proceeds from issuance of bonds | 1,000,000 |
| Purchase of 30% of the shares of an affiliated company | 550,000 |

On the 2012 statement of cash flows, MNC's net cash flow from investing activities is *closest* to:
A. 570,000.
B. 550,000.
C. 430,000.

9. Cash receipts and payments related to dealing or trading securities are classified as:
   A. operating cash flow.
   B. investing cash flow.
   C. financing cash flow.

10. JFK Enterprises recorded the following for the year 2012:

| | |
|---|---|
| Purchase of equipment | $70,000 |
| Gain from sale of van | $8,000 |
| Receipts from sale of van | $18,000 |
| Dividends paid on ordinary share capital | $10,000 |
| Interest and preference dividend paid | $12,000 |
| Salaries paid | $40,000 |

Which of the following is *most likely* to be the net cash flow from investing activities?
A. $44,000 outflow.
B. $52,000 outflow.
C. $66,000 outflow.

11. Lincoln Ltd issued a $20,000 200-day note at 10%, and used the cash to pay for salaries. It also issued long-term debt worth $90,000 at 10% annually and used the cash to purchase equipment for the new office. The combined effect of these transactions is *least likely* to be:
    A. a decrease in operating cash flow by $20,000.
    B. an increase in financing activity by $110,000.
    C. an increase in investing activity by $20,000.

**LO.b: Describe how non-cash investing and financing activities are reported.**

12. Which of the following is *least likely* a non-cash transaction?
    A. Issuing stock dividends.
    B. Acquiring land using long-term debt.
    C. Purchasing machinery with notes payable.

13. Significant non-cash transactions are *most likely* disclosed in:
    A. The cash flow statement.
    B. A separate note or supplementary schedule to the cash flow statement.
    C. Neither of the above.

**LO.c: Contrast cash flow statements prepared under International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (US GAAP).**

14. Which of the following statements is correct?
    A. Under IFRS, interest paid is considered an investing cash flow.
    B. Under U.S. GAAP, dividends received is considered a financing cash flow.
    C. Under U.S. GAAP, interest paid is considered an operating cash flow.

15. In a cash flow statement prepared according to U.S. GAAP, interest paid is *most likely* included in which activity?
    A. Operating.
    B. Financing.
    C. Either operating or financing.

16. Aero Corp. prepares its financial statements using IFRS. It reports its interest payment on long-term debt as a financing activity. If the company reports under U.S. GAAP, the *most likely* effect on the cash flow statement would be a(n):
    A. decrease in cash flow from investing activities.
    B. increase in cash flow from operating activities.
    C. increase in cash flow from financing activities.

17. Dividends received are *most likely* classified as which type of cash flow under U.S. GAAP?
    A. Investing.
    B. Financing.
    C. Operating.

18. Which of the following statements is *least accurate* regarding cash flow statements prepared under IFRS and U.S. GAAP?
    A. Under U.S. GAAP, dividends paid are considered as a financing activity.
    B. Under IFRS, interest paid can be reported either as an operating or a financing cash flow.
    C. Under U.S. GAAP, bank overdrafts are considered as a part of cash and cash equivalents.

19. Dividends paid are *most likely* classified as which type of cash flow under both IFRS and U.S.GAAP?
    A. Investing.
    B. Financing.
    C. Operating.

20. The excerpt from a company's cash flow statement is presented below:

| | |
|---|---|
| Operating activities: | |
| Cash received from customers | £50,000 |
| Investing activities: | |
| Interest and dividends received | £10,000 |
| Financing activities: | |
| Net repayment of revolving credit loan | £25,000 |

    Which of the following standards and formats did the company *most likely* use in the preparation of its financial statements?
    A. IFRS, direct format.
    B. IFRS, indirect format.
    C. Either IFRS or U.S. GAAP, direct format.

**LO.d: Distinguish between the direct and indirect methods of presenting cash from operating activities and describe arguments in favor of each method.**

21. An analyst chooses the direct method rather than the indirect method for analyzing a firm's operating cash flows. The *most likely* reason for his selection is to:
    A. understand the impact of non-cash items.
    B. identify operating cash flows by source and by use.
    C. understand the relationship between net income and operating cash flows.

22. Compared with the indirect method for reporting cash flow from operating activities, the *least likely* benefit of the direct method is that it provides:
    A. supplementary data under U.S. GAAP.
    B. details on the specific sources of operating receipts and payments.
    C. insight on differences between net income and operating cash flows.

23. Which of the following cash flows is *most likely* to have two formats, direct and indirect?
    A. Financing.
    B. Investing.
    C. Operating.

24. Which of the following statements is *most likely* correct about the indirect method of operating cash flow?
    A. An increase in current asset is subtracted from net income.
    B. A decrease in current asset is subtracted from net income.
    C. An increase in current liability is subtracted from net income.

25. Which of the following statements is *least likely* accurate about the indirect method of operating cash flow?
    A. Non-cash items are added to net income.
    B. Non-operating losses are added to net income.
    C. Decrease in deferred income tax liability is added to net income.

**LO.e: Describe how the cash flow statement is linked to the income statement and the balance sheet.**

26. A manufacturing company has an accounts receivable balance of $10 million on 1 January 2014. During 2014 the reported revenue was $150 million and cash collected from customers was $155 million. The accounts receivable balance on 31 December 2014 was most likely:
    A. $5 million.
    B. $10 million.
    C. $15 million.

27. In 2012, PIA recorded unearned revenue related to advance booking of its tickets that it will recognize as revenue during 2013. Ignoring income taxes, recognizing advance sale revenue will *most likely* have which of the following effects on cash from operations in 2013?
    A. A decrease.
    B. No effect.
    C. An increase.

28. In 2012, PIA recorded unearned revenue related to advance booking of its tickets, which it will recognize as revenue during 2013. This recognition of the advance sale revenue will *most likely* have which of the following effects on cash from operations in 2013?
    A. A decrease.
    B. No effect.
    C. An increase.

**LO.f: Describe the steps in the preparation of direct and indirect cash flow statements, including how cash flows can be computed using income statement and balance sheet data.**

29. The following information is available about a company:

| **Selected Income Statement Data<br>for the year ended December 31st<br>(US$ thousands)** |
|---|

| | 2013 | 2012 |
|---|---|---|
| Sales revenue | $150,000 | $ 90,000 |
| Cost of goods sold | 95,000 | 69,500 |
| Depreciation expense | 5,000 | 3,000 |
| Net income | $ 18,150 | $ 6,550 |
| **Selected Balance Sheet Data As of December 31st (US$ thousands)** | | |
| | 2013 | 2012 |
| **Current Assets** | | |
| Cash & investments | $ 50,250 | $ 35,000 |
| Accounts receivable | $20,000 | $15,200 |
| Inventories | $20,000 | $12,800 |
| Total current assets | $90,250 | $63,000 |
| **Current Liabilities** | | |
| Accounts payable | $ 25,000 | $ 25,000 |
| Other current liabilities | $7,000 | $9,000 |
| Total current liabilities | $ 32,000 | $ 34,000 |

The cash collected from customers in 2013 is *closest* to:
A. $145,200.
B. $151,500.
C. $153,200.

30. The following information (in millions) is available about a company:

| | |
|---|---|
| Cost of goods sold | $150 |
| Increase in total assets | 200 |
| Increase in total liabilities | 120 |
| Change in inventory | (25) |
| Change in accounts payable | (30) |

The amount of cash (in millions) that the company paid to its suppliers is *closest* to:
A. $145.
B. $155.
C. $205.

31. The following annual financial data is available for a company:

| | £ millions |
|---|---|
| Beginning interest payable | 85.3 |
| Cash paid for interest | 111.0 |
| Ending interest payable | 95.3 |

Interest expense for the year is *closest* to:

A. 101.0.
B. 111.0.
C. 121.0.

32. A security analyst is *least likely* to interpret the accounting process of a company as a tool for:
    A. aiding in the assessment of management's judgment in accruals and valuations.
    B. making adjustments to reflect items not reported in the financial statements.
    C. preventing earnings manipulation by management.

33. The following information is available for Nishant Mills Ltd:

| | |
|---|---|
| Net income | $45,000 |
| Depreciation | $18,000 |
| Amortization | $10,000 |

Inventories increased by $1,500, accounts receivables decreased by $1,800, and accounts payables increased by $1,000. The net cash flow from operating activities under the indirect method is *closest* to:
A. $49,300.
B. $64,300.
C. $74,300.

34. The following information is available for Nissan Newspapers Ltd.

| | |
|---|---|
| Cash balance as of June 30, 2012 | $58,000 |
| Cash balance as of July 1, 2011 | $65,000 |
| Cash flows: | |
| Operating activities | ($45,000) |
| Financing activities | $90,000 |

The cash flow from investing activities is *closest* to:
A. ($52,000).
B. $13,000.
C. $52,000.

35. Amanda Mills Ltd. reported revenues of $10 million, expenses of $7.5 million, and a profit of $2.5 million. Accounts receivable increased by $4 million. The cash received from its customers is *closest* to:
    A. $6 million.
    B. $10 million.
    C. $14 million.

36. An analyst collects the following information for Baking Butter Corporation:

| | |
|---|---|
| Net revenue | $200,000 |

| | |
|---|---|
| Gross profit | $50,000 |
| Increase in inventory | $8,000 |
| Increase in accounts payable | $12,000 |

The cash paid to its suppliers is *closest* to:
A. $146,000.
B. $154,000.
C. $170,000.

37. MG Laptops Ltd reported a cost of goods sold worth $120,000. Inventory purchases made during the year amounted to $150,000. If the beginning inventory is $40,000, what is the ending inventory?
A. 10,000.
B. 30,000.
C. 70,000.

38. At the beginning of the year, Donald owed his employees $16,000. The total salary expense incurred during the year amounted to $40,000. The cash flow statement showed a salary expense of $49,000. What liability did Donald record at the end of the year?
A. $7,000.
B. $9,000.
C. $25,000.

39. The other operating expenses reported by King Fishers Ltd. were $20 million. These comprised electricity expenses and insurance expense. The prepaid insurance expense decreased by $6 million. The accrued electricity expense increased by $8 million. The cash paid for other operating expenses is *closest* to:
A. $6 million.
B. $18 million.
C. $22 million.

40. The balance sheet extract for Jackal Labs Ltd. shows the machinery and accumulated depreciation balances for the years 2011 and 2012.

| | **2011** | **2012** |
|---|---|---|
| Machinery | $80 million | $91 million |
| Accumulated depreciation | $25 million | $31 million |

Further information provided is as follows:

| | |
|---|---|
| Gain on sale of machinery | $1.5 million |
| Depreciation expense for 2012 | $7 million |
| Capital expenditure on machinery | $14 million |

How much did the company receive in cash from the sale of machinery?
A. $2 million.
B. $2.5 million.

C. $3.5 million.

41. Retiring long-term debt is a:
    A. cash outflow related to financing activities.
    B. cash inflow related to financing activities.
    C. neither of the above.

42. The retained earnings over the year increased by $4 million. The net income was $5 million. The dividend paid was *most likely*:
    A. -$1 million.
    B. 0.
    C. $1 million.

43. The following information is available for Frampton Corporation Ltd.

| | |
|---|---|
| Cash received from customers | $12,000 |
| Cash paid to employees | $2,000 |
| Cash paid for income tax | $1,500 |
| Cash paid for purchase of equipment | $20,000 |
| Cash paid for dividends | $1,800 |
| Cash paid to retire long term debt | $15,000 |

The net cash from financing activities is *closest* to:
A. $16,500.
B. $16,800.
C. $20,000.

44. The following information is available for HTC Corporation.

| **Income Statement Extract** | **2012** | **2011** |
|---|---|---|
| Operating income | $14 million | $12 million |
| Depreciation | $5 million | $3 million |
| Net income | $9 million | $7 million |

| **Balance Sheet Extract** | **2012** | **2011** |
|---|---|---|
| Current Assets | $8 million | $6 million |
| Current Liabilities | $10 million | $12 million |

The total adjustment in order to compute operating cash flow is *closest* to:
A. ($2 million).
B. $1 million.
C. $5 million.

**LO.g: Convert cash flows from the indirect to direct method.**

45. Which of the following is *least likely* a step to convert cash flows from the indirect method to the direct method?

A. Aggregate all revenues and expenses.
B. Add noncash items to aggregated revenue and expenses.
C. Convert accrual amounts to cash flow amounts by adjusting for working capital changes.

46. Which of the following is least likely a calculation performed for converting cash flows from indirect method to the direct method?
A. Add increase in accounts receivable to non-cash adjusted revenue.
B. Add increase in inventory to cost of goods sold.
C. Subtract increase in salary and wage payable from salary and wage expense.

**LO.h: Analyze and interpret both reported and common-size cash flow statements.**

47. In a common size analysis of the statement of cash flows, the items of cash flow may be presented as a percentage of:
A. total cash flows.
B. net revenue.
C. either total cash flow or net revenue.

48. Cash flow is *most likely* to be negative:
A. for a mature company.
B. for a growth stage company.
C. for a declining profits company.

49. The first step in cash flow statement analysis is:
A. Evaluating the uses and sources of cash.
B. Evaluating the drivers of operating cash flow.
C. Evaluating if the elements are classified correctly.

50. Which of the following is least likely an approach for developing common-size cash flow statement?
A. Total cash inflows/total cash outflows method.
B. The percentage of net revenues method.
C. Free cash flow to the firm method.

**LO.i: Calculate and interpret free cash flow to the firm, free cash flow to equity, and performance and coverage cash flow ratios.**

51. An analyst is *most likely* to conclude that there are problems with the quality of a company's earnings if the cash flow earnings index (operating cash flow divided by net income) were consistently:
A. equal to 1.0.
B. less than 1.0.
C. greater than 1.0.

52. Which of the following statements is *least accurate* regarding cash flow ratios?
A. Interest coverage ratio is calculated as EBIT over interest payments.

B. Debt payment ratio measures the firm's ability to pay debts with financing cash flows.
C. Reinvestment ratio measures the firm's ability to acquire assets with operating cash flows.

53. An analyst has gathered the following information about a company:

| | **CAD millions** |
|---|---|
| Cash flow from operating activities | 112.2 |
| Cash flow from investing activities | (15.8) |
| Cash flow from financing activities | 26.5 |
| Net change in cash for the year | 122.9 |
| Interest paid (included in CFO) | 13.3 |
| Taxes paid (tax rate of 30%) | 10.0 |
| Total debt, end of year | 462.5 |

The cash flow debt coverage ratio for the year is *closest* to:
A. 19.2%.
B. 24.3%.
C. 26.6%.

54. What is the most likely impact of an increase in net borrowing on the free cash flow to equity (FCFE) for a firm?
A. No impact.
B. Decrease in FCFE.
C. Increase in FCFE.

55. The following data is available for a firm:

| | **$ millions** |
|---|---|
| Net income | 45.0 |
| Non-cash charges | 12.3 |
| Interest expense | 2.6 |
| Capital expenditures | 15.0 |
| Working capital expenditures | 8.1 |

If the firm's tax rate is 30%, the free cash flow to the firm (FCFF) is *closest* to:
A. $36.02 million.
B. $51.02 million.
C. $51.80 million.

56. The following information is available for a company:

| **Cash Flow Item** | **CAD** |
|---|---|
| Net income | 500,000 |
| Non-cash charges | 30,000 |
| Interest expense | 50,000 |
| Capital expenditure | 180,000 |
| Net borrowing | 150,000 |

| | |
|---|---|
| Tax rate | 35% |

The free cash flow to the firm (in CAD) is *closest* to:
A. 382,500.
B. 400,000.
C. 532,500.

57. The following data is available for NRL:

| | $ millions |
|---|---|
| Net Income | 180.0 |
| Non-cash charges | 30.4 |
| Interest expense | 56.0 |
| Capital expenditures | 68.6 |
| Working capital expenditures | 26.0 |

If NRL's tax rate is 30%, the free cash flow to the firm (FCFF) is *closest* to:
A. 171.8.
B. 155.0.
C. 132.6.

58. The net income of a company is reported to be $45,000. The only non-cash charge is depreciation which equals $4000. The interest expense is $5,000. Fixed capital expenditure and working capital expenditure are $20,000 and $9,000 respectively. What is the free cash flow to the firm? Assume the tax rate is 40%.
A. $49,000.
B. $23,000.
C. $25,000.

59. The following information is available for Pinto Paints Ltd.

| | |
|---|---|
| Net income | $30,000 |
| Depreciation | $16,000 |
| CAPEX | $9,000 |
| WC expenditure | $7,000 |
| Net debt repayment | $10,000 |
| Cash flow from operations | $39,000 |

The free cash flow to equity of the company is *closest* to:
A. 10,000.
B. 20,000.
C. 30,000.

60. Which of the following ratios is *most likely* used to measure financial risk?
A. Debt coverage ratio.
B. Interest coverage ratio.

C. Reinvestment coverage ratio.

61. Free cash flow to firm can most likely be defined as:
    A. CFO + Interest (1 – Tax Rate) – Fixed Capital Investment.
    B. CFO + Interest (1 – Tax Rate) – Fixed Capital Investment – Working Capital Investment.
    C. CFO + Interest(1 – Tax Rate) + Fixed Capital Investment + Working Capital Investment.

**Solutions**

1. B is correct. The sale of equipment would increase cash from investing activities. Issuance of corporate bonds is a financing activity. Since the company manufactures and sells computers, option C represents an operating activity.

2. A is correct. Only the cash flows for the purchase of the shares in an affiliated company are cash from investing activities. Therefore, the net amount is -$375,000. Cash flows from trading securities are operating activities.

3. C is correct. The company received the cash in 2012 when it recorded the unearned revenue and it was a part of the cash from operations in that year. Hence, there will be an increase in cash flow from operations. In 2013, the revenue is earned, but there is no cash exchanged, and hence no effect of the cash from operations, ignoring taxes.

4. A is correct. An increase in the days sales payable would indicate the company is stretching out its payables, which would increase the cash from operations.

5. C is correct. The company can choose when to enter into short-term borrowing with the bank and reclassify its accounts payable into short-term financing. It will likely do so when cash flows are seasonally strong, thereby reducing operating cash flows, but increasing financing cash flows. On repayment, the cash outflow is treated as a financing activity (loan repayment) not an operating cash flow. The result is that the company can manipulate the timing of reported cash flows since the timing and extent of vendor financing is at management's discretion.

6. A is correct. Net cash from operations = 150,000 + 5,000 – 20,000 + 12,000 = 147,000

7. C is correct. Options A and B represent financing activities. Option C is an operating activity.

8. B is correct. Cash flows for the purchase of the shares in an affiliated company are cash from investing activities, therefore the net amount is -$550,000. Proceeds from issuance of bonds are financing activities. Cash flows from trading securities are operating activities

9. A is correct. Here is the relevant excerpt from Section 2.1 of the curriculum: "Cash outflows result from cash payments for inventory, salaries, taxes, and other operating- related expenses and from paying accounts payable. Additionally, operating activities include cash receipts and payments related to dealing securities or trading securities (as opposed to buying or selling securities as investments)."

10. B is correct. The investing activities include the purchase of equipment, and sale of the van. Gain from the sale of van is a part of net income. Dividends and interest paid are part of financing activities and salaries paid are part of operating activities. Therefore, net cash flow from investing is an outflow of $52,000.

11. C is correct. The only investing activity is the purchase of equipment; thus investing cash flow should decrease by $90,000. Financing activity comprises of both short term and long term debt and thus increases by $110,000. Salaries paid is an operating activity, which decreases operating cash flows by $20,000.

12. B is correct. In this case the company issues debt and receives cash. The cash is then used to buy land. Clearly these are cash-based transactions. The other two are examples of non-cash transactions. With stock dividend a company issues additional shares of its common stock to shareholders instead of cash.

13. B is correct. Significant non-cash transactions are generally disclosed as a separate note or as a supplementary schedule to the cash flow statement.

14. C is correct. Statement A is incorrect because under IFRS, interest paid is considered a financing cash flow or an operating cash flow. Statement B is incorrect because under U.S. GAAP, dividend received is considered an operating cash flow. Hence, statement C is correct.

15. A is correct. Interest paid must be categorized as an operating cash flow activity under U.S. GAAP, although it can be categorized as either an operating or financing cash flow activity under IFRS.

16. C is correct. Interest payments can be reported either as operating or financing cash flow under IFRS, but can only be reported as operating cash flow under U.S. GAAP. The interest payment was originally reported as financing activity under IFRS, but under U.S. GAAP, it would be an operating activity.
    Therefore, cash flow from financing activities would increase, and operating cash flows decrease by the same amount.

17. C is correct. Dividends received can be classified as either an operating or investing activity under IFRS, but can only be classified as an operating activity under U.S. GAAP.

18. C is correct. Under U.S. GAAP, bank overdrafts are not considered part of cash and cash equivalent. They are classified as financing cash flows.

19. B is correct. Dividends paid are classified as a financing cash flow under U.S. GAAP, while dividends received, interest paid and interest received are classified as operating cash flows.
    Under IFRS interest and dividends received may be classified as either operating or investing activities. Dividends and Interest paid may be classified as either operating or financing activities.

20. A is correct. The direct method of cash flow statement presentation shows the specific cash inflows and outflows that result in reported cash flow from operating activities (cash from customers, cash to suppliers, etc.). Companies using IFRS can decide to report interest and dividend receipts as either an investing or operating activity, whereas under U.S. GAAP, they

must report such income as an operating activity. The listed operating and investment activities indicate that the company reports under IFRS, using the direct method

21. B is correct. The direct method cash flow statement presents specific operating cash flows by source and use.

22. C is correct. Providing insight on the differences between net income and cash flow is a benefit of the indirect method. The indirect method starts with net income and integrates a series of adjustments to calculate cash flow from operations.

23. C is correct. Operating cash flows can be presented in a direct or indirect format.

24. A is correct. An increase in current asset is subtracted from net income and vice versa. An increase in current liability is added to net income.

25. C is correct. Increase in deferred income tax liability is added to net income. Remember: increase in a liability is a source of cash and is added; decrease in liability is a use of cash and is subtracted. See Exhibit 9 in Section 3.2.5.

26. A is correct. Since cash collections exceeded revenue by $5 million, the accounts receivable balance should come down by $5 million.

27. B is correct. PIA received the cash in 2012 when it recorded the unearned revenue and it was a part of the cash from operations in that year. In 2013, the revenue is earned, but there is no cash exchanged and hence no effect of the cash from operations, ignoring taxes.

28. A is correct. PIA received the cash in 2012 when it recorded the unearned revenue and it was a part of the cash from operations in that year. In 2013, the revenue is earned so it will increase the taxes which will decrease the cash from operations.

29. A is correct. Cash collected = Revenues – Increase in account receivables = 150,000 – (20,000 – 15,200) = 145,200.

30. B is correct. Cash paid to suppliers = 150 – 25 + 30 = 155

31. C is correct. Interest expense = Ending interest payable + Cash interest paid – beginning interest payable = 95.3 + 111 – 85.3 = 121.

32. C is correct. Understanding the accounting process may assist an analyst in identifying earnings manipulation, but it will not prevent the manipulation of earnings by management. It is important for analysts to understand the accounting process so they can make adjustments for items not reported and to aid in the assessment of management’s judgment of accruals and valuations.

33. C is correct.

$$\text{Operating cash flow} =$$
$$\text{Net income} + \text{Depreciation and amortization} - \text{Increase in working capital}$$
$$\text{Operating cash flow} = 45{,}000 + 18{,}000 + 10{,}000 + (-1500 + 1800 + 1000) = \$74{,}300$$

34. A is correct.
$$\text{Ending balance} = \text{Beginning balance} + \text{Cash flows}$$
$$58{,}000 = 65{,}000 - 45{,}000 + 90{,}000 + \text{Investing cash flow}$$
$$\text{Investing cash flow} = (\$52{,}000)$$

35. A is correct.
$$\text{Cash collected} = \text{Revenue} - \text{Increase in Accounts receivable}$$
$$\text{Cash collected} = \$10 \text{ million} - \$4 \text{ million} = \$6 \text{ million}$$

36. A is correct.
$$\text{Cash paid to suppliers} = \text{Cost of goods sold} + \text{increase in inventory} - \text{increase in payables}$$
$$\text{Cash paid to suppliers} = 200{,}000 - 50{,}000 + 8{,}000 - 12{,}000 = \$146{,}000$$

37. C is correct.
$$\text{Ending inventory} = \text{Beginning inventory} + \text{purchases} - \text{cost of goods sold}$$
$$\text{Ending inventory} = 40{,}000 + 150{,}000 - 120{,}000 = 70{,}000$$

38. A is correct.
$$\text{Salary payable} = \text{Beginning salary payable} + \text{Salary expense} - \text{Cash paid}$$
$$\text{Salary payable} = 16{,}000 + 40{,}000 - 49{,}000 = 7{,}000$$

39. A is correct.
$$\text{Cash paid} = \text{Operating expenses} - \text{decrease in prepaid} - \text{increase in accrued}$$
$$\text{Cash paid} = 20 - 6 - 8 = 6$$

40. C is correct.
$$\text{Gain} = \text{Selling Price} - \text{Book Value}$$
Historical cost:
Beginning value of machinery + machinery bought – machinery sold = Ending value of machinery
80 million + 14 million – 91 million = 3 million
Machinery sold = 3 million
Accumulated depreciation:
Beginning value of depreciation + depreciation expense – machinery depreciation = Ending value of depreciation
25 million + 7 million – 31 million = 1 million
Machinery depreciation = 1 million
Book value:
Book value = Historical cost – accumulated depreciation
Book value = 3-1 = 2 million
Selling price:
Selling price = Gain + Book Value
Selling price = 1.5 million + 2 million = 3.5 million

41. A is correct. Retiring long-term debt is a cash outflow related to financing activities.

42. C is correct.
$$\text{Ending retained earnings} = \text{Beginning retained earnings} + \text{net income} - \text{dividends paid}$$
Thus, if 'Ending retained earnings – Beginning retained earnings' is equal to \$4 million, dividends paid is equal to 4 – 3 = 1.

43. B is correct.
Cash flow from financing activities:

| | |
|---|---|
| Cash paid for dividends | \$1,800 |
| Cash paid to retire long term debt | \$15,000 |
| Total | \$16,800 |

44. B is correct.

| | |
|---|---|
| Add depreciation | \$5 million |
| Subtract increase in current assets | (\$2 million) |
| Subtract decrease in current liabilities | (\$2 million) |
| Total adjustment | \$1 million |

45. B is correct. In step 2, all noncash items should be **removed** (not added) from aggregated revenues and expenses.

46. A is correct. Increase in accounts receivable must be subtracted from revenue adjusted for non-cash items.

47. C is correct. In a common size analysis of the statement of cash flows, the items of cash flow may be presented as a percentage of either total cash flow or net revenue.

48. B is correct. Cash flow is most likely negative for a growth stage company. A mature company tends to perform well and has stable cash flows. A declining profits company may not necessarily have negative cash flow.

49. A is correct. Identifying the major sources and uses of cash is the first step in cash flow statement analysis.

50. C is correct. The first two are approaches to develop common-size cash flow statements.

51. B is correct. A cash flow earnings index consistently below 1.0 could indicate potential problems in a company's quality of earnings.

52. B is correct. Debt payment ratio (CFO ÷ Cash paid for long-term debt repayment) shows the firm's ability to pay debts with operating cash flows

53. B is correct. Cash flow debt coverage ratio = CFO ÷ Total debt

112.2 ÷ 462.5 = 24.3%.

54. C is correct. FCFE = CFO – FCInv + Net Borrowing. An increase in net borrowing will increase FCFE, all else equal.

55. A is correct. FCFF = Net income + Non-cash charges + interest expense * (1 – Tax rate) – capital expenditures – working capital expenditures
FCFF = $45 + 12.3 + 2.6 * (1 - 0.3) - 15 - 8.1$ = \$36.02 million

56. A is correct. FCFF = Net income + Non-cash charges + interest expense*(1 – tax rate) – capital expenditures – working capital expenditures
FCFF = $500000 + 30000 + 50000 * (1 - 0.35) - 180000 - 0$ = 382,500

57. B is correct.

| | \$ millions |
|---|---|
| Net Income | 180.0 |
| Plus: Non-cash Charges | 30.4 |
| Plus: Interest Expense × (1 – Tax Rate) | 56×(1-0.3) = 39.2 |
| Less: Capital Expenditures | (68.6) |
| Less: Working Capital Expenditures | (26) |
| FCFF | 155 |

58. B is correct.
$\text{FCFF} = \text{NI} + \text{NCC} + \text{Interest}\ (1 - \text{Tax Rate}) - \text{FC Inv} - \text{WC Inv}$
$\text{FCFF} = 45{,}000 + 4{,}000 + 5{,}000\ (1 - 0.4) - 20{,}000 - 9{,}000 = \$23{,}000$

59. B is correct.
$\text{FCFE} = \text{CFO} - \text{FCInv} - \text{Net debt repayment}$
$\text{FCFE} = 39{,}000 - 9.000 - 10{,}000 = 20{,}000$

60. A is correct.
The debt coverage ratio measures financial risk.

61. A is correct. Free cash flow to firm = CFO + Interest (1 – Tax Rate) – Fixed Capital Investment. Note that working capital investment is already included in CFO.

**LO.a: Describe tools and techniques used in financial analysis, including their uses and limitations.**

1. The use of financial ratio analysis is *most likely* limited in which of the following situations?
   A. Comparing companies using different accounting methods.
   B. Providing a means of evaluating management's ability.
   C. Providing insights into microeconomic relationships within a company that help analysts project earnings and free cash flow.

2. Thiago Silva, an equity research analyst, wants to analyze a company from different perspectives through financial ratios. He will *least likely* be able to determine:
   A. Creditworthiness.
   B. Current financial condition.
   C. Past performance.

3. Which of the following is *most likely* true about ratios?
   A. Ratios are indicators of some aspect of a company's performance telling what happened and why it happened.
   B. Ratios cannot be used to compare companies of different sizes.
   C. Ratios provide insights into a company's financial flexibility.

4. Which of the following is *least likely* a limitation of ratio analysis?
   A. The heterogeneity of a company's operating activities.
   B. The need to use judgment.
   C. The microeconomic relationships within a company.

5. Sam Robson wants to compare a specific metric for company J with the same metric for company K. Which of the following kinds of analyses is Robson *most likely* to conduct?
   A. A cross sectional analysis.
   B. A longitudinal analysis.
   C. A trend analysis.

6. Which of the following statements is *most* accurate?
   A. If revenue grows more quickly than assets, the company's efficiency may be improving.
   B. If inventory grows slower than revenue, the company is likely to face an operational problem with obsolescence.
   C. If net income is growing faster than revenue, the company's efficiency is declining.

7. With a vertical common size balance sheet, each item is divided by:
   A. The value of that item in the base year.
   B. Total assets.
   C. Total equity.

8. Which of the following is an analyst *most likely* to consider when deciding which financial ratios to use?
   A. An industry in which target companies are operating.

B. Current state of the economy.
C. Accounting policies.

9. Presenting the financial data of a company in relation to a single financial statement item is best known as:
   A. Common-size analysis.
   B. Time-series analysis.
   C. Cross-sectional analysis.

10. In which of the following situations is ratio analysis *least* likely useful?
    A. To compare two companies using different inventory valuation methods: one using LIFO and the other using FIFO.
    B. To compare the changes in a company over time.
    C. To assess a company's ability to raise capital and grow.

**LO.b: Classify, calculate, and interpret activity, liquidity, solvency, profitability, and valuation ratios.**

11. Selected financial information for Park's Company is provided below:

| | |
|---|---|
| Sales | $2.3 million |
| Cost of goods sold | $0.98 million |
| Cash | $0.5 million |
| Accounts receivable | $0.8 million |
| Inventory | $0.25 million |
| Accounts payable | $0.5 million |

The company's cash conversion cycle (in days) is *closest* to:
A. 33.9.
B. 48.6.
C. 66.2.

12. The interest coverage ratio is *most likely* an indicator of a company's:
    A. efficiency.
    B. liquidity.
    C. solvency.

13. The balance sheet data of a company is presented below:

| | |
|---|---|
| Current Assets | |
| Cash and cash equivalents | $ 1,900 |
| Marketable securities | 300 |
| Notes and accounts receivable, trade | 1,750 |
| Allowance for doubtful accounts | (500) |
| Inventories | 1,000 |
| Deferred income taxes | 540 |

| | |
|---|---|
| Other current assets | 250 |
| **Total current assets** | **$ 5,240** |
| Current Liabilities | |
| Accounts payable and other accrued liabilities | $ 2,800 |
| Current portion of borrowings | 1,020 |
| Other current liabilities | 1,260 |
| **Total current liabilities** | **$ 5,080** |

The company's quick ratio is *closest* to:
A. 0.68.
B. 0.78.
C. 1.03.

14. The following selected balance sheet and ratio data are available for a company:

| **Metric** | **2012** | **2011** |
|---|---|---|
| Cash and cash equivalents | 90.0 | |
| Marketable securities | 350.5 | |
| Accounts receivables | 10.0 | |
| Other current assets | 120.1 | |
| Total current assets | 570.6 | |
| Deferred revenues | 75.0 | |
| Other current liabilities | 112.5 | |
| Total current liabilities | 187.5 | |
| Cash ratio | | 2.15 |
| Quick ratio | | 2.70 |
| Current ratio | | 2.89 |

Which of the following ratios decreased between 2011 and 2012?
A. Cash.
B. Current.
C. Quick.

15. The financial information for Pear Company is provided below:

| | |
|---|---|
| Sales | $2.8 million |
| Cost of goods sold | $2.3 million |
| Purchases | $2.1 million |
| Average receivables | $0.6 million |
| Average inventory | $0.5 million |
| Average payables | $0.2 million |

The company's cash conversion cycle (in days) is *closest* to:
A. 114.
B. 122.

C. 129.

16. An analyst wants to critically examine a company's liquidity and wants to use the most stringent test. He is *most likely* to select the:
    A. cash ratio.
    B. current ratio.
    C. quick ratio.

17. The following information is available about ABC Company:

| | $ millions |
|---|---|
| Sales | 2,400 |
| COGS | 1,440 |
| Purchases | 1,470 |
| Average receivables | 312.5 |
| Average inventory | 355 |
| Average payables | 72.5 |

XYZ's cash conversion cycle (in days) is *closest* to:
A. 120.
B. 156.
C. 138.

18. Which ratios measure operational efficiency?
    A. Activity.
    B. Liquidity.
    C. Profitability.

19. The following information is available for Pidku Enterprises:

| **Income Statement Extract** | **2012** | **2011** |
|---|---|---|
| Revenue | $2 million | $1.5 million |
| Cost of goods sold | $1.5 million | $1.25 million |
| Gross profit | $0.5 million | $0.25 million |
| **Balance Sheet Extract** | 2012 | 2011 |
| Accounts receivable | $300,000 | $275,000 |
| Inventory | $275,000 | $250,000 |
| Accounts payable | $250,000 | $225,000 |

Which of the following are *most likely* to be the inventory turnover and payables turnover for the company for FY2012?

| | Inventory turnover | Payables turnover |
|---|---|---|
| A. | 5.45 | 6.10 |
| B. | 5.71 | 6.42 |
| C. | 63.9 | 56.06 |

20. Faddy Corporation reported revenue of $150,000 for 2011. The income reported was $65,000. The opening balance of the accounts receivables account was $40,000 and the closing balance was $52,000. Assuming a 360-day year, what are the days of sales outstanding for Faddy Corporation?
    A. 110.4.
    B. 124.8.
    C. 254.7.

21. Which of the following is *most likely* accurate about the interpretation of activity ratios?
    A. A working capital turnover of 3.6 indicates that the company generates $3.6 of net income for every $1 of working capital.
    B. A low fixed asset turnover ratio may indicate a labor intensive environment.
    C. A high payables turnover ratio implies a low accounts payables balance relative to purchases.

22. Which of the following is *least likely* correct?
    A. A relatively high DSO indicates an inefficient collection of receivables.
    B. A high total asset turnover ratio implies an efficient usage of assets.
    C. A payables turnover ratio that is low relative to industry could indicate that the company is not making full use of the available credit facilities.

23. The following table shows the balance sheet extract for Pulpy Peaches Ltd.

| **Current Assets** | | **Current Liabilities** | |
|---|---|---|---|
| Cash | $75,000 | Accounts payables | $65,000 |
| Marketable securities | $60,000 | Short term notes payable | $80,000 |
| Accounts receivables | $56,000 | | |
| Inventory | $40,000 | | |

    What is the cash ratio for the company?
    A. 0.52.
    B. 0.93.
    C. 1.32.

24. Mary Higgins is a financial analyst. She has the following information available for a leading company in the agricultural sector.

| | |
|---|---|
| Days of inventory on hand | 36.48 |
| Days of sales outstanding | 49.22 |

| | |
|---|---|
| Payables turnover | 8.99 |

Assume that there are 360 days in a year. What is the cash conversion cycle for the firm?
A. 27.30.
B. 45.66.
C. 76.71.

25. Which of the following is *least likely* correct about the interpretation of liquidity ratios?
A. The quick ratio is more conservative than the current ratio and does not take inventory into account.
B. The defensive interval ratio measures how long the company can continue to pay its expenses from its existing liquid assets.
C. The longer the cash conversion cycle, the greater will be the liquidity of the company.

26. Steven Clark is a credit analyst. He is evaluating the solvency of NYC Public Limited. The following balance sheet extract is made use of for this analysis.

| **Balance Sheet Extract (millions of $)** | **2011** | **2010** |
|---|---|---|
| Total equity | 567 | 491 |
| Long term debt | 800 | 700 |
| Other long term liabilities | 450 | 450 |
| Current liabilities | 300 | 280 |
| **Total equity and liabilities** | **2,117** | **1,921** |

What is the average financial leverage of the company for 2011?
A. 3.73.
B. 3.82.
C. 3.97.

27. The reported earnings before interest and tax for Bling Corporation were $127,500. The corporate tax rate is 35%. Other bits of information are as follows:

| | |
|---|---|
| Interest charges | $44,000 |
| Lease payments | $20,000 |

What is the fixed charge coverage ratio for the company?
A. 1.61.
B. 1.98.
C. 2.30.

28. Which of the following is *most likely* to be known as ‘times interest earned’?
A. Financial leverage.
B. Fixed charge coverage.
C. Interest coverage ratio.

29. Which of the following statements about solvency ratios is correct?
A. A higher interest coverage ratio implies weaker solvency.

B. A higher fixed coverage ratio implies stronger solvency.
C. A higher debt to assets ratio implies stronger solvency.

30. Which of the following statements about profitability ratios is correct?
A. Return on common equity is a ratio of net income to average common equity.
B. Controlling operating costs can result in faster growth of operating profit margin than gross profit margin.
C. Higher product pricing and lower product costs result in higher gross profit margin.

**LO.c: Describe relationships among ratios and evaluate a company using ratio analysis.**

31. Sara Dawood is concerned about whether her business would be able to pay off the long-term loan obtained by a commercial bank. The ability of her company to meet long-term obligations is known as:
A. liquidity.
B. profitability.
C. solvency.

32. The current ratio for an industry is 2.4. Data for a firm in the industry is presented below:

| **As on December 31** | **£ '000s** |
|---|---|
| Cash | 120 |
| Accounts receivable | 400 |
| Inventory | 1400 |
| Accounts payable | 350 |
| Taxes payable | 250 |
| Installment loan payable,<br>due in three equal annual payments on June 30. | 600 |

As compared to the industry the company is:
A. as liquid.
B. less liquid.
C. more liquid.

33. The following information (in millions) for a company is available:

| | 2013 | 2012 |
|---|---|---|
| Short-term borrowings | $150 | $152 |
| Current portion of long-term interest bearing debt | 200 | 195 |
| Long-term interest bearing debt | 1,200 | 1,150 |
| Total shareholders' equity | 2,580 | 2,400 |
| EBIT | 362.5 | 325 |
| Interest payments | 75 | 62 |
| Operating lease payments | 30 | 34 |

What is the *most* appropriate conclusion an analyst can make about the solvency of the company? Solvency has:

A. improved because the debt-to-equity ratio decreased.
B. deteriorated because the debt-to-equity ratio increased.
C. improved because the fixed charge coverage ratio increased.

34. Selected information from a company's comparative income statements and balance sheets is presented below:

**Selected Income Statement Data**
**for the year ended December 31st**
**(US$ thousands)**

| | **2013** |
|---|---|
| Sales revenue | $2,050,000 |
| Cost of goods sold | 1,250,000 |
| Net income | $350,150 |

**Selected Balance Sheet Data**
**as of December 31st**
**(US$ thousands)**

| | **2013** | **2012** |
|---|---|---|
| **Current Assets** | | |
| Cash & investments | $150,250 | $ 135,000 |
| Accounts receivable | 200,000 | 180,200 |
| Inventories | 205,000 | 150,800 |
| Total current assets | $555,250 | $466,000 |
| **Current Liabilities** | | |
| Accounts payable | $150,000 | $125,000 |
| Other current liabilities | 50,000 | $50,000 |
| Total current liabilities | $500,000 | $75,000 |

The company operates in an industry in which suppliers offer terms of 2/10, net 30. The payables turnover for the average company in the industry is 8.5 times. Which of the following statements is *most accurate*? In 2013, the company on average:

A. took advantage of early payment discounts.
B. paid its accounts within the payment terms provided.
C. paid its accounts more promptly than the average firm in the industry.

35. In which of the following situations will cross-sectional analysis be most useful?

A. When comparing companies of different sizes which are in the same industry.
B. When comparing companies of the same size across different industries.
C. When evaluating the performance of a company over multiple time periods.

36. An analyst gathered the following data for two companies in the same industry:

| | Company A | Company B |
|---|---|---|
| Days in sales outstanding | 24 | 30 |
| Days of inventory on hand | 25 | 31 |

| | | |
|---|---|---|
| Days of payables | 44 | 40 |
| Current assets | $182,000 | $189,000 |
| Total assets | $401,000 | $569,000 |
| Current liabilities | $60,000 | $66,000 |
| Total liabilities | $329,000 | $450,000 |
| Shareholders' equity | $132,000 | $121,000 |

Which of the following is the *most appropriate* conclusion the analyst can make? Compared to Company B, Company A:

A. has a longer time between cash outlay and cash collection.
B. has more financial risk.
C. is more liquid.

37. The current ratio for XYZ industry is 3.00. Data for a firm in XYZ industry is presented below:

| **As at June 30** | **$ '000s** |
|---|---|
| Cash | 800 |
| Accounts receivable | 700 |
| Inventory | 2,500 |
| Accounts payable | 500 |
| Taxes payable | 300 |
| Installment loan payable,<br>due in two equal annual payments on Dec 31. | 800 |

The firm's current ratio relative to that of the industry is *best* described as being:

A. as liquid.
B. less liquid.
C. more liquid.

**LO.d: Demonstrate the application of DuPont analysis of return on equity, and calculate and interpret effects of changes in its components.**

38. The financial ratios of a company are given below:

| | |
|---|---|
| Operating profit margin | 23.8% |
| Net profit margin | 14.0% |
| Total asset turnover | 0.9 |
| Return on assets | 12.6% |
| Financial leverage | 1.88 |
| Debt to equity | 0.88 |

The company's return on equity (ROE) is *closest* to

A. 23.7%.
B. 26.1%.
C. 32.4%.

39. Selected information for a company and the common size data for its industry are provided below:

| | **Company (£)** | **Common Size Industry Data (% of sales)** |
|---|---|---|
| EBIT | 100,000 | 22.0 |
| Pretax profit | 85,500 | 18.2 |
| Net Income | 74,200 | 13.5 |
| Sales | 350,000 | 100.0 |
| Total assets | 650,000 | 150 |
| Total equity | 400,00 | 65.5 |
| | | |
| ROE | 18.6% | 20.6% |

The company's inferior ROE compared to that of the industry is most likely due to its:
A. tax burden ratio.
B. interest burden ratio.
C. financial leverage ratio.

40. The following financial data is available for a company:

| | |
|---|---|
| ROA | 5.6% |
| Total asset turnover | 2.12 |
| Financial leverage | 1.89 |
| Dividend payout ratio | 52.3% |

The company's sustainable growth rate is *closest* to:
A. 2.67%.
B. 5.05%.
C. 5.66%.

41. Which of the following will *least likely* result in an increase in a company's sustainable growth rate?
A. Higher tax burden ratio.
B. Higher interest burden ratio.
C. Higher dividend payout ratio.

42. Ali & Sons is operating in a highly fragmented industry, where competition among firms is very high. The company's ROE for last year was very high as compared to other firms in the industry. The company was *most likely* able to sustain this increase in ROE because it:
A. increased the prices of its product significantly.
B. decreased the prices of its product significantly.
C. took advanced measures for reducing working capital levels as a percentage of assets.

43. IMC telecom's, financial data is mentioned below:

| | |
|---|---|
| Return on Assets (ROA) | 5% |
| Total Asset Turnover | 2.0 |
| Financial Leverage | 2.5 |
| Dividends Payout Ratio | 45% |

IMC's sustainable growth rate is *closest* to:
A. 6.875%.
B. 5.625%.
C. 13.75%.

44. The gross profit margin for Amnesty Limited grew from 35% to 42% over the past one year. Which of the following is *least likely* an explanation for this increase?
A. The company charged higher prices for some of its products.
B. A new manufacturing process allowed for cost cutting.
C. Some office personnel were laid off and thus salary expense decreased.

45. The balance sheet extract for Silver Linings Limited is as follows:

| | |
|---|---|
| Cost of goods sold | $450,000 |
| Gross profit | $250,000 |
| Expenses | $170,000 |
| EBIT | $80,000 |
| Interest charges | $15,000 |
| EBT | $65,000 |
| Tax | $26,000 |
| Net Income | $39,000 |

What is the pre-tax margin for the company?
A. 3.7%.
B. 9.3%.
C. 14.4%.

46. Rob Westfield is an analyst. He gathers the following information for Panama Country Club.

| | |
|---|---|
| Average total assets | $750,000 |
| Average total liabilities | $480,000 |
| EBIT | $210,000 |
| EBT | $180,000 |
| Tax | 40% |

Which of the following statements is *least likely* correct?
A. The return on assets is 14.4%.
B. The return on equity is 40.0%.
C. The return on total capital is 66.7%.

47. While studying a research report, Andy Gibb came across the following ratios.

| | |
|---|---|
| Interest burden | 0.85 |
| Tax burden | 0.64 |
| EBIT margin | 7.50% |
| Financial Leverage | 1.80 |
| Total asset turnover | 1.24 |

What is the return on equity for this company?
A. 1.67%.
B. 5.06%.
C. 9.11%.

**LO.e: Calculate and interpret ratios used in equity analysis and credit analysis.**

48. Which of the following statements is *least likely* accurate about credit analysis?
A. Financial ratios are often used for credit analysis.
B. A high coverage ratio implies good credit quality.
C. A high leverage ratio implies good credit quality.

49. Which of the following is *least likely* a valuation ratio?
A. Acid test ratio.
B. Cash flow per share.
C. Diluted earnings per share.

50. The sustainable growth rate is the product of:
A. dividend payout ratio and earnings per share.
B. dividend payout ratio and retention ratio.
C. retention ratio and return on equity.

51. Billy James collected the following information from the cash flow statement of Daughtry Limited.

| | |
|---|---|
| Cash flow from operations | $300,000 |
| Cash flow from financing | $180,000 |
| Cash flow from investing | ($90,000) |

The weighted average number of shares outstanding for this company is 100,000 shares. The cash flow per share for the company is *closest* to:
A. 1.8.
B. 3.0.
C. 3.9.

52. Which of the following ratios is *least likely* to be used in credit analysis?
A. Interest coverage ratio.
B. Assets to equity ratio.
C. Price to earnings ratio.

**LO.f: Explain the requirements for segment reporting, and calculate and interpret segment ratios.**

53. For segment reporting, which of the following *must* be disclosed?
    I. Factors used to identify the segment
    II. Products and services sold by the segment
    III. A measure of the segments total assets and liabilities
    A. I and II only.
    B. II, and III only.
    C. I, II and III.

54. Which of the following ratios measures the overall efficiency of a segment?
    A. Segment turnover.
    B. Segment ROA.
    C. Segment debt ratio.

**LO.g: Describe how ratio analysis and other techniques can be used to model and forecast earnings.**

55. Mr. Smith, an analyst at Cyan Limited is forecasting net profit of the following three companies. He uses the five-year average net profit margins. The operating expenses and capital structures are similar for these companies.
    - Company A's products currently enjoy healthy margins because of its technological edge. New technologies typically replace old ones every three years in this industry.
    - Company B has been offering the same products throughout the period, and the demand and cost structures for its products have not experienced any significant changes.
    - Company C has recently restructured its product offerings focusing on high margin products only.

    Which of the three companies will have reliable forecasted net profit margin?
    A. Company C.
    B. Company B.
    C. Company A.

56. A computer generated analysis based on probability models for factors that drive outcomes is *most likely* to be known as:
    A. scenario analysis.
    B. sensitivity analysis.
    C. simulation.

**Solutions**

1. A is correct. Financial ratio analysis is limited by the use of alternative accounting methods. Accounting methods play an important role in the interpretation of financial ratios. The lack of consistency across companies makes comparability difficult to analyze and limits the usefulness of ratio analysis.

2. A is correct. Financial ratios alone are not sufficient to determine the creditworthiness of a company. Other factors must also be considered, such as examining the entire operation of the company, meeting with management, touring company facilities, and so forth.

3. C is correct. Statement A is incorrect because ratios explain what happened, but *do not* explain why it happened. Statement B is incorrect because ratios *allow* comparison of different sized companies.

4. C is correct. The microeconomic relationships within a company are the insights that the ratio analysis provides. Hence, this is not a limitation.

5. A is correct. The cross-sectional analysis allows for comparing a specific metric for a company with the same metric for another company.

6. A is correct. Statement B is incorrect because the company is likely to face an operational problem with obsolescence if the inventory grows *more quickly* that revenue. Statement C is incorrect because if net income is growing faster than revenue, the company's profitability increases.

7. B is correct. With a vertical common size balance sheet, each item is divided by total assets.

8. A is correct. Several ratios are industry specific; hence ratios should be selected based on the industry being evaluated.

9. A is correct.

10. A is correct. This is a limitation of ratio analysis.

11. A is correct. CCC = DOH + DSO – Days Payables = $\frac{365}{\frac{0.98}{0.25}} + \frac{365}{\frac{2.3}{0.8}} - \frac{365}{\frac{0.98}{0.5}} = 33.9$. When purchases are not available (as in this case), the COGS can be used to estimate payables turnover.

12. C is correct. Interest coverage ratio measures a company's ability to meet its interest obligations and is an indicator of company's solvency.

13. A is correct. Quick Ratio: $\frac{1900 + 300 + 1750 - 500}{5080} = 0.68$

14. C is correct. Cash ratio = $\frac{\text{Cash + Marketable securities}}{\text{Current liabilities}}$ = (90 + 350.5) / 187.5 = 2.3

    Current ratio = $\frac{\text{Current assets}}{\text{Current liabilities}}$ = 570.6 / 187.5 = 3.0

    Quick ratio = $\frac{\text{Cash + Marketable securities + Accounts receivables}}{\text{Current liabilities}} = \frac{90 + 350.5 + 10}{187.5}$ = 2.4

15. B is correct. CCC = DSO + DOH – Days Payables = $\frac{365}{\frac{2.8}{0.6}} + \frac{365}{\frac{2.3}{0.5}} - \frac{365}{\frac{2.1}{0.2}}$ = 122.

16. A is correct. The cash ratio determines how much of the company's short-term obligations can be settled with existing amounts of cash and marketable securities.

17. A is correct. Cash conversion cycle = Days sales outstanding + Days of inventory on hand – Days of payables

| | **Accounts receivable Days in Sales (DSO)** | **Inventory Days on hand (DOH)** | **Accounts payables Days in payables** |
|---|---|---|---|
| | Sales/A/R | Cost of Goods Sold/ Inventory | Purchases/ Payables |
| **Turnover** | 2,400/312.5 = 7.68 times | 1,440/355 = 4.06 times | 1,470/72.5 = 20.28 times |
| **In days** | 365/7.68 = 48 days | 365/4.06 = 90 days | 365/20.28 = 18 days |

Cash conversion cycle = 48 + 90 – 18 = 120

18. A is correct. Activity ratios measure operational efficiency.

19. B is correct.

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average Inventory}} = \frac{1{,}500{,}000}{\frac{275{,}000+250{,}000}{2}} = 5.714$$

$$\text{Payables turnover} = \frac{\text{Purchases}}{\text{Average trade payables}} = \frac{1{,}500{,}000 + 275{,}000 - 250{,}000}{\frac{250{,}000+225{,}000}{2}} = 6.42$$

20. A is correct.

$$\text{Days of sales outstanding} = \frac{\text{Number of days in the period}}{\text{Receivables turnover}} = \frac{\text{Number of days in the period}}{\frac{\text{Revenue}}{\text{Average Receivables}}}$$

$$\text{Days of sales outstanding} = \frac{360}{\left(\frac{150{,}000}{\frac{40{,}000+52{,}000}{2}}\right)} = 110.4$$

21. C is correct. Statement A is incorrect because a working capital turnover of 3.6 indicates that the company generates \$3.6 of revenue for every \$1 of working capital. Statement B is incorrect because a low fixed asset turnover ratio may indicate a capital intensive environment. Statement C is correct.

22. C is correct. Statements A and B are correct. Statement C is incorrect because a payables turnover ratio that is *high* relative to industry could indicate that the company is not making full use of the available credit facilities.

23. B is correct.

$$\text{Cash Ratio} = \frac{(\text{Cash} + \text{Marketable securities})}{\text{Current liabilities}} = \frac{75{,}000 + 60{,}000}{65{,}000 + 80{,}000} = 0.93$$

24. B is correct.

$$\text{Cash Conversion Cycle} = \text{DOH} + \text{DSO} - \text{Number of days of payables}$$

$$\text{Cash Conversion Cycle} = 36.48 + 49.22 - \left(\frac{360}{8.99}\right) = 45.66$$

25. C is correct. The longer the cash conversion cycle, the lower will be the liquidity of the company. Therefore, statement C is incorrect.

26. B is correct.

$$\text{Financial Leverage} = \frac{\text{Average total assets}}{\text{Average total equity}} = \frac{\frac{2{,}117+1{,}921}{2}}{\frac{567+491}{2}} = 3.82$$

27. C is correct.

$$\text{Fixed charge coverage} = \frac{\text{EBIT} + \text{Lease payments}}{\text{Interest payments} + \text{Lease payments}} = \frac{127{,}500 + 20{,}000}{44{,}000 + 20{,}000} = 2.30$$

28. C is correct.
The interest coverage ratio is known as times interest earned.

29. B is correct. A higher debt to assets ratio implies weaker solvency.

30. C is correct. Return on common equity is a ratio of (net income – preferred dividends) to average common equity.

31. C is correct. The ability to meet long-term obligations is known as solvency.

32. A is correct.
Current ratio = Current assets ÷ Current liabilities

| Current assets: | **£ '000s** | Current liabilities: | **£ '000s** |
|---|---|---|---|
| Cash | 120 | Accounts payable | 350 |
| Accounts receivable | 400 | Taxes payable | 250 |
| Inventory | 1,400 | Loan, first installment | 200 |
| Total | 1,920 | Total | 800 |

Current ratio = 2.4

33. A is correct. The debt–equity ratio decreased, thereby improving solvency; the fixed charge ratio remained the same.

$$\text{Fixed charge coverage ratio} = \frac{\text{EBIT} + \text{Lease payments}}{\text{Interest payments} + \text{Lease payment}}$$

Fixed charge coverage ratio 2013 = $\frac{362.5 + 30}{75 + 30}$ = 3.74

Fixed charge coverage ratio 2012 = $\frac{325 + 34}{62 + 34}$ = 3.74

Debt-to-equity ratio = $\frac{\text{Total debt}}{\text{Equity}}$

Debt-to-equity ratio 2013 = (150 + 200 + 1200) / 2580 = 60.0%
Debt-to-equity ratio 2012 = (152 + 195 + 1150) / 2400 = 62.4%

34. C is correct.
Purchases = COGS + Ending inventory – Beginning inventory
Purchases = 1250000 + 205000 – 150800 = 1304200
Payables Turnover = Purchases ÷ Average payables
Payables Turnover = 1304200 ÷ (1/2 x (150000 + 125000) = 9.5
Days Payables = 365 / 9.5 = 38.4
The firm's days in payables is 38.5 days; therefore, it appears the firm does not normally take supplier-provided discounts (paying in 10 days) nor pay its accounts within the 30-day terms provided. However, on average, the firm is paying faster than the average firm in the industry (42.9 days).

35. A is correct. Cross-sectional analysis is most helpful when comparing companies of different sizes which are in the same industry. Option B is not correct because ratios might not be comparable across industries. Option C deals with time-series analysis.

36. C is correct.
Company A has a higher current ratio and shorter cash conversion cycle and it therefore more liquid. The lower financial leverage ratio indicates that it has less financial risk, not more, and it has less time between cash outlay and cash collection.

| Measure | Definition | Company A | Company B |
|---|---|---|---|
| Current ratio | CA/CL | 3.03 | 2.86 |
| Cash conversion cycle | DOS + DOH – Days payable | 5 | 21 |
| Financial Leverage | Total assets/Sh equity | 3.04 | 4.70 |

37. C is correct.
Current ratio = $\frac{\text{Current assets}}{\text{Current liabilities}}$

| **Current Assets** | **Amount** | **Current Liabilities** | **Amount** |
|---|---|---|---|
| Cash | 800 | Accounts payable | 500 |
| Accounts receivable | 700 | Taxes payable | 300 |
| Inventory | 2,500 | Loan payable, first installment | 400 |
| Total | 4,000 | Total | 1,200 |

The higher the current ratio, the more liquid the company. Thus, with a current ratio of 3.33 (4,000 ÷ 1,200), the company is more liquid than the industry, with a current ratio of 3.00.

38. A is correct. ROE = ROA * Financial leverage = 12.6% x 1.88 = 23.7%.

39. C is correct.

| | **Company** | **Industry** |
|---|---|---|
| **Tax burden ratio** | =74.2/85.5 = 0.87 | 13.5/18.2 = 0.74 |
| **Financial leverage** | 650/400 = 1.625 | 150/65.5 = 2.29 |
| **Interest burden ratio** | 85.5/100 = 0.855 | 18.2/22 = 0.83 |

40. B is correct.
Sustainable growth rate = retention ratio (*b)* × ROE.
*b* = 1- Dividend payout ratio = 1 - 0.523 = 0.477
ROE = ROA x Financial leverage = .056 x 1.89 = 0.10584
Sustainable growth rate = *b* x ROE = 0.477 x 0.10584 = 0.0505 = 5.05%

41. C is correct.
Sustainable growth rate = Retention ratio * ROE.
A higher dividend payout ratio means a lower retention ratio.
The higher a company's ROE and its ability to finance itself from internally generated funds (a higher retention ratio), the greater its sustainable growth rate. In the five-factor ROE, any factor that increases ROE will increase sustainable growth:
ROE = Tax burden * Interest burden * EBIT margin * Asset turnover * Leverage.

42. C is correct. Either decreasing or increasing the prices is not sustainable in a highly fragmented and competitive industry. Increasing the price will lead to a decrease in sales because customers switch easily in competitive industries. On the other hand, decreasing the price will lead to a price war, which will reduce the profit for the all the firms in the industry.

43. A is correct.
Sustainable growth rate = retention ratio (b) × ROE
    1) Retention ratio = 1 – payout ratio
       Retention ratio = 1 – 0.45 = 0.55
    2) ROE = ROA × financial leverage
       ROE = 0.05 × 2.5 = 12.5%
Sustainable growth rate = 0.55 × 0.125 = 6.875%.

44. C is correct.
A decrease in salary expense has an impact on the net profit margin and not the gross profit margin since it is a non-operating expense. Higher prices will increase the gross profit margin, all else equal. Lower manufacturing costs will decrease COGS and increase the gross profit margin.

45. B is correct.

$$\text{Pre} - \text{tax margin} = \frac{\text{EBT}}{\text{Revenue}} = \frac{\text{EBT}}{\text{COGS} + \text{GP}} = \frac{65{,}000}{450{,}000 + 250{,}000} = 9.30\%$$

46. C is correct.

$$\text{Return on total capital} = \frac{\text{EBIT}}{\text{Debt} + \text{Equity}} = \frac{210{,}000}{750{,}000} = 28\%$$

47. C is correct.

$$\text{Return on equity} = \text{Interest burden} * \text{Tax burden} * \text{EBIT margin} * \text{Asset turnover} * \text{Leverage}$$
$$\text{Return on equity} = 0.85 * 0.64 * 0.075 * 1.80 * 1.24 \approx 0.0911$$

48. C is correct. Financial ratios are frequently used for credit analysis. A high coverage ratio implies good credit quality. High leverage means a relatively high level of debt. This implies high credit risk and low credit quality.

49. A is correct. The acid test ratio is a liquidity ratio and not a valuation ratio.

50. C is correct. Sustainable growth rate is the product of retention ratio and return on equity.

51. B is correct.

$$\text{Cash flow per share} = \frac{\text{Cash flow from operations}}{\text{Weighted average number of shares outstanding}} = \frac{300{,}000}{100{,}000} = 3.0$$

52. C is correct. Interest coverage ratios and leverage ratios (such as assets/equity) are used in credit analysis. The price to earnings ratio is used in equity analysis.

53. C is correct. All the items need to be listed. Refer to the notes for other items that need to be listed.

54. A is correct. Turnover ratios measure efficiency. Net profit margin measures profitability. The debt ratio measures leverage.

55. B is correct. Company B will have reliable forecasted net profit margin because it has been offering the same products and its demand and cost structures have been stable, too. Therefore, its net profit margin forecast should be stable and most reliable.

56. C is correct. A computer generated analysis based on probability models for the factors that drive outcomes is known as simulation.

**LO.a: Distinguish between costs included in inventories and costs recognized as expenses in the period in which they are incurred.**

1. A company manufactures copper wires and prepares its financial statements in accordance with IFRS. During its latest full fiscal year, the company recorded the following data:

| **Inventory Item** | **Amount €** |
|---|---|
| Raw material copper costs | 200,000 |
| Storage of finished wires | 50,000 |
| Wasted copper materials from abnormal production errors during the year | 25,000 |
| Transportation-in costs | 10,000 |
| Tax-related duties | 6,000 |
| Administrative overhead | 12,000 |
| Trade discounts due to volume purchases throughout the year | 5,000 |

The total costs included in inventory (in €) for the year are *closest* to:
A. 205,000.
B. 211,000.
C. 216,000.

2. A company incurs the followings costs related to its inventory during the year:

| **Cost** | **¥ millions** |
|---|---|
| Purchase price | 140,000 |
| Trade discounts | 2,000 |
| Import duties | 15,000 |
| Shipping of raw materials to manufacturing facility | 45,000 |
| Manufacturing conversion costs | 66,000 |
| Abnormal costs as a result of waste material | 30,000 |
| Storage cost prior to shipping to customers | 9,000 |

The amount charged to inventory cost (in millions) is *closest* to:
A. ¥264,000.
B. ¥266,000.
C. ¥273,000.

3. Which of the following costs is *least likely* to be included in inventory?
A. Cost of raw materials.
B. Cost of transporting finished goods to showroom.
C. Cost of storing raw materials.

4. Which of the following is *least likely* to reduce the purchase price of inventories?
A. Rebates.
B. Tax related duties.

   C. Trade discounts.

5. The purchase price of inventories will *most likely* increase due to which of the following?
   A. Handling.
   B. Trade discounts.
   C. Rebates.

**LO.b: Describe different inventory valuation methods (cost formulas).**

6. In order to match the actual historical cost of the inventory items to their physical flow, the inventory valuation method that *most likely* achieves this objective is:
   A. FIFO.
   B. LIFO.
   C. specific identification.

7. Anc Corp. reports under IFRS. Which of the following inventory valuation methods is the company *least likely* to use?
   A. LIFO.
   B. Specific Identification.
   C. Weighted average cost.

8. Which of the following inventory valuation methods is not permitted under IFRS?
   A. FIFO.
   B. LIFO.
   C. Weighted average cost.

9. Which of the following is *most likely* to have the greatest impact on the amount of reported cost of sales and inventory?
   A. Changes in selling price.
   B. Nature of product.
   C. Inventory valuation method.

10. Which of the following methods requires a separate purchases account?
    A. Periodic inventory system.
    B. Perpetual inventory system.
    C. Specific identification valuation method.

11. Goods that are not ordinarily interchangeable and are likely to be segregated are valued using the:
    A. First in first out method.
    B. Specific identification method.
    C. Weighted average cost method.

12. A company values measures its ending inventory using the costs of its recent purchases. Which of the following inventory valuation methods is the company *most likely* using?
    A. FIFO.

B. LIFO.
C. Specific Identification.

13. The amount assigned to cost of sales and inventory is *most* impacted by which of the following?
A. Inventory valuation method.
B. Increasing prices.
C. Type of good.

**LO.c: Calculate and compare cost of sales, gross profit, and ending inventory using different inventory valuation methods and using perpetual and periodic inventory systems.**

14. If a company uses a perpetual inventory system, the inventory method that *best* matches the actual historical cost of the inventory sold with their physical flow is:
A. FIFO.
B. LIFO.
C. specific identification.

15. Selected data from IMC Company that uses the FIFO inventory method is provided below:

| | Units | $/Unit | Total ($) |
|---|---|---|---|
| Opening inventory | 2,000 | 10.0 | 20,000 |
| Purchase | 500 | 10.5 | 5,250 |
| Sales | 1,100 | 15.0 | 16,500 |
| Purchase | 600 | 11.0 | 6,600 |
| Sales | 1,200 | 15.0 | 18,000 |
| Ending inventory | 800 | | |

If IMC used a perpetual system versus a periodic inventory system, the gross margin would *most likely* be:
A. lower.
B. the same.
C. higher.

16. Which inventory valuation method records purchases and sales of goods in inventory as they occur?
A. Perpetual inventory system.
B. Periodic inventory system.
C. Specific identification method.

17. A company switches from periodic inventory system to perpetual inventory system. The cost of sales and ending inventory will be the same if the company has been following which of these inventory valuation methods?
A. FIFO.
B. LIFO.
C. Weighted average cost.

18. A firm which prepares its financial statements according to U.S. GAAP and uses a periodic inventory system had the following transactions during the year:

| Date | Activity | Tons (000s) | $ per Ton |
|---|---|---|---|
| | Beginning inventory | 1 | 500 |
| February | Purchase | 8 | 540 |
| May | Sale | 5 | 600 |
| July | Purchase | 2 | 575 |
| November | Sale | 3 | 620 |

The cost of sales (in '000s) is *closest* to:
A. $4,550 using FIFO.
B. $4,435 using LIFO.
C. $4,342 using weighted average.

19. Kevin Corporation Limited prepares its financial statements in accordance with IFRS. The inventory related costs incurred during the year include the following:

| | |
|---|---|
| Raw materials | $56,000 |
| Direct labor | $40,000 |
| Storage of finished goods | $18,000 |
| Abnormal costs | $6,000 |
| Transportation of raw materials | $10,000 |

The total inventory cost recorded is *closest* to:
A. $102,000.
B. $106,000.
C. $112,000.

20. The information on a company's inventory is given below:

| | |
|---|---|
| Opening inventory | 0 units |
| 1st purchase | 500 units at $30/unit |
| 2nd purchase | 1000 units at $33/unit |
| 3rd purchase | 1200 units at $34/unit |
| Total Sales | 2000 units at $50/unit |

Using a periodic inventory system and the weighted average method, the ending inventory value is *closest* to:
A. $22,633.
B. $23,023.
C. $23,800.

21. Jackson Enterprises uses the FIFO inventory valuation method. The company bought 400 generators at a price of $300 each on January 5, 2012. 300 of these generators were sold off at a price of $450 each by the end of March, 2012. On April 10, 2012, 250 more generators

were bought at a price of $325 each. By May 31, 2012, 225 generators were further sold off at a price of $500 each. What would be the inventory on June 1, 2012 for the company?
A. $38,125.
B. $40,625.
C. $62,500.

22. Swan Brothers Limited uses weighted average cost as the inventory valuation method. The following table shows their purchases and sales for the first two quarters of cotton bales.

| Date | Purchased | Sold | Cost per bale | Price per bale |
|---|---|---|---|---|
| January 1 | 180 | 0 | 200 | 250 |
| February 1 | 20 | 150 | 210 | 250 |
| March 1 | 0 | 25 | 225 | 275 |
| April 1 | 200 | 0 | 225 | 275 |
| May 1 | 100 | 0 | 250 | 280 |
| June 1 | 0 | 175 | 275 | 300 |

What is the cost of ending inventory?
A. $33,060.
B. $36,250.
C. $39,750.

23. Calvin Clients Limited reports its inventory and cost of goods sold using the LIFO valuation method. The following table shows the details of purchases and sales for the year 2010. Assume that in each month, the purchases happen at the start of the month and sales happen at the end of the month.

| Month | Units purchased | Units sold | Cost per unit | Price per unit |
|---|---|---|---|---|
| January | 50 | 0 | 100 | 150 |
| March | 100 | 25 | 110 | 150 |
| May | 0 | 60 | n/a | 175 |
| June | 125 | 0 | 125 | 175 |
| July | 120 | 0 | 150 | 180 |
| October | 0 | 80 | n/a | 200 |
| December | 0 | 60 | n/a | 225 |

What is the cost of goods sold for the company?
A. $19,625
B. $29,850
C. $37,850

**LO.d: Calculate and explain how inflation and deflation of inventory costs affect the financial statements and ratios of companies that use different inventory valuation methods.**

24. In an environment of rising inventory unit costs, which of the following methods is *most likely* to report the highest amount of ending inventory?

A. FIFO.
B. LIFO.
C. Weighted average cost.

25. A company decides to change its inventory method from FIFO to the weighted average cost method. Assuming that the change happens during a period of rising inventory costs, which of the following financial ratios will *most likely* increase as a result of this change?
    A. Current.
    B. Debt-to-equity.
    C. Number of days in inventory.

26. Company ABC operates in an environment of declining prices. Its reported profits will tend to be the *lowest* if it accounts for inventory using the:
    A. FIFO method.
    B. LIFO method.
    C. weighted average cost method.

**LO.e: Explain LIFO reserve and LIFO liquidation and their effects on financial statements and ratios.**

27. Analyst 1: Under US GAAP, companies that use the LIFO method must disclose in their financial notes the amount of LIFO reserve.
    Analyst 2: LIFO reserve can be used to adjust reported LIFO inventory and cost of goods sold balances to the FIFO method for comparison purposes.
    A. Analyst 1 is correct.
    B. Analyst 2 is correct.
    C. Both analysts are correct.

28. LIFO liquidation occurs when the number of units in ending inventory:
    A. increases from the number of units that were present at the beginning of the year.
    B. decreases from the number of units that were present at the beginning of the year.
    C. increases/ decreases from the number of units that were present at the beginning of the year.

29. If inventory unit costs have generally risen from year to year, a LIFO liquidation will *most likely*:
    A. produce an inventory related increase in gross profits.
    B. produce an inventory related decrease in gross profits.
    C. have no impact on gross profits.

**LO.f: Convert a company's reported financial statements from LIFO to FIFO for purposes of comparison.**

***The following information relates to Questions 30-35***

An equity research analyst is studying the effect of Company XYZ's use of the LIFO method to account for its inventory. For this purpose, the analyst gathers the following information.

**Exhibit 1. Balance Sheet Information (US$ Millions)**

| **As of 31 December** | **2015** | **2014** |
|---|---|---|
| Cash and cash equivalents | 17.2 | 15.7 |
| Accounts receivable | 62.6 | 45.8 |
| Inventories | 62 | 53.9 |
| Other current assets | 12.5 | 6.5 |
| Total current assets | 154.3 | 121.9 |
| Property and equipment, net | 303.5 | 297.2 |
| **Total assets** | 457.8 | 419.1 |
| | | |
| Total current liabilities | 149.5 | 139.5 |
| Long-term debt | 64.4 | 60.4 |
| Total liabilities | 213.9 | 199.9 |
| Common stock and paid in capital | 165.2 | 165.2 |
| Retained earnings | 78.7 | 54 |
| Total shareholders' equity | 243.9 | 219.2 |
| **Total liabilities and shareholders' equity** | 457.8 | 419.1 |

**Exhibit 2. Income Statement Information (US$ Millions)**

| **For the Year Ended 31 December** | **2015** | **2014** |
|---|---|---|
| Sales | 434.6 | 416.1 |
| Cost of goods sold | 221.1 | 214.7 |
| Depreciation and amortization expense | 13.9 | 11.9 |
| Selling, general, and administrative expense | 165.6 | 163.7 |
| Interest expense | 3.1 | 1.8 |
| Income tax expense | 6.2 | 4.8 |
| Net income | 24.7 | 19.2 |

The analyst also finds the following information in the notes to the financial statements.

- The LIFO reserves as of 31 December 2014 and 2015 are $11.7 million and $15.5 million respectively, and
- The effective income tax rate applicable to the company for 2015 and earlier periods is 20 percent.

30. If company XYZ had used FIFO instead of LIFO, the amount of inventory reported as of 31 December 2015 would have been *closet* to:
    A. $46.5 million.
    B. $65.8 million.
    C. $77.5 million.

31. If company XYZ had used FIFO instead of LIFO, the amount of cost of goods sold reported by it for the year ended 31 December 2015 would have been *closest* to:
    A. $205.6 million.
    B. $217.3 million.

C. $224.9 million.

32. If company XYZ had used FIFO instead of LIFO, its reported net income for the year ended 31 December 2015 would have been higher by an amount *closet* to:
A. $3 million.
B. $3.8 million.
C. $15.5 million.

33. If company XYZ had used FIFO instead of LIFO, its retained earnings as of 31 December 2015 would have been higher by an amount closest to:
A. $11.7 million.
B. $12.4 million.
C. $15.5 million.

34. If company XYZ had used FIFO instead of LIFO, which of the following ratios computed as of 31 December 2015 would *most likely* have been lower?
A. Cash ratio.
B. Current ratio.
C. Gross profit margin.

35. If company XYZ had used FIFO instead of LIFO, its debt to equity ratio computed as of 31 December 2015 would have:
A. increased.
B. decreased.
C. remained unchanged.

**LO.g: Describe the measurement of inventory at the lower of cost and net realisable value.**

36. Nathan Scott is an accountant at Dan Motors Limited. The company prepares its accounts in accordance with IFRS. The inventory cost at year end is $29,000, while the estimated selling price is $34,000. If the costs necessary to make the inventory worthy of being sold are $6,000, the inventory recorded will be *closes*t to:
A. $28,000.
B. $29,000.
C. $34,000.

37. Under US GAAP, inventory is measured at:
A. Lower of cost or market where market value must be greater than net realizable value.
B. Net realizable value.
C. Lower of cost or market where market value is bound by the limits: NRV, NRV minus normal profit margin.

38. Which of the following statements is *most accurate*?
A. Reversal of a write-down limited to the amount of original write-down is permitted under US GAAP.

B. Reversal of a write-down is permitted only under IFRS and limited to the amount of original write-down.
C. Reversal of a write-down is permitted under both IFRS and US GAAP but the amount of reversal varies for both standards.

**LO.h: Describe implications of valuing inventory at net realisable value for financial statements and ratios.**

39. A company which prepares its financial statements using IFRS wrote down its inventory value by €40,000 in 2011. In 2012, prices increased and the same inventory was worth €50,000 more than its value at the end of 2011. Which of the following statements is *most accurate*? In 2012, the company's cost of sales:
A. was unaffected.
B. decreased by €40,000.
C. decreased by €50,000.

40. A kitchen appliance store prepares its financial statements in accordance with IFRS. The store has 500 mixer-grinders in its inventory. Each unit is sold at a price of $150. The store paid on an average of $140 per unit to the manufacturer of the appliance. Sale of appliances has been slow in recent months. The store estimates it can sell each mixer-grinder for $130 if it announces a sale for a limited period along with free shipping at the cost of $5 per mixer-grinder. The manufacturer has also lowered the price to $100 because of the low demand. The total carrying amount of the 500 mixer-grinders on the store's balance sheet would be *closest* to:
A. $62,500.
B. $65,000.
C. $70,000.

41. Following information is available for a manufacturing company:

| | |
|---|---|
| Cost of ending inventory computed using FIFO | $2.5 million |
| Net realizable value | $2.3 million |
| Current replacement cost | $2.1 million |

If the company uses IFRS instead of U.S. GAAP its cost of goods sold ($ millions) is *most likely*:
A. the same.
B. 0.2 lower.
C. 0.2 higher.

**LO.i: Describe the financial statement presentation of and disclosures relating to inventories.**

42. The *most appropriate* way to account for the assets, that have been selected to be spun-off, until the distribution occurs is to classify them as:
A. held for sale with no depreciation taken.

B. held for use until disposal with no deprecation taken.
C. held for use until disposal with depreciation continuing to be taken.

43. Which of the following is *least likely* to be a financial statement disclosure required by IFRS concerning inventory?
    A. The carrying amount of inventory at fair value plus costs to sell.
    B. The carrying amount in classifications of inventory such as work in progress, finished goods, etc.
    C. The circumstances that led to the reversal of a write down of inventories.

**LO.j: Explain issues that analysts should consider when examining a company's inventory disclosures and other sources of information.**

44. Reversal of prior-year inventory write-downs are most likely permitted under:
    A. U.S. GAAP only.
    B. IFRS only.
    C. U.S. GAAP and IFRS.

45. Which of the following is *least likely* correct about the measurement of inventory value under U.S.GAAP?
    A. Inventory is measured at the lower of cost or market value.
    B. The lower limit of the market value is net realizable value minus a normal profit margin.
    C. Reversal of write downs are permitted under U.S. GAAP and prohibited under IFRS.

**LO.k: Calculate and compare ratios of companies, including companies that use different inventory methods.**

46. Which ratio is *most likely* higher for a company using FIFO method to account for inventory, during a period of rising prices, when compared against a company using weighted average cost method?
    A. Debt-to-equity ratio.
    B. Inventory turnover.
    C. Return on sales.

47. Given below is the information of a company that uses the FIFO inventory method:
    Opening inventory of 1000 units at $12/unit
    Purchase of 200 units at $12.8/unit
    Sale of 600 units at $14/unit
    Purchase of 200 units at $13/unit
    Sale of 600 units at $14/unit
    If the company used a perpetual system versus a periodic inventory system, the gross margin would *most likely* be:
    A. higher.
    B. lower.
    C. the same.

48. Which ratio is *most likely* higher for a company using LIFO method to account for inventory, during a period of rising prices, when compared against a company using FIFO method?
    A. Current ratio.
    B. Gross margin.
    C. Inventory turnover.

49. Amerco Inc. uses the LIFO method and Britco Ltd. uses the FIFO method. During periods of falling prices, compared to the cost of replacing of the inventory, the cost of goods sold reported by:
    A. Britco is too high.
    B. Amerco is too high.
    C. Amerco is too low.

50. A company decides to change its inventory method from FIFO to the weighted average cost method. If the inventory prices are decreasing during this period, which of the following financial ratios will *most likely* decrease as a result of this change?
    A. Debt-to-equity.
    B. Current.
    C. Number of days in inventory.

**LO.l: Analyze and compare the financial statements of companies, including companies that use different inventory methods.**

51. A high inventory turnover ratio and low number of days of inventory on hand indicates:
    A. effective inventory management.
    B. inadequate amount of inventory.
    C. obsolete inventory.

52. The ratio *least likely* used to measure the efficiency of inventory management is:
    A. Days of inventory on hand.
    B. Gross profit margin.
    C. Cash ratio.

53. Which of the following ratios is *least likely* to be used to evaluate the efficiency or effectiveness of inventory management?
    A. Days of inventory on hand.
    B. Gross profit margin.
    C. Quick ratio.

54. Which of the following is *most likely* to be an indicator of highly effective inventory management?
    A. Low inventory turnover ratio.
    B. Low gross profit margin.
    C. Low number of days of inventory on hand.

**Solutions**

1. B is correct.

| Inventory Item | Amount(in €) |
|---|---|
| Raw materials | 200,000 |
| Transportation-in | 10,000 |
| Tax-related duties | 6,000 |
| Less: Trade discounts | (5,000) |
| Total inventory costs | 211,000 |

2. A is correct.
The costs to include in inventories are all costs of purchase, costs of conversion, and other costs incurred in bringing the inventories to their present location and condition.

| Cost | ¥ millions |
|---|---|
| Purchase price | 140,000 |
| Less Trade discounts | (2,000) |
| Import duties | 15,000 |
| Shipping of raw materials to manufacturing facility | 45,000 |
| Manufacturing conversion costs | 66,000 |
| Total inventory costs | **264,000** |

3. C is correct. Inventory costs include: cost of raw materials, cost of conversion and cost necessary to bring inventory to final location and condition. The cost of storing finished goods inventory is expensed and hence not included in the inventory cost. Refer to IFT Notes for the list of costs which are included in inventory and the list of costs that expensed.

4. B is correct. Tax related duties are an expense and increase the purchase price of inventories.

5. A is correct. Handling, transportation costs increase the cost of inventory.

6. C is correct. Specific identification best matches the physical flow of the inventory items because it tracks the actual units that are sold

7. A is correct. LIFO is permitted under US GAAP.

8. B is correct. IFRS does not permit the use of LIFO method for inventory valuation.

9. C is correct. The inventory valuation method has a significant impact on the amount allocated to cost of sales and inventory.

10. A is correct. The periodic inventory system requires a separate purchases account.

11. B is correct. Goods that are not ordinarily interchangeable and are likely to be segregated are valued using the specific identification method.

12. A is correct. Under FIFO, costs of most recent purchases is allotted to ending inventory.

13. A is correct.

14. C is correct. Specific identification matches the actual historical costs of the specific inventory items to their physical flow: The costs remain in inventory until the actual identifiable inventory is sold

15. B is correct. When using the FIFO inventory method the ending inventory, the cost of goods sold and the gross margin, are the same under either the perpetual or periodic methods. The use of a perpetual or periodic system makes a difference under weighted average, and LIFO.

16. A is correct.

17. A is correct. The choice of system affects the cost of sales and ending inventory for LIFO or weighted average cost method.

18. C is correct.
    FIFO: Cost of Sales = 1 * 500 + 7 *540 = 4,280
    LIFO: Cost of Sales = 2 * 575 + 6 * 540 = 4,390
    WA: Total units = 11
        Total cost = 5,970
        Cost of Sales = 5,970/11 * 8 = 4,342

19. B is correct. $\text{Inventory cost} = \text{Raw materials} + \text{Direct labor} + \text{Transportation}$
    $\text{Inventory cost} = 56{,}000 + 40{,}000 + 10{,}000 = 106{,}000.$
    Abnormal cost and storage cost of finished goods are excluded from the cost of inventory.

20. B is correct.
    Ending Inventory Weighted Average Calculations

| | Units | $/unit | Total $ |
|---|---|---|---|
| Purchase #1 | 500 | $30 | $15,000 |
| Purchase #2 | 1000 | $33 | $33,000 |
| Purchase #3 | 1200 | $34 | $40,800 |
| Total available | 2,700 | | $88,800 |

    Average cost 88,800 / 2,700 = $32.89
    Ending inventory 2,700 – 2,000 = 700 units.
    $32.89 * 700 = $23,023

21. B is correct. Under FIFO method:
    Purchased 400

| | |
|---|---|
| Sold | (300) |
| Remainder as at March 2012 | 100 |
| Purchased further | 250 |
| Sold (100 old+125 new) | (225) |
| Remainder (new) | 125 |

Therefore, inventory cost 125 * 325 = $40,625.

22. A is correct.

$$\text{Weighted average cost per unit} = \frac{\text{Total cost incurred}}{\text{Total units purchased}}$$

$$\text{Weighted average cost per unit} = \frac{180 * 200 + 20 * 210 + 200 * 225 + 100 * 250}{500} = \frac{110{,}200}{500}$$

$$= \$220.4$$

$$\text{Ending Inventory} = \text{Number of units remaining } \times \text{weighted average cost per unit}$$
$$\text{Ending Inventory} = [(180 + 20 + 200 + 100) - (150 + 25 + 175)] * 220.4 = \$33{,}060.$$

23. B is correct. Under the LIFO method we assume that the most recently purchased items are sold first. The first sale happens in March. These items were purchased at 110 so the cost for March is 25 * 110. We do the same for the remaining months.

| **Month** | **Units purchased** | **Units sold** | **Cost per unit** | **COGS for the month** | **Ending Inventory: # of units @ cost** |
|---|---|---|---|---|---|
| January | 50 | 0 | 100 | 0 | 50 @ 100 |
| March | 100 | 25 | 110 | 25 * 110 | 50 @ 100<br>75 @ 110 |
| May | 0 | 60 | n/a | 60 * 110 | 50 @100<br>15 @ 110 |
| June | 125 | 0 | 125 | 0 | 50 @100<br>15 @ 110<br>125 @ 125 |
| July | 120 | 0 | 150 | 0 | 50 @100<br>15 @ 110<br>125 @ 125<br>120 @ 150 |
| October | 0 | 80 | n/a | 80 * 150 | 50 @100<br>15 @ 110<br>125 @ 125<br>40 @ 150 |
| December | 0 | 60 | n/a | 40 * 150<br>20 * 125 | |

Cost of goods sold = 25 * 110 + 60 * 110 + 80 * 150 + (40 * 150 + 20 * 125) = $29,850

24. A is correct. In an environment of rising inventory unit costs, FIFO is most likely to report the highest amount of ending inventory.

25. B is correct. All else held constant, in a period of rising costs, the ending inventory would be lower under weighted average and cost of goods sold (CGS) will be higher (compared to FIFO) resulting in lower net income and retained earnings. There will be no impact on the debt level, current or long-term. Therefore, the debt-to-equity ratio (Total debt ÷ Total shareholder's equity) will increase due to the decrease in retained earnings (and lower shareholders' equity).

26. A is correct. In a declining price environment, the newest inventory is the lowest-cost inventory. Therefore, using the FIFO method i.e. selling the older, expensive inventory first, will result in higher cost of sales and lower profit.

27. C is correct. Under US GAAP, companies that use the LIFO method must disclose in their financial notes the amount of the LIFO reserve or the amount that would have been reported in inventory if the FIFO method had been used. This information can be used to adjust reported LIFO inventory and cost of goods sold balances to the FIFO method for comparison purposes.

28. B is correct. LIFO liquidation occurs when the number of units in ending inventory declines from the number of units that were present at the beginning of the year.

29. A is correct. If inventory unit costs have generally risen from year to year, then a LIFO liquidation will produce an inventory-related increase in gross profits.

30. C is correct. Inventory (FIFO method) = Inventory (LIFO method) + LIFO reserve
    = \$62 million + 15.5 million
    = \$77.5 million

31. B is correct. COGS (FIFO method) = COGS (LIFO method) – Increase in LIFO reserve
    = \$221.1 million – (15.5 million – 11.7 million)
    = \$217.3 million

32. A is correct. NI (FIFO method) = NI (LIFO method) + Increase in LIFO reserve × (1 – Tax rate)
    = \$24.7 million + 3.8 million × (1 – 20%)
    = \$27.74 million
    Therefore, the increase in net income is:
    Increase in NI = NI (FIFO method) – NI (LIFO method)
    = \$27.74 million – 24.7 million
    = \$3.04 million

33. B is correct.
    RE (FIFO method) = RE (LIFO method) + LIFO reserve × (1 – Tax rate)
    = \$78.7 million + 15.5 million × (1 – 20%)
    = \$91.1 million
    Therefore, the increase in retained earnings is:

Increase in RE = RE (FIFO method) – RE (LIFO method)
= $91.1 million – 78.7 million
= $12.4 million

34. A is correct. The cash ratio (cash and cash equivalents ÷ current liabilities) would be lower because cash would have been less under FIFO. XYZ's income before taxes would have been higher under FIFO, and consequently taxes paid by XYZ would have also been higher and cash would have been lower. There is no impact on current liabilities. Both XYZ's current ratio and gross profit margin would have been higher if FIFO had been used. The current ratio would have been higher because inventory under FIFO increases by a larger amount than the cash decreases for taxes paid. Because the cost of goods sold under FIFO is lower than under LIFO, the gross profit margin would have been higher.

35. B is correct. If XYZ had used FIFO instead of LIFO, the debt-to-equity ratio would have decreased. No change in debt would have occurred, but shareholders' equity would have increased as a result of higher retained earnings.

36. A is correct. The inventory is recorded at lower of the cost or the net realizable value. The net realizable value is the difference between estimated selling price and the costs incurred to bring the inventory into a saleable condition.
Thus, the inventory is recorded at $34,000 - $6,000 = $28,000.

37. C is correct. Under US GAAP inventory is measured at the lower of cost or market where market value is bound by the limits: NRV, NRV minus normal profit margin.

38. B is correct. Reversal of a write-down is permitted only under IFRS and limited to the amount of original write-down. Under US GAAP the reversal of a write-down is not allowed.

39. B is correct. Under IFRS there will be reversal of the write-down. This reversal will be limited to 40,000. The reversal of the inventory write-down is recognized as a reduction in the cost of sales.

40. A is correct. Inventory is measured at the lower of cost or net realizable value. Lower of the two is NRV which is $125. Under IFRS, net realizable value (NRV) = estimated selling price - estimated costs necessary to get the inventory ready for sale and make the sale = 130 – 5 = 125. For 500 units: 500 * 125 = $62,500.

41. B is correct. Under IFRS, the inventory would be written down to its net realizable value (2.3 million) and cost of goods sold will increase by 0.2 million. Under U.S. GAAP, inventory is written down to its current replacement cost ($2.1 million) and cost of goods sold will increase by 0.4 million. End result is that under IFRS the cost of goods sold will be lower by 0.2 million.

42. C is correct. Long-lived assets that will be disposed of other than by sale, such as a spin-off, an exchange for other assets, or abandonment, are classified as held for use until disposal and continue to be depreciated until that time.

43. A is correct. The disclosure required by IFRS is the carrying amount of inventory at fair value minus costs to sell.

44. B is correct. Reversal of prior-year inventory write-downs are permitted under IFRS but not under U.S. GAAP.

45. C is correct. Reversal of write downs are prohibited under U.S. GAAP and permitted under IFRS.

46. C is correct. In periods of rising prices FIFO results in a higher inventory value and a lower cost of goods sold and therefore a higher net income. The higher net income increases return on sales. The higher reported net income also increases retained earnings, and therefore results in a lower debt-to-equity ratio not a higher one. The combination of higher inventory and lower cost of goods sold decreases inventory turnover (CGS/inventory).

47. C is correct. When using the FIFO inventory method the ending inventory, the cost of goods sold and the gross margin, are the same under either the perpetual or periodic methods. The use of a perpetual or periodic system makes a difference under weighted average, and LIFO.

48. C is correct. During a period of rising prices, ending inventory under LIFO will be lower than that of FIFO and cost of goods sold higher; therefore, inventory turnover (CGS/average inventory) will be higher.

49. A is correct. Britco uses FIFO which means that cost of goods sold reflects old prices. Given that prices are falling, old prices are higher than the current cost of replacing inventory.

50. A is correct. All else held constant, in a period of declining costs the ending inventory would be higher under weighted average and cost of goods sold (COGS) will be lower (compared to FIFO) resulting in higher net income and retained earnings. There will be no impact on the debt level, current or long-term. Therefore the debt-to-equity ratio (Total debt ÷ Total shareholder's equity) will decrease due to the increase in retained earnings (and higher shareholders' equity).

51. A is correct.

52. C is correct. Cash ratio does not consider inventory. The three ratios used to measure the efficiency of inventory include days of inventory on hand, inventory turnover and gross profit margin.

53. C is correct. The quick ratio does not take into account inventory and is least likely to be used to evaluate inventory management. The three important ratios used to evaluate the

efficiency or effectiveness of inventory management include inventory turnover, days of inventory on hand, and gross profit.

54. C is correct. The indicators of highly effective inventory management include high inventory turnover ratio, high gross profit margin, and low number of days of inventory on hand

**LO.a: Distinguish between costs that are capitalized and costs that are expensed in the period in which they are incurred.**

1. A company recently purchased a warehouse property and related equipment for €20 million. The company incurred the following additional costs:
   • €1.0 million for repairs to the building's roof
   • €0.3 million to modify the interior layout to meet their needs (moving walls and doors, inserting and removing partitions, etc.)
   • €0.2 million on an orientation and training session for employees to familiarize them with the facility
   The cost to be capitalized (in millions) for accounting purposes is *closest* to:
   A. €20.0.
   B. €21.3.
   C. €21.5.

2. Energy Unlimited, Inc., a vertically integrated power company, borrows capital from a consortium of banks to finance the construction and commissioning of an electricity generation plant. The loan has the following terms:

| | |
|---|---|
| Borrowing date | 10 November 2013 |
| Borrowed amount | ¥750 million |
| Annual interest rate | 10 percent |
| Term of the loan | 5 years |
| Payment method | Annual interest payments only. Entire principal is due at the end of the loan term. |

   The construction and commissioning of the plant take three years, during which time Energy Unlimited earned ¥25 million by temporarily investing the proceeds of the loan. The amount of interest related to construction and commissioning (in ¥ million) that can be capitalized in Energy Unlimited balance sheet under IFRS is *closest* to:
   A. 200.
   B. 225.
   C. 350.

3. Capital Inc. incurred the following costs recently on purchasing a machine for its car manufacturing plant:

| | |
|---|---|
| Purchase price | $15,790 |
| Delivery charges and taxes | $1,320 |
| Installation and testing | $900 |
| Reinforcement of factory floor to accommodate machine | $150 |
| Maintenance staff training costs | $650 |

   The total cost of the machine that will appear on Capital's balance sheet is *closest* to:

A. $18,010.
B. $18,160.
C. $18,810.

4. The information on a company's financing for construction of a manufacturing facility is given below:
- Borrowed NZD12,000,000 at a rate of 11%
- Issued NZD2,000,000 of preferred shares with a cumulative dividend rate of 8%
- Temporarily invested NZD1,000,000 of the loan proceeds for the first six months of construction and earned 8% on that account

Under IFRS, the amount of financing costs to be capitalized in the first year is *closest* to:
A. NZD1,280,000.
B. NZD1,440,000.
C. NZD1,480,000.

5. The information on a company's financing for construction of a manufacturing facility is given below:
- Borrowed USD12,000,000 at a rate of 11%
- Issued USD2,000,000 of preferred shares with a cumulative dividend rate of 8%
- Temporarily invested USD1,000,000 of the loan proceeds for the first six months of construction and earned 8% on that account

Under US GAAP, the amount of financing costs to be capitalized in the first year is *closest* to:
A. $1,280,000.
B. $1,320,000.
C. $1,480,000.

**LO.b: Compare the financial reporting of the following types of intangible assets: purchased, internally developed, acquired in a business combination.**

6. Under IFRS, which of the following conditions is a criterion for an asset to be classified as an intangible asset? It must:
A. have an indefinite useful life.
B. be expected to generate future economic benefits.
C. be obtained through a business combination.

7. On the statement of cash flow, an internally developed intangible asset will most likely be classified as a:
A. Operating cash flow.
B. Investing cash flow.
C. Financing cash flow.

*8.* Under US GAAP, the costs related to the development of a software for sale are *most likely:*
A. Expensed.
B. Capitalized.
C. Expensed until feasibility is established and capitalized thereafter.

9. Two companies develop, X and Y, develop scanners and software for editing the scanned images. X follows IFRS, while Y follows US GAAP. Which of the following statements is most accurate regarding the development of scanners and the editing software?
   A. Company X can capitalize the software development costs if it meets certain criteria.
   B. Company Y can capitalize the development costs related to making scanners if its meets certain criteria.
   C. Both companies must expense all development costs related to these intangible assets.

**LO.c: Explain and evaluate how capitalising versus expensing costs in the period in which they are incurred affects financial statements and ratios.**

10. Capitalizing expenditures, rather than expensing them:
    A. results in lower profitability in the initial years and higher profitability in subsequent years.
    B. results in higher profitability in the initial years and lower profitability in subsequent years.
    C. has no impact, both methods give the same profitability.

11. Capitalising an expenditure, rather than expensing it:
    A. results in greater amount reported as cash flow from operations.
    B. results in lower amount reported as cash flow from operations.
    C. has no impact, both methods report the same cash flow from operations.

**LO.d: Describe the different depreciation methods for property, plant, and equipment and calculate depreciation expense.**

12. A company has purchased a machine for $1 million with an overall useful life of 20 years and has two significant components:
    Component A costs $ 500,000 and has an expected useful life of 20 years
    Component B costs $ 500,000 and has an expected useful life of 10 years
    Assuming that the company's objective is to maximize income and it uses the straight line method of depreciation, the depreciation expense for the first year computed under IFRS compared with under U.S. GAAP will *most likely* be:
    A. the same.
    B. $25,000 higher.
    C. $25,000 lower.

13. A Russian corporation is computing the depreciation expense of a piece of manufacturing equipment for the fiscal year ended December 31, 2013 using the information below. The company takes a full year's depreciation in the year of acquisition.

| | |
|---|---|
| Date of purchase | January 1, 2013 |
| Cost of equipment | RUB 5,000,000 |
| Estimated residual value | RUB 500,000 |
| Expected useful life | 15 years |
| Total productive capacity | 15,000,000 units |

| | |
|---|---|
| Production in 2013 | 1,100,000 units |

The depreciation expense (in RUB) will *most likely* be:

A. 300,000 lower using the straight-line method compared with the double-declining balance method.
B. 66,667 higher using the units-of-production method compared with the straight-line.
C. 336,667 higher using the double-declining balance method compared with the units-of-production method.

14. At the start of the year, a company acquired new equipment at a cost of €80,000, estimated to have a five year life and a residual value of €5,000. If the company depreciates the asset using the double declining balance method, the depreciation expense that the company will report for the third year is *closest* to:
    A. €11,520.
    B. €17,280.
    C. €19,200.

15. An analyst has gathered the following information about a company's capital assets:

| Year ending | **2012** | **2011** |
|---|---|---|
| Property, plant, and equipment | 4750 | 4750 |
| Accumulated depreciation | 575 | 420 |
| Net book value | 4175 | 4330 |

As of the end of 2012, the expected remaining life of the assets, in years, is *closest* to:

A. 24 years.
B. 27 years.
C. 31 years.

**LO.e: Describe how the choice of depreciation method and assumptions concerning useful life and residual value affect depreciation expense, financial statements, and ratios.**

16. A research analyst is analyzing the effect of two alternative methods of depreciation for a newly purchased machine on a company's income statement. She has collected the following information about the machine's expected production life and use:

| | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Total** |
|---|---|---|---|---|---|---|
| Units of production | 1,550 | 1,750 | 1,750 | 1,500 | 1,500 | 8,050 |

If the company uses the straight-line method to depreciate the machine instead of the units-of-production method of depreciation, its net income in Year 2 will *most likely* be:

A. the same.
B. lower.
C. higher.

17. Jonathan Hollis, CFO of Alexander Oil Company, is selecting the depreciation method to use for new equipment with an expected useful life of four years. Production is expected to be relatively slow initially, but will gradually increase over time. The method chosen for tax

reporting must be the same as the method used for financial reporting. Which of the following depreciation methods would you *most strongly* recommend to Hollis, if he wants to minimize tax payments in the first year of equipment's life?

A. Straight-line method.
B. Units-of-production method.
C. Double-declining balance method.

**The following information relates to Questions 18 - 19**

Anna Judd of Blue Chip Limited, an Australian corporation, is computing the depreciation expense of a manufacturing plant for the fiscal year ended 31 March 2014. The plant was acquired on 1 April 2013. Judd gathers the following information (currency in Australian dollars, AUD):

| | |
|---|---|
| Plant cost | AUD 2,500,000 |
| Estimated residual value | AUD 250,000 |
| Expected useful life | 10 years |
| Total productive capacity | 1,900,000 units |
| Production in FY 2014 | 100,000 units |
| Expected production for the next 9 years | 200,000 units each year |

18. The amount of depreciation expense (in AUD) reported on Blue Chip's income statement related to the manufacturing plant based on straight-line method is *closest* to:

A. 118,421.
B. 225,000.
C. 250,000.

19. The amount of depreciation expense (in AUD) reported on Blue Chip's income statement related to the manufacturing plant based on units-of-production method is *closest* to:

A. 118,421.
B. 225,000.
C. 250,000.

20. KESC's objective is to maximize income; it had spent $3,000,000 for equipment with two significant components as mentioned below. The machine is expected to have an overall useful life of 16 years and the company uses the straight line method of depreciation.

| Component | Cost | Useful Life |
|---|---|---|
| X | $1,000,000 | 10 years |
| Y | $ 2,000,000 | 16 years |

The depreciation expense for the first year computed under U.S. GAAP relative to IFRS will *most likely* be:

A. the same.
B. $37,500 higher.

C. $37,500 lower.

21. A company prepares its statements according to US GAAP. It *most likely* reports long-lived assets using:
    A. the revaluation model at fair value.
    B. the cost model at acquisition cost less accumulated depreciation.
    C. the revaluation model at historical cost.

22. What is the effect of a higher expected residual value and a longer useful life on depreciation expense?
    A. Lower.
    B. Higher.
    C. No effect.

23. Assume an asset is in its early years and ignore the effect of taxes. An accelerated method of depreciation, relative to straight-line depreciation, will most likely result in a decrease of:
    A. Asset turnover ratio.
    B. Shareholders' equity.
    C. Cash flow from operations.

**LO.f: Describe the different amortisation methods for intangible assets with finite lives and calculate amortisation expense.**

24. The following information is available on a company for the year 2011:
    - Purchased a customer list for $200,000, which is expected to provide equal annual benefits for the next 4 years
    - Recorded $200,000 of goodwill in the acquisition of a competitor. It is estimated that the acquisition would provide substantial benefits for the company for at least the next 10 years
    - Spent $300,000 on media placements announcing the company had donated products and services to the community. The CEO believes the firm's reputation was enhanced substantially and the company will likely benefit from it for the next 5 years

    Based on those events, the amortization expense that the company should report in 2011 is *closest* to:
    A. $50,000.
    B. $70,000.
    C. $130,000.

25. A financial analyst at Mahsud Financial Corporation, a middle-eastern financial firm, is computing the amortization of a bank accountholders list, an intangible asset, for the fiscal year ended 31 March 2014. She has collected the following information about the asset:

| | |
|---|---|
| Acquisition cost | AED 1,800,000 |
| Acquisition date | 1 April 2011 |
| Expected residual value at time of acquisition | AED 350,000 |

| |
|---|
| The accountholder list is expected to result in additional revenues for five years after acquisition. The present value of these expected additional revenues exceeds the cost of the list. |

Based on the straight-line method, the amount of accumulated amortization related to the accountholder list as of 31 March 2014 is *closest* to:

A. AED 290,000.
B. AED 870,000.
C. AED 1,080,000.

26. A research analyst is analyzing the amortization of a product patent acquired by A-One Digital Printing, a Canadian corporation. She collects the following information about the patent:

| | |
|---|---|
| Acquisition cost | CAD 7,200,000 |
| Acquisition date | 1 April 2013 |
| Patent expiration date | 31 March 2019 |
| Total plant capacity of patented product | 55,000 units per year |
| Production of patented product in fiscal year ended 31 March 2014 | 32,000 units |
| Expected production of patented product during life of the patent | 264,000 units |

The amortization expense on the patent for the fiscal year 2014 using the units-of-production method is *closest* to:

A. CAD 551,742.
B. CAD 698,182.
C. CAD 872,727.

27. Which of the following statements is *least likely* correct?

A. Acceptable amortization methods are the same as acceptable depreciation methods.
B. Intangible assets with finite lives are amortized.
C. Intangible assets in indefinite useful lives are amortized.

28. With respect to accounting treatment, intangible assets with finite useful lives *mainly* differ from those with infinite useful lives in terms of:

A. Impairment.
B. Amortization.
C. Revaluation.

**LO.g: Describe how the choice of amortisation method and assumptions concerning useful life and residual value affect amortisation expense, financial statements, and ratios.**

29. Which of the following items will cause a company to report a lower amount of amortization expense of intangible assets in the first year after acquisition?

A. A higher amortization rate.
B. A lower residual value.
C. A longer useful life.

30. Which of the following amortization methods is *most likely* to equally distribute the cost of an intangible asset over its useful life?
    A. Units-of-production method.
    B. Straight-line method.
    C. Double-declining balance method.

**LO.h: Describe the revaluation model.**

31. SHM enterprise, a hypothetical company, owns several investment properties on which it earns rental income. It values the properties using the fair value model based on prevailing rental markets. SHM prepares its financial statements according to IFRS. After two years of increases the market softened in 2010 and values decreased. A summary of the properties' valuations is as follows:
    - Original cost (acquired in 2008) $100.0 million
    - Fair value valuation as of December 31, 2008 $102.0 million
    - Fair value valuation as of December 31, 2009 $110.0 million
    - Fair value valuation as of December 31, 2010 $98.00 million

    What will be the impact of the revaluation on the 2010 financial statements?
    A. $12 million charge to net income.
    B. $10 million charge to revaluation surplus and €2.0 million charge to net income.
    C. $12 million charge to revaluation surplus.

32. Mega Retail, a British corporation that follows IFRS, has elected to use the revaluation model for its property, plant and equipment. One of Mega Retail's lifter was purchased for £1,200,000 at the beginning of the fiscal year ended 31 December 2012. As of 31 December 2012, the lifter has a fair value of £2,100,000. Should Mega Retail show a profit for the revaluation of the lifter?
    A. No, because increase in value resulting from revaluation can never be recognized as a profit.
    B. No, because this value increase is recorded directly in equity.
    C. Yes.

33. A company has two types of long-lived assets: land and machinery. The company prepares its financial statements as per IFRS, which allows the company to use:
    A. The cost model for land and revaluation model for machinery.
    B. Only the revaluation model for both land and machinery.
    C. Only the revaluation model for land and the cost model for machinery.

34. Assume a revaluation initially decreases the carrying amount of the asset which resulted in a loss. Subsequently, the carrying amount of the asset increases. This increase is *most likely*:
    A. recognized as a profit or loss on the income statement.
    B. increase equal to reversal is recorded in income statement and any excess of the reversal amount is recorded directly to equity.
    C. recorded as part of equity under the heading of revaluation surplus in the balance sheet.

35. Investment property differs from property, plant and equipment as it:
    A. is long-lived.
    B. earns rent.
    C. is tangible.

36. If a company uses the fair value model to value investment property, changes in the fair value of the asset are *least likely* to impact:
    A. net income.
    B. net operating income.
    C. other comprehensive income.

37. Investment property is *least likely* to:
    A. be held for capital appreciation.
    B. be used in the production of goods and services.
    C. earn rent.

38. Under the fair value model, an increase in the value of an asset:
    A. increases net income.
    B. is shown as part of other comprehensive income and does not impact net income.
    C. is not reflected in the financial statements.

39. Assume a revaluation initially increases the carrying amount of the asset. This increase *most likely*:
    A. is recognized as a profit or loss on the income statement.
    B. has no effect on the income statement or the balance sheet.
    C. is recorded as part of equity under the heading of revaluation surplus in the balance sheet.

**LO.i: Explain the impairment of property, plant, and equipment and intangible assets.**

40. Which of the following assets should *most likely* be tested for impairment at least annually?
    A. Land.
    B. A patent with a legal life of 20 years.
    C. A trademark with an expected indefinite life.

41. An analyst is analyzing the impairment of the production equipment of Omega Corp., a German corporation that follows IFRS. He collects following information about the equipment:

| | |
|---|---|
| Fair value | €20,100,000 |
| Costs to sell | €695,000 |
| Value in use | €15,600,000 |
| Net carrying amount | €22,300,000 |

The amount of impairment loss on Omega Corp.'s income statement related to production equipment is *closest* to:

A. 2,200,000.
B. 2,895,000.
C. 6,700,000.

42. An analyst identified the following intangible assets while reviewing the financial statements and footnotes of a listed company that follows IFRS:
    - Product patent with no expiration date;
    - Copyright expiring in 25 years; and
    - Goodwill acquired 5 years ago in an M&A transaction.

    Which of these assets is an intangible asset with a finite useful life?

| | **Product Patent** | **Copyright** | **Goodwill** |
|---|---|---|---|
| A. | Yes | Yes | No |
| B. | Yes | No | No |
| C. | No | Yes | No |

43. Boston Inc. preparers financial statement using US GAAP and reports the following information related to a piece of equipment on 31 December 2015:
    - Carrying value = $100,000
    - Undiscounted expected cash flows = $102,000
    - Fair value = $98,000

    What is *most likely* to be the reported value of the equipment after it is assessed for recoverability?
    A. $98,000.
    B. $100,000.
    C. $102,000.

44. An Australian printing company which prepares its financial statements according to IFRS has experienced a decline in the demand for its products. The following information relates to the company's printing equipment as of 31 December 2013:

| | **AUD** |
|---|---|
| Carrying value of equipment (net book value) | 300,000 |
| Undiscounted expected future cash flows | 330,000 |
| Fair Value | 280,000 |
| Costs to sell | 40,000 |
| Value in use | 250,000 |

The impairment loss (in AUD) is *closest* to:
A. 0.
B. 50,000.
C. 60,000.

**LO.j: Explain the derecognition of property, plant, and equipment and intangible assets.**

45. A company plans to either exchange or abandon a long-lived asset. Until it does so, the asset will *least likely* be:
    A. Classified as held-for-use until disposal.
    B. Depreciated and tested for impairment if the carrying amount is greater than zero.

C. Removed from the financial statements as it is derecognized.

46. Mus Inc, a wellness chain, sells outdated equipment from across its centers. The following data is available about the sale:
Gain on sale of the equipment: $1.8 million
Carrying amount of the equipment: $2.5 million (original cost of $4 million - $1.5 of accumulated depreciation)
The price at which Mus Inc. sold the equipment was *closest* to:
A. $4.3 million.
B. $2.2 million.
C. $0.7 million.

47. A senior analyst at Silk Road Capital Management is studying the result of sale of a vehicle for GBP 82,000 on 31 March 2012. The analyst gathers the following information about the vehicle:

| | |
|---|---|
| Acquisition cost of the vehicle | GBP 120,000 |
| Acquisition date | 1 April 2009 |
| Estimated residual value at acquisition date | GBP 8,000 |
| Expected useful life | 8 years |
| Depreciation method | Straight-line |

The sale of the vehicle *most likely* resulted in:
A. a gain of GBP 12,000.
B. a loss of GBP 4,000.
C. a gain of GBP 4,000.

48. Stonebridge Inc. sells an intangible asset with a historical acquisition of £17 million and an accumulated depreciation of £3 million and reports a loss on the sale of £4.2 million. Which of the following amounts is *most likely* the sale price of the asset?
A. £9.8 million.
B. £12.2 million.
C. £18.2 million.

49. The proceeds from the sale of a long-lived asset is most likely shown on the cash flow statement under:
A. Operating activities.
B. Investing activities.
C. Financing activities.

50. Which of the following *best* explains the balance sheet treatment when an asset is exchanged?
A. Add the fair value of the asset acquired and no changes made for the asset given up.
B. Subtract the carrying amount of the asset given up, add the fair value of the asset acquired.
C. Subtract the fair value of the asset given up and add the fair value of the asset acquired.

51. What is the *most likely* accounting treatment for a retired asset?
    A. The carrying value of the asset is removed from the balance sheet but the income statement is not impacted.
    B. There is no impact on the financial statements.
    C. The carrying value of the asset is removed from the balance sheet and the loss is recognized on the income statement.

**LO.k: Explain and evaluate how impairment, revaluation, and derecognition of property, plant, and equipment and intangible assets affect financial statements and ratios.**

52. Impairment charges reflect:
    A. allocation of the cost of a long-lived asset over its useful life.
    B. an unexpected decline in the fair value of an asset to an amount lower than its carrying amount.
    C. an unexpected increase in the fair value of an asset to an amount higher than its carrying amount.

53. Analyst 1: US GAAP permits impairment losses to be reversed, with reversal reported in profit.
    Analyst 2: IFRS does not permit the reversal of impairment losses.
    A. Analyst 1 is correct.
    B. Analyst 2 is correct.
    C. Both analysts are incorrect.

54. Which of the following statements is *least* accurate?
    A. IFRS permits the use of the revaluation model while US GAAP does not.
    B. If an asset is revalued upwards the gain will be reflected on the income statement.
    C. Under the revaluation model, carrying amounts are the fair values at the date of revaluation minus any subsequent accumulated depreciation or amortisation.

**LO.l: Describe the financial statement presentation of and disclosures relating to property, plant, and equipment and intangible assets.**

55. According to IFRS, all of the following pieces of information about property, plant and equipment must be disclosed in a company's financial statements and footnotes *except for*:
    A. amount of disposals.
    B. acquisition dates.
    C. useful lives.

56. According to IFRS, under the cost method all of the following pieces of information about intangible assets must be disclosed in a company's financial statements and footnotes *except for*:
    A. impairment loss.
    B. amortization rate.
    C. fair value.

57. Which of the following statements is *most accurate*? Under:
    A. U.S. GAAP, intangibles can be valued using the cost model or the revaluation model.
    B. IFRS, intangibles must be valued using the cost model.
    C. IFRS, intangibles can be valued using the cost model or the revaluation model.

**LO.m: Analyze and interpret financial statement disclosures regarding property, plant, and equipment and intangible assets.**

58. Stern Holding Company uses the revaluation model to value land. At the end of the current year, the value of the land has increased and will be adjusted on the balance sheet. If the company prepares its financial statements in accordance with IFRS, which of the following statements is *most accurate*? In the current period, the revaluation of the land will:
    A. decrease the debt to equity ratio.
    B. increase return on assets.
    C. increase return on sales.

59. Analyst 1: The gains and losses arising in the year on asset revaluation are reported in the notes to the financial statement only.
    Analyst 2: The gains and losses arising in the year on asset revaluation are recognised directly in equity.
    A. Analyst 1 is incorrect.
    B. Analyst 2 is incorrect.
    C. Both analysts are incorrect.

**LO.n: Compare the financial reporting of investment property with that of property, plant, and equipment.**

60. Builders Co. owns several investment properties on which it earns rental income. It values the properties using the fair value model based on prevailing rental markets and prepares its financial statements according to IFRS. A summary of the properties' valuations is as follows:
    - Original cost (acquired in 2010) €100.0 million
    - Fair value valuation as at December 31, 2010 €102.0 million
    - Fair value valuation as at December 31, 2011 €105.0 million
    - Fair value valuation as at December 31, 2012 €101.0 million

    Which of the following *best* describes the impact of the revaluation on the 2012 financial statements?
    A. €4 million charge to net income.
    B. €4 million charge to revaluation surplus.
    C. €2 million charge to revaluation surplus and €2 million charge to net income.

61. Under IFRS, which of the following will *least likely* be classified as an investment property?
    A. A property that is held for sale.
    B. A property that will earn rent.
    C. Properties held for sale by a housing construction company.

62. Which one of the following statements about investment property is *most* accurate?
    A. Investment property is presented as part of the long-lived assets on the balance sheet.
    B. A company must use the same model for all of its investment property even if comparability becomes less frequent.
    C. Once classified as investment property, a company is not allowed to change it to property, plant and equipment or as part of inventory.

**LO.o: Explain and evaluate how leasing rather than purchasing assets affects financial statements and ratios.**

63. Which of the following options will *most likely* result in the lowest debt-to-asset ratio?
    A. Buying an equipment and seeking to finance it.
    B. Using a finance lease to obtain the equipment.
    C. Using an operating lease to obtain the equipment.

64. Which of the following options will *most likely* result in the highest return on asset?
    A. Buying an equipment and seeking to finance it.
    B. Using a finance lease to obtain the equipment.
    C. Using an operating lease to obtain the equipment.

**LO.p: Explain and evaluate how finance leases and operating leases affect financial statements and ratios from the perspective of both the lessor and the lessee.**

65. When a lessee reports a lease as an operating lease rather than a finance lease:
    A. it appears more leveraged over the entire lease period.
    B. it usually appears more profitable in the early years of the lease.
    C. It usually appears more profitable in the later years of the lease.

66. When a lessor reports a lease as a finance lease rather than an operating lease:
    A. it usually appears more profitable in the early years of the lease.
    B. it usually appears more profitable in the later years of the lease.
    C. there is no impact on profitability, both methods give the same profitability.

**Solutions**

1. B is correct. The capitalized amount = purchase price + costs that are involved in extending asset's life or getting it ready to use = 20 + 1 + 0.3 = 21.3. Orientation and training costs are expensed during the period.

2. A is correct. Borrowing costs can be capitalized under IFRS until the tangible asset is ready for use. Also, under IFRS, income earned on temporarily investing the borrowed money decreases the amount of borrowing costs eligible for capitalization. Therefore, total capitalized interest = (750 million * 10% * 3 years) – 25 million = 200 million.

3. B is correct. The costs necessary for the machine to be ready to use can be capitalized. Therefore, total capitalized costs = 15,790 + 1,320 + 900 + 150 = $18,160.

4. A is correct. Under IFRS, any amounts earned by temporarily investing the funds are deducted from the interest cost. The costs related to the preferred shares cannot be capitalized.
   Total capitalized costs = Interest cost – Interest income = 12,000,000 * 11% - 1,000,000 *8% * 0.5 = 1,280,000.

5. B is correct. Under US GAAP, amounts earned by temporarily investing the funds are not deducted from the interest amount. Hence capitalized interest cost = 12,000,000 * 11% = $1,320,000.

6. B is correct. The three criteria to identify intangible assets under IFRS are that they must be: 1) identifiable, 2) under the control of the company and 3) expected to generate future economic benefits.

7. A is correct. The cost of an internally developed intangible asset is classified as an operating cash flow while the cost of an acquired intangible asset is classified as an investing cash flow.

8. C is correct. Under US GAAP, the costs related to the development of a software for sale are expensed until feasibility is established and capitalized thereafter.

9. A is correct. IFRS allows capitalization of development costs if certain criteria are met.

10. B is correct. Capitalising expenditures, rather than expensing them, results in higher reported profitability in the initial year, it results in lower profitability in subsequent years.

11. A is correct. Capitalising an expenditure rather than expensing it results in a greater amount reported as cash from operations because capitalised expenditures are classified as an investing cash outflow rather than an operating cash outflow.

12. B is correct.

Under IFRS: the company must use the component method of depreciation expense:
$\left(\frac{500000}{20}\right) + \left(\frac{500000}{10}\right)$ = 75,000
Under U.S. GAAP, the company would not use component deprecation because it would prefer to minimize depreciation expense in order maximize income:
1,000,000/20 = 50,000
Under IFRS, depreciation in first year is: $25,000 higher

13. C is correct.
    Depreciation expense under:
    Straight line: $\frac{5,000,000 - 500,000}{15}$ = 300,000
    Double-declining balance: 1/15 * 2 *5,000,000 = 666,666.67
    Units of Production: $(5,000,000 - 500,000) * \left(\frac{1,100,000}{15,000,000}\right)$= 330,000

14. A is correct.
    Under double declining balance method, the depreciation rate would be 2 * the straight line rate of
    20%, i.e., 40% depreciation rate per year. However, the asset should not be depreciated below its assumed residual value in any year.
    Year 1: Depreciation = 80,000 *40% = 32,000; Net book value = 48,000
    Year 2: Depreciation = 48,000 * 40% = 19,200; Net book value = 28,800
    Year 3: Depreciation = 28,800 * 40% = 11,520; Net book value = 17,280

15. B is correct.
    Expected remaining useful life = Net PPE / Depreciation expense = $\frac{4175}{575 - 420}$ = 27.

16. C is correct. If the company makes use of the straight-line method, the depreciation expense will be one-fifth (20 percent) of the depreciable cost in Year 2. If it uses the units-of-production method, the depreciation expense will be 21 percent (1,750/8,050) of the depreciable cost in Year 2. Therefore, if the company uses the straight-line method, its depreciation expense will be lower and its net income in Year 2 will be higher.

17. C is correct. If Hollis wants to minimize tax payments in the first year of the equipment's life, he should use an accelerated method, such as the double-declining balance method.

18. B is correct. Using the straight-line method, depreciation expense is equal to
    Depreciation expense = $\frac{2,500,000 - 250,000}{10}$ = 225,000.

19. A is correct. Using the units-of-production method, depreciation expense is equal to
    Depreciation expense = $(2,500,000 - 250,000) * \left(\frac{100,000}{1,900,000}\right)$ = 118,421.

20. C is correct. Under IFRS: the company must use the component method of depreciation expense:

$\left(\frac{1,000,000}{10}\right) + \left(\frac{2,000,000}{16}\right)$ = 225,000 per year for the first 10 years

Under U.S. GAAP, the company would not use component deprecation because it would prefer to minimize depreciation expense in order maximize income.

$\left(\frac{3,000,000}{16}\right)$ = 187,500 per year

21. B is correct. Revaluation model is not permitted under US GAAP.

22. A is correct. Higher residual value and longer useful life result in lower depreciation expense.

23. B is correct. An accelerated method of depreciation has higher depreciation expense in the early years and lower net income. This, in turn, decreases shareholder's equity.

24. A is correct. The customer list is the only identifiable intangible asset, and it should be amortized on a straight-line basis over its expected future life: $200,000 ÷ 4 = $50,000/year. Goodwill is an unidentifiable intangible and should be tested for impairment but not amortized. All advertising and promotion costs, such as the media placements, are typically expensed. If the reputation of the company has been enhanced as the CEO suggests, this is an internally generated intangible that is not recorded on the balance sheet and is therefore not amortized.

25. B is correct. Using the straight-line method, accumulated amortization is equal to Accumulated amortization = [(1,800,000 – 350,000)/5 years] * 3 years = 870,000.

26. C is correct. Using the units-of-production method, depreciation expense is equal to Depreciation expense = $7,200,000 * \left(\frac{32,000}{264,000}\right)$ = 872,727.

27. C is correct. Statements A and B are true. Statement C is false. Intangible assets with indefinite useful lives are not amortized.

28. B is correct. An intangible asset with a finite useful life is amortized, whereas an intangible asset with an indefinite useful life is not.

29. C is correct. A longer useful life results in a lower amount of amortization in the first year after acquisition (and every year after that).

30. B is correct. The straight-line method equally distributes the cost of an asset over its useful life because amortization is the same amount every year.

31. A is correct. When using the fair value model of revaluing assets, all increases and decreases in the investment prices affect net income.

32. B is correct. In this case, the value increase brought about by the revaluation should be recorded directly in equity. The reason is that under IFRS, an increase in value due to

revaluation can only be recognized as a profit to the extent that it reverses a revaluation decrease of the same asset previously recognized in the income statement.

33. A is correct. IFRS requires all assets within an asset class to use the same model: either cost or revaluation model.

34. B is correct.

35. B is correct. Investment property earns rent. Investment property and property, plant and equipment are tangible and long-lived.

36. C is correct. When a company uses the fair value model to value investment property, changes in the fair value of the property are reported in the income statement – not in other comprehensive income.

37. B is correct. Investment property earns rent. Inventory is held for resale, and property, plant and equipment are used in the production of goods and services.

38. A is correct. Under the fair value model, all changes in the fair value of the asset affect net income.

39. C is correct. An initial increase in the carrying amount of the asset bypasses the income statement and goes directly to equity.

40. C is correct. Intangible assets with indefinite lives need to be tested for impairment at least annually. PP&E (including land) and intangibles with finite lives are only tested if there has been a significant change or other indication of impairment.

41. B is correct. The impairment loss equals €2,895,000.
Recoverable amount = greater of fair value less cost to sell and value in use = 19,405,000
Impairment loss = Net carrying amount – Recoverable amount = 22,300,000 – 19,405,500 = 2,895,000

42. C is correct. A product patent with no expiration date is an intangible asset with an indefinite useful life. A copyright with a defined expiration date is an intangible asset with a finite useful life. Goodwill is considered to have an indefinite useful life.

43. B is correct. Under US GAAP we first test for recoverability by comparing the carrying value with the undiscounted future cash flows. In this case the undiscounted future cash flow of $102,000 exceeds the carrying value of $100,000, hence there is no impairment. Had the undiscounted future cash flows been lower than the carrying value, the asset would have been written down to the fair value of $98,000 and an impairment loss of $2,000 would have been recognized.

44. B is correct. Under IFRS, an asset is considered to be impaired when its carrying amount exceeds its recoverable amount (the higher of fair value less cost to sell or value in use).

Fair value less costs to sell: 280,000 – 40,000 = 240,000
Value in use = 250,000
Recoverable amount (higher value) = 250,000
Impairment loss under IFRS = Carrying value – recoverable amount = 300,000 – 250,000 = 50,000

45. C is correct. When a long-lived asset is disposed of, it is derecognized and not shown on the financial statements.

46. A is correct.
Gain on sale = Sale price – carrying amount at the time of sale
1.8 = Sale price – 2.5
Sale price = 4.3

47. C is correct. The result of the sale of the vehicle equals
Gain or loss on the sale = Sale proceeds – Carrying amount
= Sale proceeds – (Acquisition cost – Accumulated depreciation)
= 82,000 – {120,000 – [((120,000 – 8,000)/8 years) * 3 years]}
= 4,000.

48. A is correct. Gain or loss on sale = Sale proceeds – Carrying amount. Rearranging this equation, Sale proceeds = Carrying amount + Gain or loss on sale. Thus, Sale price = (17 million – 3 million) + (-4.2 million) = 9.8 million.

49. B is correct. When an asset is disposed of, it is removed from the operating cash flow and shown under investing cash flow.

50. B is correct.

51. C is correct. When an asset is abandoned or retired the carrying value of the asset is removed from the balance sheet and the loss is recognized on the income statement.

52. B is correct. Impairment charges reflect an unexpected decline in the fair value of an asset to an amount lower than its carrying amount.

53. C is correct. IFRS permit impairment losses to be reversed, with the reversal reported in profit. US GAAP do not permit the reversal of impairment losses.

54. B is correct. Statements A and C are true. Statement C is false. If an asset is revalued upwards the revaluation surplus is recorded under equity.

55. B is correct. Under IFRS, acquisition dates are not required to be disclosed.

56. C is correct. IFRS do not require fair value of intangible assets to be disclosed.

57. C is correct. Under U.S. GAAP, intangibles must be valued at historical cost, whereas under IFRS they can be valued at cost or revaluation.

58. A is correct. The increase in the value of the land bypasses the income statement and goes directly to a revaluation surplus account in equity. Equity increases thereby decreasing the debt to equity ratio.

59. C is correct. A revaluation surplus is reflected directly in equity while a revaluation loss flows through the income statement.

60. A is correct. For investment properties, when using the fair value model of revaluing assets, all increases and decreases affect net income.

61. C is correct. These long-lived assets are considered inventory.

62. B is correct. Investment property is presented as a separate line item on the balance sheet. A company can classify a property from investment property to property, plant, and equipment. When doing so, it must change from fair value model to cost model or revaluation model.

63. C is correct. The lowest debt-to-asset ratio is found when the equipment is financed through an operating lease. Buying an asset and seeking to finance it with new debt and leasing it under a finance lease result in the same return on assets.

64. C is correct. The highest return on assets is found when the equipment is leased under an operating lease, because net income is highest and the asset base is lowest. Buying an asset and seeking to finance it with new debt and leasing it under a finance lease result in the same return on assets.

65. B is correct. When a lessee reports a lease as an operating lease rather than a finance lease, it usually appears more profitable in early years of the lease and less so later, and it appears less leveraged over the entire lease period.

66. A is correct. When a lessor reports a lease as a finance lease rather than an operating lease, it usually appears more profitable in early years of the lease.

**LO.a: Describe the differences between accounting profit and taxable income, and define key terms, including deferred tax assets, deferred tax liabilities, valuation allowance, taxes payable, and income tax expense.**

1. A company's income tax expense:
   A. is equal to income tax payable + (net increase in deferred tax liabilities – net increase in deferred tax assets).
   B. appears on the balance sheet.
   C. is equal to income tax payable + net increase in deferred tax assets and liabilities.

2. Income tax paid:
   A. must be equal to the income tax expense.
   B. reduces the income tax payable.
   C. is a provision for the amount of taxes to be paid, and not a cash flow.

3. Accounting profit is:
   A. a provision for income tax expense.
   B. reported on the balance sheet.
   C. reported on the income statement.

4. Income tax payable:
   A. is reported on the income statement.
   B. is tax expense + change in deferred tax assets and liabilities.
   C. is reported on the balance sheet.

5. Using accelerated method of depreciation for reporting purposes and straight-line method for tax purposes would *most likely* result in a:
   A. temporary difference.
   B. valuation allowance.
   C. deferred tax liability.

6. To reduce the deferred tax assets, a company would *most likely* create a:
   A. valuation allowance.
   B. temporary difference.
   C. reserve.

7. The appropriate treatment of deferred tax liabilities that are expected to reverse, is to classify them as:
   A. neither liabilities nor equity.
   B. equity.
   C. liabilities.

8. Deferred tax liabilities are appropriately treated as equity when:
   A. the timing of tax payments is uncertain.
   B. they are not expected to reverse.
   C. the amount of tax payments is uncertain.

9. The appropriate treatment of deferred tax liabilities when both the timing and amount of tax payments are uncertain, is to classify them as:
   A. neither liabilities nor equity.
   B. equity.
   C. liabilities.

10. A taxable income higher than accounting profit results in:
   A. a deferred tax asset.
   B. a deferred tax liability.
   C. none of the above.

**LO.b: Explain how deferred tax liabilities and assets are created and the factors that determine how a company's deferred tax liabilities and assets should be treated for the purposes of financial analysis.**

11. In the current year, a company increased its deferred tax liability by $500,000. During the year, the company *most likely*:
   A. became entitled to a $500,000 tax refund.
   B. reported a higher accounting profit than taxable income.
   C. had permanent differences between accounting profit and taxable income.

12. The appropriate treatment of deferred tax liabilities that are expected to reverse, is to classify them as:
   A. neither liabilities nor equity.
   B. equity.
   C. liabilities.

13. If the deferred tax liability is not expected to reverse, then it should be treated as:
   A. equity.
   B. liability.
   C. neither equity nor liability.

14. Deferred tax liability is treated as a liability when:
   A. it is expected to reverse.
   B. it is not expected to reverse.
   C. when the amount and timing of tax payments are uncertain.

15. When both the amount and timing of tax payments are uncertain, it is appropriate to classify deferred tax liabilities as:
   A. equity.
   B. debt.
   C. neither liability nor equity.

**LO.c: Calculate the tax base of a company's assets and liabilities.**

Use the following information from a company's balance sheet to answer questions 16-19.

Arceus Inc. incurred $275,000 in research costs, which were expensed in the current fiscal year. As per the applicable tax laws, the research costs must be expensed over a five year period instead of one year.

The company capitalized development costs of $1,500,000 during the year, of which $250,000 was amortized. As per applicable tax laws, amortization of 20 per cent per year is allowed.

Accounts receivable includes a provision for doubtful debt of about $375,000. As per applicable tax laws, a deduction of 30% of the gross amount is allowed for doubtful debt.

Assume that the dividends are not taxable. The table below gives the carrying amounts for the various elements.

| | Carrying amount ($) |
|---|---|
| Dividends receivable | 3,000,000 |
| Research costs | 0 |
| Accounts receivable | 1,600,000 |
| Development costs | 1,250,000 |

16. The tax base for dividends receivable is *closest* to:
    A. $3,000,000.
    B. $0.
    C. $2,250,000.

17. The tax base for research costs is *closest* to:
    A. $55,000.
    B. $220,000.
    C. $0.

18. The tax base for development costs is *closest* to:
    A. $1,200,000.
    B. $1,250,000.
    C. $250,000.

19. The tax base for accounts receivable is *closest* to:
    A. $1,120,000.
    B. $1,382,500.
    C. $1,487,500.

**LO.d: Calculate income tax expense, income taxes payable, deferred tax assets, and deferred tax liabilities, and calculate and interpret the adjustment to the financial statements related to a change in the income tax rate.**

20. The following information is available about a company:

| (all figures in $ thousands) | **2011** | **2010** |
|---|---|---|
| Deferred tax assets | 450 | 300 |
| Deferred tax liabilities | 520 | 350 |
| Net deferred tax liabilities | 70 | 50 |
| Income tax payable | 2300 | 2100 |

The company's 2011 income tax expense (in thousands) is *closest* to:
   A. $2,300.
   B. $2,320.
   C. $2,520.

21. A company purchased equipment in 2010 for £25,000. The year-end values of the equipment for accounting purposes and tax purposes are as follows:

| | **2011** | **2010** |
|---|---|---|
| Carrying amount for accounting purposes | £35,000 | £38,000 |
| Tax base for tax purposes | £29,000 | £34,000 |
| Tax rate | 35% | 30% |

Which of the following statements *best* describes the effect of the change in the tax rate on the company's 2011 financial statements? The deferred tax liability:
   A. increases by £300.
   B. decreases by £250.
   C. increases by £100.

22. In early 2013, Virgin Atlantic must pay the tax authority $45,000 on the income it earned in 2012. This amount was reported on the company's financial statements as of 31 December 2012 as:
   A. income tax expense.
   B. a deferred tax liability.
   C. taxes payable.

23. In an income statement, income tax expense equals taxes payable, plus the increase in:
   A. deferred tax assets and deferred tax liabilities.
   B. deferred tax assets, less the increase in deferred tax liabilities.
   C. deferred tax liabilities, less the increase in deferred tax assets.

24. A company purchased equipment for $250,000 on 1 January 2011. It is depreciating the equipment over a period of 10 years on a straight-line basis for accounting purposes, but for tax purposes, it is using the declining balance method at a rate of 20%. Given a tax rate of 30%, the deferred tax liability as at the end of 2013 is *closest* to:
   A. $12,500.
   B. $14,100.
   C. $15,500.

**The following information relates to Questions 25-27**

A company's provision for income taxes resulted in effective tax rates attributable to loss from continuing operations before cumulative effect of change in accounting principles that varied from the statutory federal income tax rate of 30 percent, as presented in the table below.

| **Year Ended 31 Dec** | **2012** | **2011** | **2010** |
|---|---|---|---|
| Expected federal income tax expense (benefit) from continuing operations at 30 percent | ($120,000) | $850,000 | $785,000 |
| Expenses not deductible for income tax purposes | 410,000 | 39,000 | 45,000 |
| State income taxes, net of federal benefit | 122,000 | 25,000 | 78,000 |
| Change in valuation allowance for deferred tax assets | (145,000) | (844,000) | (839,000) |
| Income tax expense | $267,000 | $70,000 | $69,000 |

25. The company's net income (loss) in 2012 was *closest* to:
    A. ($227,000).
    B. ($400,000).
    C. ($667,000).

26. In 2012, the $410,000 adjustment *most likely* resulted in:
    A. an increase in deferred tax assets.
    B. an increase in deferred tax liabilities.
    C. no change in deferred tax assets and liabilities.

27. What does the change in valuation allowance for deferred tax assets indicate over the period of three years from 2010-2012?
    A. increased prospects for future profitability.
    B. decreased prospects for future profitability.
    C. assets being carried at a higher value than their tax base.

28. At the beginning of the year a company purchased a fixed asset for $2,000,000 with no expected residual value. The company depreciates similar assets on a straight-line basis over 20 years, while the tax authorities allow declining balance depreciation at the rate of 10% per year. In both cases the company takes a full year's depreciation in the first year and the tax rate is 30%. Which of the following statements concerning this asset at the end of the year is *most accurate*?
    A. The deferred tax asset is $60,000.
    B. The tax base is $2,000,000.
    C. The temporary difference is $100,000.

**LO.e: Evaluate the impact of tax rate changes on a company's financial statements and ratios.**

29. The *most likely* impact of a decrease in income tax rates is:
    A. a decrease in deferred tax liabilities.

B. an increase in deferred tax assets.
C. an increase in future tax payments.

The following data is available for a company:

| ($ Millions) | 2015 | 2014 | 2013 |
|---|---|---|---|
| Machinery value for accounting purposes (carrying amount) (depreciation of $3,000/year) | $15,000 | $18,000 | $21,000 |
| Machinery value for tax purposes (tax base) (depreciation of $3,650 per year) | $13,357 | $17,007 | $20,657 |
| Difference | $1643 | $993 | $343 |

Use the information above to answer questions 30 – 31:

30. Assume the tax rate is initially 25 percent. The deferred tax liability for 2014 is *closest* to:
    A. $85.75.
    B. $248.25.
    C. $5102.1.

31. Assume the tax rate changes to 20 percent from 25 percent. The change in deferred tax liability due to the change in tax rates for 2015 is *closest* to:
    A. $328.16.
    B. $130.
    C. $82.15.

**LO.f: Distinguish between temporary and permanent differences in pre-tax accounting income and taxable income.**

32. When certain expenditures result in tax credits that directly reduce taxes, it is *most likely* that the company will report:
    A. A deferred tax liability.
    B. A deferred tax asset.
    C. No deferred tax asset or liability.

33. When accounting treatment of an asset requires it to be expensed immediately while tax rules require it to be capitalized and amortized, it is *most likely* that the company will report:
    A. a deferred tax liability.
    B. a deferred tax asset.
    C. no deferred tax asset or liability.

34. For tax purposes, a company treats advance payments from customers as immediately taxable, but for accounting purposes the advance payments are not recognized until the company's obligation is fulfilled. It is *most likely* that the company will report:
    A. a deferred tax liability.
    B. a deferred tax asset.
    C. no deferred tax asset or liability.

35. The consequence of recognizing an expense which is required under the accounting standards but not permitted under tax laws, is a:
    A. temporary difference.
    B. permanent difference.
    C. deferred tax liability.

36. If the carrying amount of a liability temporarily exceeds its tax base, then it *most likely* results in a:
    A. deferred tax asset.
    B. deferred tax liability.
    C. taxable temporary difference.

37. When a capital expenditure is incurred with a depreciation period set for seven years for accounting purposes but six years for tax purposes, it is *most likely* that the company will report:
    A. a deferred tax liability.
    B. a deferred tax asset.
    C. no deferred tax asset or liability.

Use the information below to answer questions 38-41.

Note I:

Income Taxes

The components of earnings before income taxes are as follows ($ thousands):

| | **2012** | **2011** | **2010** |
|---|---|---|---|
| Earnings before income taxes: | | | |
| United States | $67,004 | $57,505 | $45,583 |
| Foreign | 80,533 | 78,328 | 65,390 |
| Total | $147,537 | $135,833 | $110,973 |

The components of the provision for income taxes are as follows ($ thousands):

| | **2012** | **2011** | **2010** |
|---|---|---|---|
| Income Taxes | | | |
| Current: | | | |
| Federal | $17,109 | $12,305 | $10,589 |
| Foreign | 15,143 | 17,067 | 13,589 |
| | $32,252 | $29,372 | $24,178 |
| Deferred: | | | |
| Federal | ($3,220) | $3,482 | $1,583 |
| Foreign | 4 | 222 | 379 |
| | ($3,216) | $3,704 | $1,962 |
| Total | $29,036 | $33,076 | $26,140 |

38. The company's U.S. GAAP income statement in 2012 reported a provision for income taxes *closest* to:
    A. $29,036.
    B. $17,109.
    C. $32,252.

39. The effective tax rate of the company was *highest* in:
    A. 2010.
    B. 2011.
    C. 2012.

40. In comparison to the company's effective tax rate on US income, its effective tax rate on foreign income was:
    A. lower in each reporting year.
    B. higher in each reporting year.
    C. lower in some years and higher in others.

41. If the carrying amount of an asset exceeds its tax base, then it *least likely* results in a:
    A. taxable temporary difference.
    B. deferred tax asset.
    C. deferred tax liability.

**LO.g: Describe the valuation allowance for deferred tax assets—when it is required and what impact it has on financial statements.**

42. A valuation allowance for doubtful deferred taxes is *most likely* required under:
    A. IFRS.
    B. U.S. GAAP.
    C. both IFRS and U.S. GAAP.

43. The *most likely* impact of creating a valuation allowance is:
    A. a decrease in the income in the period when the allowance is created.
    B. an increase in the income in the period when the allowance is created.
    C. no effect on the income statement.

**LO.h: explain recognition and measurement of current and deferred tax items**

44. In 2015 company has a deferred tax liability which is expected to reverse in 2016. This deferred tax liability should be measured at the:
    A. 2015 tax rate.
    B. tax rate expected in 2016.
    C. an average of the 2015 and 2016 tax rates.

45. ABC Inc. depreciates equipment using the straight line method for financial reporting and an accelerated method for tax reporting. The carrying amount and tax base on 31 December 2015 are given below.

| | Carrying amount | Tax base |
|---|---|---|
| On 31 December, 2015 | $700,000 | $300,000 |

The equipment was revalued upwards by $100,000 on 1 January 2015. The applicable tax rate is 30%. The deferred tax liability on 31 December 2015 is closest to:

A. $120,000.
B. $90,000.
C. $30,000.

**LO.i: Analyze disclosures relating to deferred tax items and the effective tax rate reconciliation, and explain how information included in these disclosures affects a company's financial statements and financial ratios.**

46. National Inc. follows U.S. GAAP to report its financial statements. In 2005, National records a valuation allowance of $3,905 against total deferred tax assets of $21,764. In 2004, National recorded a valuation allowance of $2,870 against total deferred tax assets of $18,980. The change in the valuation allowance *most likely* reflects that National's:
    A. Deferred tax liabilities were increased in 2005.
    B. Expectations of future earning power have increased.
    C. Expectations of future earning power have decreased.

47. APL Corp reported a total deferred tax asset in 2009 of $45,189, offset by a $45,189 valuation allowance. APL Corp *most likely*:
    A. Has deferred tax assets equal to deferred tax liabilities.
    B. Fully utilized the deferred tax asset in 2009.
    C. Expects not to earn any taxable income before the deferred tax asset expires.

The following information relates to questions 48-50

The tax effects of temporary differences that give rise to deferred tax assets and liabilities are as follows ($ thousands):

| | **2011** | **2010** |
|---|---|---|
| Deferred tax assets: | | |
| Accrued expenses | $9,175 | $7,190 |
| Tax credit and net operating loss carry forwards | 1,378 | 2,536 |
| LIFO and inventory reserves | 4,876 | 3,784 |
| Other | 1,976 | 1,534 |
| Deferred tax assets | 17,405 | 15,044 |
| Valuation allowance | (2,236) | (2,945) |
| Net deferred tax assets | $15,169 | $12,099 |

| | **2011** | **2010** |
|---|---|---|
| Deferred tax liabilities: | | |
| Depreciation and amortization | $(25,157) | $(28,250) |

| | | |
|---|---|---|
| Compensation and retirement plans | (4,532) | (8,925) |
| Other | (910) | (413) |
| Deferred tax liabilities | (30,599) | (37,588) |
| Net deferred tax liability | ($15,430) | ($25,489) |

48. An increase in the statutory tax rate would *most likely* hurt the company's:
    A. income statement and balance sheet.
    B. only income statement but not the balance sheet.
    C. only balance sheet but not the income statement.

49. Had the valuation allowance been the same in 2011 as it was in 2010, the company would have reported *higher*:
    A. net income.
    B. income tax provision.
    C. deferred tax assets.

50. In comparison to the income tax provision in 2011, the company's tax payments in cash were:
    A. the same.
    B. lower.
    C. higher.

**LO.j: Identify the key provisions of and differences between income tax accounting under International Financial Reporting Standards (IFRS) and US generally accepted accounting principles (GAAP).**

51. Aztec Co. incurred and capitalized €2 million of development costs during the year. These costs were fully deductible immediately for tax purposes, but the company is depreciating them over two years for financial reporting purposes. Which is the *most appropriate* way for an analyst to incorporate the differential tax treatment in his analysis? The analyst should include it in:
    A. assets when calculating the company's current ratio.
    B. equity when calculating the company's return on equity ratio.
    C. liabilities when calculating the company's debt-to-equity ratio.

**Solutions**

1. A is correct. It appears on the income statement.

2. B is correct. It can be less than the income tax expense because of refunds in current period or payments in previous period.

3. C is correct. Accounting profit is reported on the income statement, while taxable income appears on the balance sheet.

4. C is correct. Income tax expense appears on the income statement.

5. A is correct. The resulting deferred tax asset arising from the differences between tax and financial reporting will correct over time and will be a temporary difference. A valuation allowance would arise only if there was doubt on the company's ability to earn sufficient future income required to pay the tax.

6. A is correct. Valuation allowance is created to reduce deferred tax assets.

7. C is correct. The deferred tax represents a future liability if the liability is expected to reverse and therefore requiring a cash tax payment in future.

8. B is correct. The deferred tax represents equity if the liability is not expected to reverse and therefore requiring no tax payment in future.

9. A is correct. The deferred tax should neither be treated as a liability or equity when both the amounts and timing of tax payments resulting from the reversals of temporary differences are uncertain.

10. A is correct. Income taxes paid is higher which results in a deferred tax asset.

11. B is correct. Deferred tax liabilities represent taxes that have not yet been paid (because of the lower taxable income) but have been recognized on the income statement (because of the higher accounting profit).

12. C is correct. The deferred tax represents a future liability if the liability is expected to reverse and therefore requiring a cash tax payment in future.

13. A is correct.

14. A is correct. Deferred tax liability should be treated as liability when it is expect to reverse with a tax payment in future. It should be classified as neither debt nor equity if the amount or timing of payments is uncertain.

15. C is correct. It should be classified as neither debt nor equity if the amount or timing of payments is uncertain.

16. A is correct. Dividends are assumed to be not taxable. The tax base is equal to the carrying amount.

17. B is correct. Tax base for research costs = $\left(275{,}000 - \frac{275{,}000}{5}\right)$= 220,000.

18. A is correct. The carrying amount is $1500000 - 250000 = 1{,}250{,}000$. The tax base is 1500000 – 0.2*1500000 = 1500000 – 300000 = 1,200,000.

19. B is correct. Accounts receivable before any provision = $1{,}600{,}000 + 375{,}000 = 1{,}975{,}000$.
Tax base for accounts receivable = $(1{,}600{,}000 + 375{,}000) - [0.3 * (1{,}600{,}000 + 375{,}000)$ = 1,382,500.

20. B is correct. Income tax expense reported on the income statement = Income tax payable + change in net deferred tax liabilities. The change in the net deferred tax liability is a $20. Therefore, the income tax expense = 2,300 + 20 = 2,320.

21. A is correct. Change in deferred tax liability = Change in rate × Taxable difference: 0.05 *6,000 = £300

22. C is correct. Taxes payable are the taxes that a company must pay in the immediate future.

23. C is correct. Here is the relationship to remember: Income tax expense = income tax payable + change in deferred tax liabilities – change in deferred tax assets.

24. B is correct.
The deferred tax liability is equal to the tax rate times the difference between the carrying amount of the asset and the tax base.
Value for accounting purposes after 3 years: 250,000 – [3 * (250,000 / 10)] = $175,000
Value for tax purposes:
Carrying amount = Start of year balance * (1 – 0.20)
After three years:
250,000 * 0.8 * 0.8 * 0.8 = 128,000
Difference between accounting and tax values = 47,000
Deferred tax liability at 30%: 30% *47,000 = 14,100

25. C is correct. The income tax benefit at the statutory rate of 30 percent is $120,000, indicating that the pre-tax income was a loss of $120,000/0.30 = ($400,000). The income tax provision was $267,000. The company's net loss in 2012 is ($400,000) - $267,000 = ($667,000).

26. C is correct. Accounting expenses that are not deductible for tax purposes lead to permanent difference and therefore do not give rise to deferred taxes.

27. A is correct. Over the given time period, changes in the valuation allowance reduced aggregate income taxes by $1,828,000. The reductions to the valuation allowance were a result of the company being more likely to earn sufficient taxable income to offset the deferred tax assets.

28. C is correct. The temporary difference is the difference between the net book value of the asset for accounting purposes [2,000,000 – (2,000,000/20)] = $1,900,000 and the net book value for taxes, [2,000,000 - 0.10(2,000,000) = $1,800,000]; 1,900,000 – 1,800,000 = $100,000

29. A is correct. A decrease in income tax rates decreases deferred tax assets and deferred tax liabilities.

30. B is correct. The deferred tax liability is the difference between tax base and carrying amount: (18000 – 17007) * 0.25 = 248.25.

31. C is correct. For 2015, the deferred tax liability at 25 percent = 1643*0.25 = 410.75
The deferred tax liability at 20 percent = 1643 *0.20 = 328.6.
Change in deferred tax liability = 410.75 – 328.6 = 82.15.

32. C is correct. Tax credits that directly reduce taxes are a permanent difference and permanent differences do not lead to deferred tax.

33. B is correct. The capitalization will result in an asset with a positive tax base and zero carrying value. Amortization means that the difference is temporary. A deferred tax asset is created since there is a temporary difference on an asset resulting in a higher tax base than carrying value.

34. B is correct. A deferred tax asset is created since the advances from customers (liability) exceed the tax base (which is now zero).

35. B is correct. Accounting items that are not deductible for tax purposes will not be reversed and therefore result in permanent differences.

36. A is correct. If the carrying amount of a liability is greater than the tax base a deferred tax asset is created.

37. A is correct. A deferred tax liability is created because the difference is temporary and the tax base will be lower (consequent to more rapid depreciation) than the asset's carrying value.

38. A is correct. The income tax provision for 2012 was $29,036, consisting of $32,252 in current income taxes, of which $3,216 were deferred.

39. B is correct. The effective tax rate of 24.4 percent ($33,076/$135,833) was higher than the effective rates in 2010 and 2012.

40. A is correct. In 2012, the effective tax rate on foreign operations was (15,143 + 4) / 80,533 = 18.8% and the effective U.S. tax rate was (17,109 – 3,200) / 67,004 = 20.7%. In 2011, the effective tax rate on foreign operations was 22.1% and the effective U.S. tax rate was 27.5%. In 2010, the effective tax rate on foreign operations was 21.4% and the effective U.S. tax rate was 26.7%.

41. B is correct.

42. B is correct. A valuation allowance is required under U.S. GAAP if there is doubt about whether a deferred tax asset will be recovered. Under IFRS the deferred tax asset is written down directly.

43. A is correct. Creating a valuation allowance reduces deferred tax asset and income.

44. B is correct. A deferred tax liability should be measured at the tax rate which is expected to apply when the liability is settled (reversed).

45. B is correct. Based on the balance sheet, the deferred tax liability is: (carrying value – tax base) * tax rate = (700,000 – 300,000) * 0.3 = 120,000. However, the effect of revaluation surplus must be removed as it goes directly to equity. This effect is equal to the tax rate * revaluation surplus = 0.3 * 100,000 = 30,000. Hence, the deferred tax liability on 31 December 2015 is: 120,000 – 30,000 = 90,000.

46. C is correct. The valuation allowance is taken against deferred tax assets to represent the uncertainty that future taxable income will be sufficient to fully recover the assets. By increasing the allowance, National Inc. is indicating greater probability that future earnings not will be offset by the deferred tax asset.

47. C is correct. The valuation allowance is taken when there is a greater likelihood that the company will fail to earn sufficient income to offset the deferred tax asset. Since the valuation allowance equals the asset, by extension the company expects no taxable income prior to the expiration of the deferred tax assets.

48. A is correct. A higher tax rate would decrease net income on the income statement and because the company has a net deferred tax liability, the net liability position on the balance sheet would also worsen (be higher).

49. B is correct. If the valuation allowance in 2011 was 2,945 (same as the 2010) rather than 2,236, the company would report lower net income. Recall that high valuation allowance can be thought of as high depreciation which results in lower income. Hence option A is not correct. A higher valuation allowance would result in a lower DTA; hence option C is not correct. A lower DTA means that the income tax expense (also called income tax provision) is higher.

50. C is correct. The net deferred tax liability was smaller in 2011 than in 2010 representing that besides meeting the tax payments provided for in 2011 the company also paid out taxes that had been deferred in earlier years.

51. C is correct. The different treatment for tax purposes and financial reporting purposes is a temporary difference and would create a deferred tax liability. Deferred tax liabilities should be classified as debt if they are expected to reverse with subsequent tax payments.

**LO.a: Determine the initial recognition, initial measurement and subsequent measurement of bonds.**

1. A company raises debt in the form of bonds of £10 million face value. When bonds are issued, the company will record a:
   A. cash inflow from financing activities.
   B. cash outflow from financing activities.
   C. cash inflow from investing activities.

2. Federal Motors reports using US GAAP. If at the time of its latest bond issue, it incurs €20,000 in printing, legal fees, commissions and other associated costs then it is *most likely* to report these costs on its financial statements as:
   A. a cash outflow from investing activities.
   B. an asset.
   C. a periodic expense which is not reflected on the balance sheet.

3. A company, which prepares its financial statements in accordance with IFRS issues £2,000,000 face value five year bonds on January 1, 2013 when interest rates are 3.20%. The bonds carry a coupon of 4.50%, with interest paid annually on December 31. The carrying value of the bonds as of December 31, 2014 will be *closest* to:
   A. £1,974,843.
   B. £2,073,262.
   C. £2,108,389.

4. The amount of cash payable to bondholders when the bonds mature is *best* known as:
   A. coupon.
   B. face value.
   C. principal.

5. Over the life of a bond, the rate demanded by investors varies based on the risks associated with future cash payments. This rate is *best* known as the:
   A. coupon rate.
   B. market rate.
   C. effective interest rate.

6. The effective interest rate was 5% on 5.25% coupon bonds at the time of issuance. The bonds were *most likely* issued at:
   A. a discount.
   B. a premium.
   C. par.

7. A company issues €1,500,000 worth of ten-year bonds. The proceeds from the issue is shown in the financial statements as a cash inflow from:
   A. financing activities.
   B. operating activities.
   C. investing activities.

8. Zero-coupon bonds are issued at:
   A. a discount to face value.
   B. a premium to face value.
   C. par to face value.

9. Ababa Corp. incurs $75,000 in legal fees when issuing $1,000,000 of five-year bonds at face value. The legal fees will *most likely* be recorded on the financial statements as:
   A. a liability under US GAAP and as part of bonds payable under IFRS.
   B. a cash outflow from investing activities under IFRS and US GAAP.
   C. an asset under US GAAP and as part of bonds payable under IFRS.

10. The effective interest rate:
    A. changes as market rates change.
    B. is the market rate at issuance.
    C. is the same as coupon rate after issuance.

11. Brookes Mount issued fixed-rate bonds when interest rates were 5 percent. Market interest rates have increased to 7 percent since then. An analyst using only the carrying amount (based on historical cost) while reviewing the company's balance sheet, will *most likely*:
    A. overestimate Brookes' economic liabilities.
    B. underestimate Brookes' economic liabilities.
    C. underestimate Brookes' interest coverage ratio.

**LO.b: Describe the effective interest method and calculate interest expense, amortization of bond discounts/premiums, and interest payments.**

12. The effective rate was 5.50% at the time of issuance of 7.00% coupon bonds. The bonds were *most likely* issued at:
    A. par.
    B. a discount.
    C. a premium.

13. On 1 July 2012, Veronica's Secret Inc. issues $3,000,000 face value, seven-year bonds with annual interest payments of $150,000 to be paid each 30 June. The market interest rate is 7.5 percent. According to the effective interest rate method of amortization, Veronica's Secret is *most likely* to report:
    A. a cash outflow of $195,207 from operating activities in the 30 June 2013 statement of cash flows.
    B. an interest expense of $150,000 in the 30 June 2013 income statement.
    C. a liability of $2,647,962 in the 30 June 2013 balance sheet.

14. Combined Corporation issues $5 million face value, seven-year bonds with a coupon rate of 3.5 percent paid annually. The market interest rate was 2.0 percent at the time of bond issuance. Using the effective interest rate method of amortization, the carrying value of liability after one year will be *closest* to:

A. $5.42 million.
B. $5.49 million.
C. $5.66 million

15. On January 1, 2011 BioGen Inc. issued bonds with a face value £10,000,000, with a term of 5 years paying 5% coupon annually on 31 December. The market rate at issue was 4%. The company did not elect to carry the bonds at fair value. In December 2013 the market rate on similar bonds had increased to 4.5% and the company decided to buy back (retire) the bonds after the coupon payment on December 31. As a result, the gain on retirement reported on the 2013 statement of income is *closest* to:
    A. $94,976.
    B. $102,354.
    C. $110,739.

**LO.c: Explain the derecognition of debt.**

16. The Bank of Cambodia pays $6.5 million to repurchase its own bond with a face value of $11.5 million and a carrying value of $7.5 million in the secondary market. The bank will *most likely* report:
    A. other comprehensive income of $1 million.
    B. other comprehensive income of $5 million.
    C. a gain of $1 million in the income statement.

17. If a company issues $7 million face value zero-coupon bonds, its debt-to-equity ratio will *most likely*:
    A. rise as the maturity date approaches.
    B. decline as the maturity date approaches.
    C. remain constant throughout the bond life.

18. A company incurs a loss of $500,000 on debt redemption. The *least likely* accounting treatment is to:
    A. report the loss on the income statement as a separate line item.
    B. provide details about the transaction in management, discussion and analysis or notes to the financial statements.
    C. record the cash used to redeem the bonds as cash used for investing activities.

19. The repayment of the face value of the bonds at maturity *most likely* appears as a:
    A. financing cash outflow.
    B. reduction in bonds payable by the carrying amount at issuance.
    C. operating cash outflow.

20. Haleys Corp. repurchases the bonds it issued in the open market by paying €15.3 million for bonds with a face value of €20 million and a carrying value of €18.1 million. The company will most likely report:
    A. other comprehensive income of €4.7million.
    B. a gain of €2.8 million on the income statement.

C. other comprehensive income of €2.8 million.

21. The events related to a company's bond issuance are given below:
    - Issued 5-year bonds with a par value of €7 million and a coupon rate of 6%, payable semiannually on 30 June and 31 December, on 1st January 2010. The effective interest rate was 5%.
    - The company repurchased its own bonds in the open market transaction on 1 January 2013, when the market rate of interest was 6%.

    The gain reported on the 2013 income statement due to the bond repurchase will be *closest* to:
    A. €131,669.
    B. €0.
    C. €130,099.

**LO.d: Describe the role of debt covenants in protecting creditors.**

22. Debt covenants are *least likely* to place restrictions on the borrower's ability to:
    A. issue additional debt.
    B. issue additional equity.
    C. pay dividends

23. Which of the following is an example of an affirmative covenant?
    A. Restriction on the amount of dividends paid.
    B. Need for periodic maintenance on real assets, if they are used as collateral.
    C. Restrictions on corporate restructurings that may materially affect the company.

24. Debt covenants *most likely*:
    A. limit the borrower's ability to issue equity.
    B. reduce the cost of borrowing.
    C. restrict the activities of the creditors.

25. A hiking expedition company that organizes trips in Leh uses term loans to finance the acquisition of new mountaineering and hiking gear. A negative covenant for the loans is most likely one that requires:
    A. the company to maintain a minimum level of working capital.
    B. Ensure that the gear is insured.
    C. the company to seek approval to pay dividends.

**LO.e: Describe the financial statement presentation of and disclosures relating to debt.**

26. A company issued $1,000,000 of bonds with a 10 year maturity at 98. Five years later, the company called the bonds at 102 when the unamortized discount was $30,000. The company would *most likely* report a loss of:
    A. $30,000.
    B. $50,000.
    C. $60,000.

27. Details about covenants can be *most likely* found in:
    A. The balance sheet as part of long-term debt.
    B. Notes to the financial statements.
    C. Management, discussion and analysis.

28. Information about the sources of debt financing can most likely be found in:
    A. Notes to the financial statements.
    B. Management, discussion and analysis.
    C. Balance sheet.

29. The portion of the long-term debt due within a year is shown as:
    A. a current liability.
    B. long-term debt.
    C. a separate line item on the balance sheet.

**LO.f: Explain motivations for leasing assets instead of purchasing them.**

30. If a lessor offers attractive terms on an operating lease, this is *most likely* because the lessor is able to:
    A. retain the tax benefits of ownership.
    B. avoid reporting the liability on its balance sheet.
    C. resell the asset at the end of the lease.

**LO.g: Distinguish between a finance lease and an operating lease from the perspectives of the lessor and the lessee.**

31. Company X and Company Y are similar in all respects except that Company X records a long term lease as an operating lease and Company Y records the same type of lease as a finance lease. Taking a lessee's perspective, which of the following statements is *most likely* true?
    A. Company X will report higher liabilities.
    B. Company X will report lower operating cash flow.
    C. Company X will report higher cash flow from investing.

32. Company A and Company B are similar in all respects except that Company A records a long term lease as an operating lease and Company B records the same type of lease as a finance lease. Taking a lessee's perspective, which of the following is *least likely* true for the early years of the lease?
    A. Company A will have lower operating income.
    B. Company A will have lower net income.
    C. Company A will have lower cash flow from operations.

33. For which type of lease, does the leased asset appear on the balance sheet of lessor and continue to be depreciated?

A. An operating lease.
B. A financing lease.
C. A sales-type lease.

34. Under U.S. GAAP, the reported revenues for a lessor at lease inception will be highest if the lease is classified as:
    A. an operating lease.
    B. a direct financing lease.
    C. a sales-type lease

35. A company obtains equipment on lease. Compared to classifying the lease as a financing lease, if it chooses to report the lease as an operating lease, it will *most likely* result in a:
    A. higher debt-to-equity ratio.
    B. lower cash from operations.
    C. lower return on assets.

36. Company A and Company B are similar in all respects except that Company A records a long term lease as an operating lease and Company B records the same type of lease as a finance lease. From a lessee's perspective, which of the following is *least* likely true for the early years of the lease?
    A. Company A will have lower operating income.
    B. Company A will have lower net income.
    C. Company A will have lower cash flow from operations.

37. Which of the following is *least likely* a criterion for a lease to be classified as a finance lease under US GAAP?
    A. The present value of lease payments comprises 90 percent or more of the fair value of the leased asset.
    B. The lease term is 60 percent or more of the useful life of the leased asset.
    C. Ownership of the leased asset transfers to the lessee at the end of the lease.

38. Under IFRS, a lessor who enters into a direct finance lease, reports:
    A. lease revenue when lease payments are received.
    B. a lease receivable equal to the carrying amount of the leased asset.
    C. a depreciation expense on the income statement.

39. From a lessee's perspective, a company showing stronger solvency position in the early years relative to an identical company has *most likely* entered into:
    A. operating lease.
    B. financing lease.
    C. sales-type lease.

40. From a lessee's perspective, a company with higher operating cash flows relative to an identical company has *least likely* entered into a:
    A. financing lease.
    B. sales-type lease.

C. operating lease.

**LO.h: Determine the initial recognition, initial measurement, and subsequent measurement of finance leases.**

41. Interest income is reported by the lessor if the lease is classified as:
    A. a capital lease.
    B. an operating lease.
    C. either a capital or an operating lease.

*The following information relates to questions 42 – 48:*

MoveIt Limited enters into a lease agreement to use earth moving equipment for five years on 1 January 2014. Details of the lease agreement are as follows:

- Annual lease payments starting on 1 January 2014: $31,842.
- Useful life of the equipment: five years.
- Salvage value: 0.
- Depreciation method: straight-line
- Fair value of the machine: $140,000
- Present value of the lease payment: $135,000
- Discount rate: 9%

42. Under US GAAP, the lease agreement for the equipment should be treated as a:
    A. Capital lease.
    B. Operating lease.
    C. Sale-type lease.

43. The amount reported as a leased asset on the balance sheet on 1 January 2014 is *closest* to:
    A. $135,000.
    B. $140,000.
    C. $159,210.

44. The depreciation expense reported in FY 2014 is *closest* to:
    A. $28,000.
    B. $27,000.
    C. $0.

45. The amount of the equipment reported as a leased asset on 31 December 2014 is *closest* to:
    A. $108,000.
    B. $112,000.
    C. $113,000.

46. The amount of the lease liability reported on the balance sheet on 1 January 2014, after the first lease payment, is *closest* to:
    A. $103,158.
    B. $135,000.

C. $140,000.

47. The interest expense reported in FY 2014 is *closest* to:
    A. $31,842.
    B. $12,150.
    C. $9,284.

48. The lease liability on 31 December 2015 is *closest* to:
    A. $103,158.
    B. $80,600.
    C. $22,557.

**LO.i: Compare the disclosures relating to finance and operating leases.**

49. Damas Gold Mines has $620 million in total liabilities and $380 million in shareholder's equity. It discloses operating lease commitments over the next four years with a present value of $60 million. If the lease commitments are treated as debt, the debt-to-total capital ratio is *closest* to:
    A. 0.62.
    B. 0.64.
    C. 0.68.

50. An analyst is comparing the relative magnitude of operating and finance leases of a company. The best source of information on undiscounted future lease payments is *most likely*:
    A. Notes to the financial statements.
    B. Management, discussion, and analysis.
    C. Balance sheet.

**LO.j: Compare the presentation and disclosure of defined contribution and defined benefit pension plans.**

51. Akzo Nobel has a defined benefit pension plan with pension liabilities of $12 million and pension assets of $9 million as on 31 December. Under either IFRS or U.S. GAAP, the reporting on the company's balance sheet would be *closest* to which of the following?
    A. Pension assets and liabilities are not required to be shown in the balance sheet but only disclosed in footnotes.
    B. $12 million is shown as a liability and $9 million as an asset.
    C. $3 million is reported as net pension obligation.

52. Alcon Inc. prepares financial statements using IFRS. The following information related to the company's defined benefit plan is extracted from the 2014 financial disclosures:

| | |
|---|---|
| • Employees' service costs | 460 |
| • Net interest expense | 80 |
| • Actuarial losses | 5 |
| • Actual return on plan assets | 525 |

The pension expense (in thousands) reported in the P&L statement is *closest* to:

A. 540.
B. 545.
C. 1,070.

53. NYC Inc. prepares financial statements under US GAAP. The following information related to the company's defined benefit plan is extracted from the 2014 financial disclosures:

- Employee service costs for the current period 10
- Employee service costs for prior periods 2
- Interest expense 5
- Expected return on plan assets 4
- Actuarial losses 5

The 2014 pension expense reported in the income statement is *closest* to:

A. 11.
B. 17.
C. 26.

**LO.k: Calculate and interpret leverage and coverage ratios.**

54. The details of a company are given below:
Total assets: $2,000 million
Total long-term debt: $500 million
Average interest rate on debt: 9%
A note to the financial statements contains the following information about the company's future beginning of year lease commitments:

**Operating Lease**

| **Year** | **$ millions** |
|---|---|
| 2015 | 300 |
| 2016 | 300 |
| 2017 | 300 |
| 2018 | 300 |
| 2019 | 300 |
| | |
| Total | 1,500 |

After adjustment for the off-balance-sheet financing, the debt-to-total-assets ratio for the company is *closest* to:

A. 52.6%.
B. 54.2%.
C. 57.1%.

55. An analyst is analyzing three companies in an industry. The data for the companies is given below. Which company is the *most* solvent?

| $-amounts in ‘000’s | Company A | Company B | Company C |
|---|---|---|---|
| Total Debt | | $19,997.8 | |
| Total Assets | | $79,043 | |
| EBIT | | $6,207 | |
| Interest Payments | | $1373.23 | |
| Debt-to-Assets Ratio | 25% | | 26% |
| Interest Coverage Ratio | 4.61 | | 4.31 |

A. Company A.
B. Company B.
C. Company C.

56. While calculating the debt to equity ratio, one *must* consider:
A. only non-current liabilities.
B. only current liabilities.
C. both non-current liabilities and current liabilities.

**Solutions**

1. A is correct. The company received a cash inflow of £10 million from lenders at the time debt was issued, which is reported as a financing activity.

2. B is correct. Under U.S. GAAP, expenses incurred when issuing bonds are generally recorded as an asset and amortized over the bond's life to related expenses (printing, legal, etc.). Cash flows related to bond issuance are categorized in the CFF section of the cash flow statement.

3. B is correct. The bond's carrying value is determined by taking the present value of the cash flows over the remaining 3 years. N=3, I/Y=3.2, PMT=2,000,000 x 4.5%, FV=2,000,000. Compute PV = 2,073,262.

4. B is correct. Face value is the cash payable by the issuer to the bondholders when the bonds mature.

5. B is correct. The market rate fluctuates over the life of the bond and is based on the riskiness of future cash flows. The effective interest rate for a bond remains constant during the life of a bond. The effective interest rate is the market rate when the bond was issued.

6. B is correct. As the effective interest rate is lower than the coupon rate, the bonds should have been issued at a premium.

7. A is correct. The proceeds from the sale of a bond issue is shown as a cash inflow from financing activities.

8. A is correct. Zero coupon bonds are issued at a discount to face value.

9. C is correct. Expenses incurred when issuing bonds are recorded as an asset and amortized over the life of the bonds under US GAAP. The expense is recorded as a cash flow under financing activities.

10. B is correct.

11. A is correct. When market interest rates increase, the market value of bonds decreases. Thus, the carrying value of bonds on the balance sheet is greater than the market value of bonds. Since the company can repurchase bonds from the market at less than the carrying amount, therefore, economic liabilities are overestimated. There is no effect on interest coverage ratio because the bonds carry a fixed rate of coupon.

12. C is correct. Since the effective interest rate is lower than the coupon rate, the bonds are issued at a premium

13. C is correct. For the first year $150,000 is the actual cash flow, not the interest expense. Hence options A and B can be ruled out. The carrying value of the liability at the end of year 1 can be calculated as follows: N=6; I/Y=7.5%; PMT=$150,000; FV=$3,000,000, CPT PV = $2,647,962.

14. A is correct. At the end of year the carrying value can be calculated as follows: N=6; I/Y=2%, PMT=175,000, FV=5,000,000, CPT PV= $5,420,107. Note that the carrying value is simply the present value of future cash flows discounted at the market rate of interest at issuance.

15. A is correct. The steps are outlined below:
    - The market value of debt at retirement can be determined by discounting the future cash flows at the current market rate (4.5%) using a financial calculator:
      FV = 10,000,000; I/Y = 4.5%; PMT = 500,000; N = 2; CPT PV = 10,093,633
    - The book value after the third interest payment (two payments remaining) can be found either using a financial calculator and the market rate at the time of issue (4%) or an amortization table (shown below):
      FV = 10,000,000; I/Y = 4%; PMT = 500,000; N = 2; CPT PV = 10,188,609.
    - Gain = Book value of debt – Market value = $10{,}188{,}609 - 10{,}093{,}633$ = 94,976

16. C is correct. A gain of $1 million (carrying value minus amount paid) will be recorded in the income statement.

17. A is correct. As the discount is amortized over time, the value of the liability for zero-coupon bonds increases with the amortized interest reducing earnings at an increasing rate over time. The debt-to-equity ratio will increase as the zero-coupon bonds approach maturity with higher relative debt and lower relative equity (through retained earnings).

18. C is correct. Statements A and B are correct. The cash used must be recorded as cash spent on financing activities.

19. A is correct. When the face value of the bonds is repaid at maturity, bonds payable is reduced by the carrying amount at maturity of the bonds. It is a financing cash outflow.

20. B is correct. A gain of €2.8 million (carrying amount less amount paid) will be reported on the income statement.

21. A is correct. Book value of the bonds on 1 January 2013 = PV (remaining coupon payments) + principal discounted at market rate at the time of issuance.
    Coupon = 0.06 *1/2*7,000,000 = 210,000.
    Using a financial calculator, we enter: N = 4; I/Y = 2.5%; PMT = 210,000, FV = 7,000,000, CPT PV.
    Book value = 7,131,669.
    The market rate when the bonds are repurchased is equal to the coupon rate, the company purchases them at par (€7,000,000).

Cost of repurchase (€7,000,000) – Book value (7,131,669) = 131,669.

22. B is correct. Debt covenants restrict the borrower from taking excessive risk generally by limiting the debtor's ability to consume cash or by limiting the level of debt relative to income and equity. Since issuing additional equity would increase the company's ability to meet its obligations, therefore, debt holders would not restrict that ability.

23. B is correct. The other two are examples of negative covenants.

24. B is correct. There is no restriction on raising additional equity as a company will be able to meet its debt obligations. Covenants restrict the actions of borrowers, not creditors.

25. C is correct. The other two are examples of affirmative covenants.

26. B is correct. Redemption Cost = 1,000,000 x 102/100 = 1,020,000
Carrying amount retired = 1,000,000 – 30,000 = 970,000
Loss on redemption = 1,020,000 - 970,000 = 50,000

27. B is correct. Notes to the financial statements has details about covenants, stated and effective interest rates, collateral etc.

28. B is correct. Details about debt financing and off-balance sheet financing can be found in MD&A.

29. A is correct. Non-current liabilities are part of long-term debt on a company's balance sheet, while that due within a year is part of current liability.

30. A is correct. The lessor often retains the tax benefits of ownership of the leased asset, which allows the lessor to pass those savings along to the lessee in the form of lower financing costs or other attractive terms. The tax benefit arises because of depreciation of the asset which reduces the tax expense.

31. B is correct. An operating lease is not reported on the balance sheet and lease payments are recorded as rent. For Company X, the entire rent expense is treated as an operating cash flow. This will result in lower operating cash flow.

32. B is correct. Company A will have a higher net income because in the early years, the expenses related to the finance lease (depreciation and interest expense) will be higher than the lease payment.

33. A is correct. In case of an operating lease, the underlying asset remains on the lessor's balance sheet. Depreciation expense is recorded by the lessor that reduces the asset's value over time.

34. C is correct. In case of a sales-type lease, the lease is treated as an asset sale and revenue is recorded at the time of sale equal to the present value of future lease payments. In case of direct financing lease, only interest income is reported as earned. In case of an operating lease, revenue from rent payments is reported when collected.

35. B is correct. The cash from operations is lower if the lease is classified as an operating lease, because the full lease payment is shown as an operating cash outflow. If it were classified as a financing lease, only the portion of the lease payment relating to interest expense reduces the operating cash flow and the portion of the lease payment that reduces the lease liability is classified as a financing cash flow. Therefore, the lessee's cash from operations tends to be lower under operating leases.

36. B is correct. Company A will have a higher net income because in the early years, the expenses related to the finance lease (depreciation and interest expense) will be higher than the lease payment.

37. B is correct. The lease term should be 75 percent or more of the useful life of the leased asset.

38. B is correct. Statements A and C are true for an operating lease. With a direct finance lease:
    a. the present value of lease payments is equal to the carrying amount of the leased asset.
    b. the leased asset is removed (derecognized) from the lessor's balance sheet.
    c. the lessor recognizes a lease receivable.

39. A is correct. From a lessee's perspective, a company that has entered into an operating lease shows higher profits, higher return measures and higher solvency in the early years.

40. C is correct. It has entered into a finance-type lease if the operating cash flows are higher as part of the lease payment goes towards reducing the lease liability which appears as financing cash flow.

41. A is correct. For either financing or sales-type lease, a portion of payments for these capital leases is reported as interest income. With an operating lease, all revenue is reported as rental revenue.

*The table below shows the lease payments and interest expense for leasing the equipment. The answers for questions 42-48 are based on this:*

| Year | Lease Liability, 1 January | Annual Lease Payment, 1 January | Interest (at 9%; accrued in previous | Reduction of Lease Liability, 1 January | Lease Liability on 31 December after Lease Payment on 1 January |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| | | | **year)** | | **Same Year** |
| 2014 | $135,000 | $31,842 | $0 | $31,842 | $103,158 |
| 2015 | 103,158 | 31,842 | 9,284.2 | 22,557.8 | 80,600.2 |
| 2016 | 80,600.2 | 31,842 | 7,254 | 24,587.9 | 56,012.2 |
| 2017 | 56,012.2 | 31,842 | 5041.1 | 26,800.9 | 29211.29 |
| 2018 | 29211.29 | 31,842 | 2,629 | 29212 | 0 |
| | | $159,210 | $24209 | $135,000 | |

42. A is correct. The lease should be treated as a capital lease as the equipment is leased for more than 75% of its useful life and the present value of lease payments exceeds 90 percent of the fair value of the asset.

43. A is correct. The amount initially reported is the lower of the present value of lease payments and the fair value of the equipment.

44. B is correct. Depreciation expense per year = $\frac{\$135{,}000}{5}$ = $27,000.

45. A is correct. The carrying amount on 31 December 2014 is 135000 – 27000 = 108000.

46. A is correct. The initial lease liability reported on 1 January 2014 is 135,000. However, after the first lease payment on 1 January, the lease liability reduces to 103,158.

47. C is correct. Interest expense reported in fiscal year 2014 is 103,158*0.09 = $9284.22.

48. B is correct. Refer to the table above for the computations.

49. B is correct. The current debt-to-capital ratio is $620/ ($620 + $380) = 0.62. In order to adjust for lease commitments, an analyst should add $60 to both the numerator and denominator: $680/ ($680 + $380) = 0.64.

50. A is correct. Information on undiscounted future lease payments is generally presented in the notes to the financial statements.

51. C is correct. The company will report a net pension obligation of $3 million, equal to the pension obligation ($12 million) less the plan assets ($9 million).

52. A is correct. Under IFRS the defined benefit pension expense reported on the income statement has two components: employees' service costs and net interest expense. Actuarial losses and actual return on plan assets are part of re-measurements. These are shown under other comprehensive income.

53. A is correct. Under US GAAP three pension components are reflected in the income statement. These are: 1) current period service costs, 2) interest expense and 3) expected return on plan assets which reduces the pension expense. In this case we have 10 + 5 – 4 = 11. Service costs for prior periods and actuarial losses are reported in other comprehensive income.

54. B is correct. The present value of the operating leases should be added to both the total debt and the total assets.
The present value of an annuity due of $300 for 5 years at 9% = $1271.9.
(N = 5; I = 9; PMT = 300; Mode = Begin)
Adjusted debt to total assets = (500 + 1271.9) ÷ (2,000 + 1271.9) = 54.2%.

55. A is correct.
Calculate the debt to assets ratio and interest coverage ratio for company B.

| Company A | Calculation | Ratio |
|---|---|---|
| Debt-to-Assets Ratio | 19997.8/79043 | 25.3 |
| Interest Coverage Ratio | 6207/1373.23 | 4.5 |

| Ratio | Company A | Company B | Company C | Comments |
|---|---|---|---|---|
| Debt-to-Assets | 25% | 25.3% | 26% | Lower is more solvent;<br>A is the most solvent. |
| Interest Coverage | 4.61 | 4.52 | 4.31 | Higher is better; A is the most solvent. |

Company A is the most solvent.

56. C is correct. Current and non-current interest bearing liabilities should be considered when calculating the debt to equity ratio.

**LO.a: Distinguish between financial reporting quality and quality of reported results (including quality of earnings, cash flow, and balance sheet items).**

1. The information provided by a high quality financial report will *least likely:*
   A. contain information that is relevant, neutral, and free from error.
   B. decrease company value.
   C. help in assessing the earnings quality of a firm.

2. High quality financial reports *least likely* reflect:
   A. decision-useful information.
   B. earnings smoothing.
   C. accounting compliant with a standard such as GAAP or IFRS.

3. Low earnings quality *most likely* indicate:
   A. deviation from accounting standards.
   B. information that is not decision-useful to assess a company's performance.
   C. activities that are not sustainable in the future.

4. Aggressive accounting choices in a period of good performance is an example of:
   A. Low reporting quality and low earnings quality.
   B. High reporting quality and low earnings quality.
   C. High reporting quality and high earnings quality.

5. Reporting higher than actual operating cash flow during a period is *least likely* an example of:
   A. aggressive accounting.
   B. conservative accounting.
   C. low reporting quality.

6. Which of the following is an example of aggressive accounting choice?
   A. Increase the amount of debt reported on the balance sheet in the current period.
   B. Decrease the operating cash flow in the current period.
   C. Increased earnings in the current period.

7. High-quality financial reports will *most likely*:
   A. indicate earnings are sustainable.
   B. indicate earnings are not sustainable.
   C. provide information that faithfully represents the economic reality of the company.

**LO.b: Describe a spectrum for assessing financial reporting quality.**

8. Which of the following is a hindrance in the proper evaluation of a company's past performance?
   A. Low earnings quality.
   B. Low financial reporting quality.
   C. Both low earnings quality and low financial reporting quality.

9. Which of the following results in the lowest level of financial reporting quality?
   A. Non-compliant accounting.
   B. Within GAAP but biased choices.
   C. Within GAAP but managed earnings.

10. Which of the following companies will *least likely* have the highest financial reporting quality?
    A. A company that combines the results of the two segments it operates in: healthcare and retail.
    B. A company that reports good performance due to favorable exchange rate movement.
    C. A company that provides delayed reports, but ones that are GAAP-compliant and decision-useful.

11. Which of the following *best* describe the characteristics at the top of the quality spectrum of financial reports?
    A. GAAP, decision-useful and unsustainable earnings.
    B. GAAP, decision-useful, sustainable earnings with adequate returns.
    C. GAAP-complaint with biased accounting choices.

12. Which quality is *best* represented by the quality spectrum of financial reports?
    A. Financial reporting.
    B. Earnings.
    C. Both.

**LO.c: Distinguish between conservative and aggressive accounting.**

13. If a particular accounting choice is considered conservative in nature, then the financial performance for the current period would *most likely*:
    A. be non-compliant.
    B. exhibit an upward bias.
    C. exhibit a downward bias.

14. Which of the following is *most likely* to reflect aggressive accounting choices?
    A. Increased reported earnings in later periods.
    B. Increased reported earnings in the current period.
    C. Decreased reported earnings in the current period.

15. A company is experiencing a period of difficult financial performance. In order to exceed analysts' earnings forecasts in the current reporting period, the company would *least likely* use:
    A. aggressive revenue recognition in the current period.
    B. aggressive expense recognition in the current period.
    C. conservative expense recognition in the current period.

16. Both IFRS and US GAAP require the oil and gas industry to recognize revenue after the product is shipped and extraction costs to be expensed when incurred. This can be *best* described as:
    A. an aggressive accounting approach.
    B. a conservative accounting approach.
    C. a non-biased accounting approach.

17. Not recognizing the increase in the market prices of gold in inventory until it is sold, is an example of:
    A. conservative accounting.
    B. aggressive accounting.
    C. standard accounting.

18. Assume the accounting standard requires a cost to be expensed. Instead, if the cost is capitalized, then the current-period reports will *most likely* be :
    A. unbiased.
    B. biased upward.
    C. biased downward.

**LO.d: Describe motivations that might cause management to issue financial reports that are not high quality.**

19. Which of the following conditions *least likely* results in poor financial reporting quality?
    A. Motivation.
    B. Rationalization.
    C. Opportunity cost

20. Which of the following situations will *least likely* motivate managers to inflate earnings in the current period?
    A. Potential disciplinary action.
    B. Exceeding analysts' earnings forecasts.
    C. The manager's compensation is tied to stock price performance.

21. One of the reasons to understate earnings in the current period is *least likely* to:
    A. have earnings surprises in the future periods.
    B. hide poor performance.
    C. avoid unwanted political attention.

22. Which of the following is a reason for issuing low quality reports in a period of good performance for a company with low leverage?
    A. Avoiding debt covenant violation.
    B. Indifferent to political attention.
    C. Inadequate internal systems.

23. A manager would be motivated to issue high quality financial reports if:
    A. his marketing strategy paid off and revenues improved significantly.

B. his compensation was linked to stock performance.
C. he is worried working for a company with poor performance will limit his future career opportunities.

24. A manager will *least likely* be motivated to overstate earnings in the current period:
    A. to exceed previous year's earnings.
    B. to beat market expectations in a period of poor performance.
    C. to enhance reputation among competitors.

**LO.e: Describe conditions that are conducive to issuing low-quality, or even fraudulent, financial reports.**

25. Which of the following *best* describes a motivation for management to issue low-quality financial reports?
    A. Ineffective board of directors.
    B. Justifying a biased accounting choice.
    C. Need to maintain a minimum interest coverage ratio of 3.0 as required by the loan agreement with the bank.

26. Which of the following can *least likely* be perceived as an opportunity for issuing low-quality financial reports?
    A. Inadequate internal controls.
    B. Accounting standards that give room for judgement and to make an inappropriate choice.
    C. Pressure to meet a revenue target.

**LO.f: Describe mechanisms that discipline financial reporting quality and the potential limitations of those mechanisms.**

27. Management commentaries in a company's financial reports are *most likely* intended to:
    A. ensure that rules have been followed.
    B. provide a description of principle risks.
    C. assure that financial information is presented fairly.

28. Which of the following is *least likely* a limitation of an audit opinion?
    A. The financial information is provided by the company.
    B. To provide assurance that the information complies with a set of accounting standards.
    C. It is based on sampling of the financial reports.

29. The purpose of an audit opinion is *most likely:*
    A. to provide assurance that the financial statements are fairly presented.
    B. to detect fraud.
    C. to identify misstatements and rectify them.

30. A private company takes a loan from a bank to purchase an equipment. The company later increases the estimated useful life of an equipment during the year, which decreases the depreciation expense. What is the *most* appropriate mechanism to ensure that the financial reporting quality is not compromised because of this change?
    A. A private contract with the bank with debt covenant.
    B. Claiming compliance with the applicable accounting standard.
    C. Getting an audit opinion to provide assurance that the change is justified.

31. The securities of Cog Corp., a company based in Kundu, trade in the United States. The financial reports of Cog are prepared in accordance with IFRS. Which of the following is *not* sufficient as per SEC?
    A. A reconciliation to US GAAP must be provided.
    B. An opinion on internal control's effectiveness must be provided as part of audit opinion.
    C. An audit opinion assuring that the reports are presented fairly, comply with Kundu law, and is in accordance with IFRS is sufficient.

**LO.g: Describe presentation choices, including non-GAAP measures that could be used to influence an analyst's opinion.**

32. To increase performance in the current period, a manager would *least likely*:
    A. defer expenses to later periods.
    B. defer current income to a later period.
    C. report liabilities at lower values.

33. To increase performance in a later period, a manager would *most likely*:
    A. Use nonrecurring transactions.
    B. Recognize revenue prematurely.
    C. Recognize expenses prematurely in current period.

34. A company prepares financial statements that depart from generally accepted accounting principles. In this case it can be said that:
    A. financial reporting quality is low and earnings quality is difficult to determine.
    B. financial reporting quality is difficult to determine and earnings quality is low.
    C. financial reporting quality is difficult to determine and the earnings quality is high.

35. A non-GAAP measure:
    A. may be used in earnings releases.
    B. may not be used to describe solvency position in management, discussion, and analysis.
    C. may exclude infrequent or unusual items that are likely to occur again.

**LO.h: Describe accounting methods (choices and estimates) that could be used to manage earnings, cash flow, and balance sheet items.**

36. A company wishing to decrease earnings in the current period may choose to:

A. capitalize an asset purchase.
B. lower provision for bad debts.
C. decrease the useful life of fixed assets.

37. Biases in revenue recognition would *most likely* be suspected if a firm:
    A. understates expenses.
    B. reports higher revenue relative to the previous period.
    C. uses bill and hold revenue recognition.

38. Which of the following is *least likely* an area of concern in revenue recognition for analysts?
    A. Revenue is recognized upon delivery of goods.
    B. Bill and hold transactions.
    C. Free on board shipping point on the last day of the quarter.

39. A company wishing to increase earnings in future periods will *least likely*:
    A. choose double-declining depreciation.
    B. expense a payment instead of capitalizing.
    C. choose straight-line depreciation.

40. An indicator of poor earnings quality is *most likely*:
    A. Operating cash flow greater than net income.
    B. Net income substantially greater than operating cash flow.
    C. Operating cash flow of a company close to the benchmark.

**LO.i: Describe accounting warning signs and methods for detecting manipulation of information in financial reports.**

41. Which of the following would *most likely* suggest that there are problems in company's accrual accounting? If cash flow to net income ratio is consistently:
    A. equal to 1.
    B. less than 1.
    C. greater than 1.

42. Which of the following observations made by an analyst *most likely* reduces the quality of earnings of the company? The company:
    A. reported for the first time an asset titled "Deferred customer acquisition costs."
    B. has reduced its estimate of the expected useful life of computer equipment from 8 years to 5 years.
    C. entered into long-term leases for its manufacturing equipment instead of purchasing it and recorded the leases as capital leases.

43. Which of the following is *most likely* to be a warning sign of low quality earnings?
    A. Smaller use of operating leases than peer companies.
    B. Use of a lower discount rate in pension plan assumptions.
    C. A ratio of operating cash flow to net income smaller than 1.0.

44. Relative to its competitors, a company may be recognizing revenue prematurely if its:
    A. days sales outstanding is decreasing.
    B. receivables turnover is decreasing.
    C. asset turnover is decreasing.

**Solutions**

1. B is correct. A high quality financial report increases company value, and contain information that is relevant and free from error.

2. B is correct. High quality financial reports have decision-useful information and are compliant with accounting standards such as GAAP or IFRS. Earnings smoothing is the result of biased accounting choices and low reporting quality.

3. C is correct. Low earnings quality reflects activities that are not sustainable in the future. The other two are characteristics of low reporting quality.

4. A is correct. Aggressive accounting implies that the reported numbers are not consistent with the economic reality of the company; hence the reporting quality is low. Aggressive accounting leads to high earnings numbers which are not sustainable. Consequently, the earnings quality is also low.

5. B is correct. Higher than actual operating cash flow, inflated revenues are examples of aggressive accounting.

6. C is correct. Increased earnings in future periods is an example of conservative accounting.

7. C is correct. High-quality financial reports provide information that faithfully represents the economic reality of the company.

8. B is correct. Low financial reporting quality is a hindrance in the proper evaluation of a company’s past performance.

9. A is correct. Under the quality spectrum of financial reports, non-compliant accounting is at the lowest level among the given options.

10. A is correct. Assessing the profitability of each segment is difficult if they are combined. This is an example of biased accounting choice.

11. B is correct. Unsustainable earnings represent low earnings quality, which is below the top of the spectrum. Biased accounting choices are at the middle of the quality spectrum.

12. C is correct. Quality spectrum represents both financial reporting and earnings. At the top of the spectrum is high financial reporting and high earnings quality. At the bottom, is low financial reporting and low earnings quality.

13. C is correct. If a particular accounting choice is considered conservative in nature, then the financial performance for the current period would exhibit a downward bias.

14. B is correct. Accounting choices are considered aggressive if they increase the company's reported performance and financial position in the current period.

15. C is correct. In order to exceed analysts' earnings forecasts in the current reporting period, the company might try to use aggressive revenue and expense recognition. Aggressive expense recognition implies decreasing the amount of expenses reported in the period.

16. B is correct. Recognizing expenses as incurred and revenues only after the product is shipped is an example of conservatism.

17. A is correct. Accounting standards allow companies to reflect commodities at market value. Not reflecting the increase in market value of a commodity such as gold is an example of conservatism.

18. B is correct. Aggressive accounting choices result in financial reports to be biased upward.

19. C is correct. Three conditions result in poor financial reporting quality: opportunity, motivation and rationalization.

20. A is correct. Potential disciplinary actions will prohibit managers from inflating earnings in the current period

21. B is correct. One of the motivations for aggressive accounting choices is to hide poor performance.

22. C is correct. A is incorrect because the company has low leverage, so avoiding debt covenant is unimportant considering the performance is also good. B is incorrect because being indifference to political attention is not a reason for issuing low quality reports. C is correct because inadequate internal systems might lead to low quality financial reports.

23. A is correct. The other two are motivations for a manager to manipulate earnings.

24. C is correct. Concealing poor performance especially if compensation is tied to the company's earnings, and enhancing reputation among customers and suppliers is likely to motivate managers to inflate earnings. Enhancing reputation among competitors is not a criteria.

25. C is correct. Inefficient board of directors presents an opportunity whereas justifying a biased accounting choice is rationalizing for issuing a low-quality financial reports.

26. C is correct. Pressure to meet a revenue target is an example of motivation: one of the three conditions conducive to issuing low-quality reports. The other two are examples of opportunities.

27. B is correct. Management commentaries in a company's financial reports are intended to provide a description of the principle risks.

28. B is correct. This is a function of an audit opinion and not a disadvantage.

29. A is correct.

30. C is correct. An audit opinion will assure the reasonableness of the change in the estimated useful life.

31. C is correct. Statements A and B are mandatory as per SEC.

32. B is correct. A manager would defer current income to a later period to increase future performance.

33. C is correct. The other two actions will increase performance in current period.

34. A is correct. If a company's financial statements depart from GAAP it can be said that the financial reporting quality is low and earnings quality is difficult or impossible to determine.

35. A is correct. Items that may occur again cannot be eliminated when using a non-GAAP measure.

36. C is correct. If a company wants to decrease reported earnings, the company's managers may reduce the useful life of fixed assets.

37. C is correct. Bill and hold method of revenue recognition may result in a bias in revenue recognition

38. A is correct. The other two are red flags for early revenue recognition that analysts must be aware of.

39. C is correct. The double-declining method results in lower earnings in the initial periods and higher earnings in later periods. Similarly, expensing rather than capitalizing results in lower earning initially but higher earnings later. Hence a company which wants to increase earnings in the future is likely to use options A and B but less likely to use option C.

40. B is correct. This is an indicator of accounting manipulation to increase net income.

41. B is correct. If cash flow to net income is consistently less than 1, there may be problems in the company's accrual accounting.

42. A is correct. An asset such as "deferred acquisition costs" indicates the amount is not expensed in the current period. This causes earnings to be unsustainably high in the current

period which is an indication of low earnings quality. Options B and C will cause the earnings to be lower in the current period.

43. C is correct. A ratio of operating cash flow to net income below 1.0 can be a warning sign of low quality earnings.

44. B is correct. Decreasing receivables turnover, increasing asset turnover and increasing days sales outstanding are signs of recognizing revenue prematurely.

**LO.a: Evaluate a company's past financial performance and explain how a company's strategy is reflected in past financial performance.**

1. Projections of future financial performance based on past results would be *least* reliable when a company:
    A. is large and operating in a mature industry.
    B. has just entered the industry.
    C. is operating in a stable industry.

2. An analyst uses the average net profit margin over the past three years of a heavy equipment manufacturing firm to forecast the next year's net profit margin. In his forecast, he is concerned about the following three items:
    - The company suffered losses from discontinued operations in two of the past three years.
    - The most recent year's tax rate was only one half the prior two years' rate as a result of a fiscal stimulus.
    - The company experienced gains on the sale of investments in each of the past three years.

    Which of the following statements about the preparation of the forecast is *most* accurate? The analyst would:
    A. use the most recent tax rate because that is the best predictor of future tax rates.
    B. exclude the gains on the sale from investments because the company is a manufacturing firm.
    C. include the discontinued operations because they appear to be an on-going feature for this company.

3. The premium pricing of differentiated products such as the iPhone is *more* directly reflected in which of the following measures?
    A. Gross profit margin.
    B. Operating profit margin.
    C. Net income.

4. Sarah Meles, an analyst, is forecasting gross profit of the three following companies. She uses the five-year average gross margins and forecasts sales using an internal model:

| **Company** | **Information** |
|---|---|
| Accura Inc. | an innovator in electronic devices and enjoys healthy margins because of its technological edge. New technologies typically replace old ones every two years in this industry. |
| Basic Co. | produces and sells consumer goods which remain relatively constant throughout the period, and the demand and cost structures for its products have not experienced any significant changes |
| Couture LLC | recently restructured its product offerings focusing on high margin products only. |

    The gross profit forecast is *most* reliable for:
    A. Accura Inc.

B. Basic Co.
C. Couture LLC.

**LO.b: Forecast a company's future net income and cash flow.**

5. Company XYZ wants to decrease its average receivable collection from the current 29 days to the industry average of 20 days by next year. Current year's credit sales are $600 million and analysts expects an increase of $100 million by next year. The required change in the company's average accounts receivable balance from current year to next year in order to achieve the target of decrease in collection period is *closest* to:
   A. $ 9,262,883.
   B. $ 8,325,164.
   C. $ 10,547,456.

6. Which of the following can be used as an off-balance sheet financing technique?
   A. Operating leases.
   B. Capital leases.
   C. Weighted average inventory.

7. As analyst gathers following information and projections:

| ($ '000) | 2011 Dec 31 | 2012 Dec 31 |
|---|---|---|
| Sales | 1,500 | 1,650 |
| Variable operating costs (% of sales) | 33% | 30% |
| Fixed operating costs | 500 | 500 |
| Tax rate | 30% | 30% |
| Dividends paid | 50 | 55 |
| Interest bearing debt at 5% | 500 | 500 |

   The forecasted net income (in '000s) for 2012 is *closest* to:
   A. $386.
   B. $441.
   C. $459.

8. Selected information about ABC Company is as follows:

| | December 31, 2012 | 2013 Projection |
|---|---|---|
| Sales | 4,000,000 | 4,500,000 |
| Variable operating costs (% of sales) | 30% | 35% |
| Fixed operating costs | 2,000,000 | 2,000,000 |
| Tax rate | 30% | 30% |
| Dividends paid | 100,000 | 110,000 |
| Interest bearing debt at 6% | 800,000 | 800,000 |

   The forecasted net income for 2013 is *closest* to:
   A. 723,900.

B. 613,900.
C. 503,900.

9. The following information is available for a company that prepares its statements in accordance with US GAAP.

| | 2015 (forecast) | 2014 (actual) | 2013 (actual) |
|---|---|---|---|
| Sales $ millions | 2,670 | 2,455 | 2,075 |
| Sales as % of sales | | 100% | 100% |
| Cost of goods sold | | 40% | 40% |
| Operating expenses | | 37% | 37% |
| Interest expense | | 4.07% | 4.8% |
| Restructuring expense | | 0% | 7.5% |
| Pre-tax margin | | 18.93% | 10.7% |
| Taxes (30%) | | 5.68% | 3.21% |
| Net income | | 13.26% | 7.49% |

Assuming no change in the capital structure for the company, the projected net income (in $ millions) for 2015 is *closest* to:
A. $289.87.
B. $347.07.
C. $359.87.

**LO.c: Describe the role of financial statement analysis in assessing the credit quality of a potential debt investment.**

10. Which of the following statements is *least likely* to be correct?
A. Analysts consider revenue sustainability when making a credit assessment.
B. Analysts consider liquidity when making a credit assessment.
C. Analysts consider financial risk but not business risk when making a credit assessment.

11. An analyst assessing the credit worthiness of a company is *most likely* to use which of the following measures?
A. Net income.
B. Operating cash flow.
C. Measures related to the operational efficiency a company's operations.

12. A company's ability to service its debt is *best* measured by:
A. Retained cash flow.
B. Profit margin.
C. Return on equity.

13. A company's access to capital markets and sensitivity to adverse events is *best* represented by which of the following quantitative factors?
A. Margin stability.

B. Scale and diversification.
C. Tolerance for leverage.

14. An analyst calculates the following ratios for two companies:

| | Alpha Inc. | Beta Inc. |
|---|---|---|
| EBITDA/Average assets | 8.1% | 11.8% |
| Debt/EBITDA | 2.7% | 2.1% |
| Retained cash flow to debt | 5.4% | 12.3% |
| Free cash flow to net debt | -3.0% | 6.8% |

Which company will most likely be assigned a higher credit rating?
A. Alpha Inc.
B. Beta Inc.
C. Can't say as data is insufficient.

**LO.d: Describe the use of financial statement analysis in screening for potential equity investments.**

15. If an analyst wants to keep risk low while screening for potential equity investments based on return on equity, which criteria is he *most likely* to use?
A. Low leverage ratio.
B. High leverage ratio.
C. Negative net income.

16. If there is a mismatch between what investors would have known at the time of the investment decision and the information used now in back-testing, this can result in:
A. back-testing bias.
B. data snooping bias.
C. look-ahead bias.

17. Lily Cho, equity manager, uses a stock screener and selects the following metrics: a global equity index, P/E ratio lower than the median P/E ratio, and a price-book value ratio lower than the median price-book value ratio. The stocks so selected would be *most appropriate* for portfolios of:
A. growth investors.
B. market-oriented investors.
C. value investors.

18. Sally Wong, equity manager, uses a stock screener and selects the following metrics: earnings growth greater than the median earnings growth percentage and a ROE value higher than the median ROE value. The stocks so selected would be *most* appropriate for portfolios of:
A. growth investors.
B. market-oriented investors.
C. value investors.

19. An equity manager conducted a stock screen on 2,000 U.S. stocks that comprise her investment universe. The results of the screen are presented in the table below:

| **Criterion** | **% of Stocks Meeting Criterion** |
|---|---|
| Price per share/Sales per share < 1.5 | 28.0 |
| Total asset/Equity = 2.0 | 58.5 |
| Dividends > 0 | 62.0 |
| Consensus forecast EPS > 0 | 52.3 |

If all the criteria were completely independent of each other, the number of stocks meeting all four criteria would be *closest* to:
   A. 106.
   B. 338.
   C. 444.

20. Which of the following reasons for the increase in a company's ROE is *least likely* to be sustainable assuming that it operates in a highly fragmented and competitive industry? The company:
   A. decided to make greater use of long-term borrowing capacity.
   B. implemented a new IT system allowing it to reduce working capital levels as a percentage of assets.
   C. increased the prices of its product significantly.

**LO.e: Explain appropriate analyst adjustments to a company's financial statements to facilitate comparison with another company.**

21. While comparing financial statements of two companies, financial statements should be:
   A. compared without making any changes.
   B. adjusted after performing horizontal and vertical ratio analysis.
   C. adjusted for the differences in accounting standards.

22. Company A classifies some financial assets as "available for sale". Company B reports similar financial assets as "held for trading". What adjustment should be made to Company A's statements before comparing with the financial statements of Company B?
   A. Realized gains and losses will be recognized in equity.
   B. Unrealized gains and losses will be added to net income.
   C. Unrealized gains and losses will be recognized in equity.

23. Consider two companies reporting under U.S. GAAP. One uses LIFO and the other uses FIFO. To make them comparable, what adjustment must be made to the financial statements the LIFO company?
   A. Subtract LIFO reserve from the reported inventory value.
   B. Add LIFO reserve to the reported inventory value.
   C. No adjustment is necessary.

24. An analyst is evaluating the balance sheet of Company X that uses the LIFO accounting method for inventory. Company X prepares its financial statements under U.S. GAAP. The analyst collects the following data:

| | **31 Dec 08** | **31 Dec 09** |
|---|---|---|
| Inventory reported on balance sheet | $ 800,000 | $ 900,000 |
| LIFO reserve | $ 80,000 | $ 90,000 |
| Average tax rate | 25% | 25% |

After adjusting the amount of inventory to convert into FIFO, inventory at 31 December 2009 would be *closest* to:

A. $ 900,000.
B. $ 910,000.
C. $ 990,000.

25. Peter Lynch gathered the following data of a company ($ millions):

| | 31 Dec 08S | 31 Dec 09 |
|---|---|---|
| Gross investment in fixed assets | $ 3.6 | $ 3.6 |
| Accumulated depreciation | $ 1.6 | $ 2.0 |

What would be the number of years of useful life which have passed (average age) and average life of assets at installation (depreciable life) of the company's fixed assets at the end of 2009?

| | **Average Age** | **Depreciable Life** |
|---|---|---|
| **A** | 5 years | 9 years |
| **B** | 9 years | 5 years |
| **C** | 4 years | 9 years |

26. What would an analyst *most likely* do to compute tangible book value?

A. Add excess of purchase price to net income.
B. Add goodwill in net asset.
C. Subtract goodwill from stockholder's equity.

27. If an operating lease is capitalized, what is the *most likely* impact on the interest coverage ratio in the early years of the lease? Assuming the ratio is based on interest expense and not the actual interest paid, the ratio will:

A. increase.
B. decrease.
C. stay the same.

28. A lifestyle retail chain that operates dozens of stores across the country leases most of its space. The following data is available about the company's leases from its Notes and the balance sheet:

| | |
|---|---|
| Total assets | $5,625 million |
| Total long-term debt | $2,346 million |
| Interest rate on debt | 11% |

| **Year** | **Millions** |
|---|---|
| 2011 | 250 |
| 2012 | 250 |
| 2013 | 250 |
| 2014 | 250 |
| 2015 | 250 |
| Total | 1,250 |

An analyst examining the company, as of the beginning of 2011, makes some adjustments for off-balance sheet financing to enable comparison. The debt-to-total assets ratio for the company after the adjustment is closest to:

A. 41.7%.
B. 50.69%.
C. 49.9%.

29. An analyst is making adjustments to a company's financial statements that prepares its statements according to US GAAP. The price to tangible book value ratio is *most* appropriate instead of price to book value ratio if the company:

A. invests significantly in new capital assets.
B. grows through acquisitions instead of growing internally.
C. develops its patents and processes internally.

30. The following information is available for two companies from the same industry with similar strategies, about the same age for PP &E assets, and expected useful lives remaining. Company X uses the LIFO method of inventory valuation, while company Y uses the FIFO method.

| | Company X | Company Y |
|---|---|---|
| Current assets | 10,900 | 12,540 |
| Inventory LIFO reserve | 2,500 | N/A |
| Current liabilities | 8,100 | 7,950 |
| Gross PP&E | 20,000 | 25,000 |
| Accumulated depreciation | 15,000 | 12,500 |
| Depreciation expense | 1,875 | 3,125 |

Which of the following statements is *most* accurate? Relative to Company X, Company Y:

A. has a higher earnings quality.

B. uses aggressive accounting for depreciation of PP&E.
C. is more liquid.

31. A company prepares its financial statements in accordance with US GAAP. The company using the LIFO inventory valuation method reported a LIFO reserve of $120,000 at year-end. This is $25,000 lower than the previous year. If the company had used FIFO for inventory accounting instead of LIFO, the company would have *most likely* reported:
    A. a lower COGS, but a higher inventory balance.
    B. both a higher COGS and a higher inventory balance.
    C. a higher COGS, but a lower inventory balance.

32. To make a company comparable with other companies, an analyst is making adjustments by converting operating leases to capital leases. What will be the *most likely* effect of this adjustment?
    A. No effect on debt-to-equity ratio.
    B. Higher debt-to-equity ratio
    C. Lower debt-to-equity ratio

**Solutions**

1. B is correct. In the case of start-ups, past performance may be irrelevant to predict future performance. .

2. B is correct. The company is a heavy equipment manufacturer - since gains on investments is not a core part of its business, they should not be viewed as an ongoing source of earnings. Discontinued operations are considered to be nonrecurring items (even though they have occurred in the past three years); they are normally treated as random and unsustainable and should not be included in a short-term forecast; the change in the current tax rate is best viewed as temporary (in the absence) of additional information and should not be the basis of the calculation of the average tax rate.

3. A is correct. The effect of premium pricing through brand recognition, unique styling are more directly reflected in higher gross margin. The operating profit margin is also higher but often advertising and research costs are incurred which makes the effect on gross margin more pronounced than on operating profit margin.

4. B is correct. Basic Co. because it has been offering the same products and its demand and cost structures has been stable too. Therefore, the relationship between sales and gross profit (i.e., gross margin) should be stable and most reliable.

5. A is correct.

   Current accounts receivable turnover (year 1) = $\frac{365}{29}$ = 12.6
   Target accounts receivable turnover for year 2 = $\frac{365}{20}$ = 18.25
   Accounts receivable balance for year 1= $\frac{\text{Sales}}{\text{turnover}} = \frac{600{,}000{,}000}{12.6}$ = 47,619,047.6
   Accounts receivable balance for year 2 = $\frac{\text{Sales}}{\text{turnover}} = \frac{700{,}000{,}000}{18.25}$ = 38,356,164.4
   The difference of $9,262,883.2 is required to meet their target.

6. A is correct. Operating leases can be used as an off-balance sheet financing technique as neither the asset nor liability appears on the balance sheet.

7. B is correct. EBT = Sales – Variable cost – Fixed cost – Interest expense
   EBT = 1650 – (1650*30%) – 500 – (500*5%) = 630
   Net income = EBT – Taxes = 630 – 630*30% = 441

8. B is correct.

| | | |
|---|---|---|
| Sales | 4,500,000 | Given |
| Variable Costs | (1,575,000) | 35% of sales |
| Fixed Costs | (2,000,000) | Given |
| Interest Expense | (48,000) | 0.06×800,000 average debt |
| Earnings before taxes | 877,000 | |

| | | |
|---|---|---|
| Taxes | 263,100 | 30% of EBT |
| Net Income | **613,900** | |

9. C is correct. The calculations for projected net income for 2015 is shown below:

   Note: interest expense in percentage terms is declining. So calculate the expense for 2013 and 2014 in dollar terms. It is a fixed expense of $100.

| | |
|---|---|
| Sales | 2,670 |
| Cost of goods sold (40%) | 1,068 |
| Operating expenses (37%) | 987.9 |
| Interest expense | 100 |
| Pretax margin | 514.1 |
| Tax (30%) | 154.23 |
| Net income | 359.87 |

10. C is correct. Credit analysts consider both financial and business risk while making a rating recommendation.

11. B is correct. Since debt is paid in cash, a company's ability to generate cash is important in assessing its credit worthiness.

12. A is correct. Retained cash flow is a measure of leverage used by Moody's.

13. B is correct.

14. B is correct. Beta Inc. has a higher retained cash flow relative to debt, EBITDA/average assets and higher cash flow to net debt.

15. A is correct. Low leverage implies lower risk.

16. C is correct. If companies have restated their financial statements, then there is a mismatch between what an investor would have known at the time of the investment decision and the information used now in back-testing. This is known as look-ahead bias.

17. C is correct. Metrics such as low P/E and low price-book are aimed at selecting value companies; therefore, the portfolio is most appropriate for value investors.

18. A is correct. Metrics such as earnings growth and momentum are aimed at selecting growth companies; therefore, the portfolio is most appropriate for growth investors.

19. A is correct. If the criteria are independent of one another, the probability that all will occur is the product of the individual probabilities (Multiplication Rule for Independent Events), i.e. 0.28 x 0.585 x 0.62 x 0.523 = 0.053, or 5.3%, which would produce 106 meeting the criteria, i.e., 5.3% x 2,000.

20. C is correct. An increase in price is not sustainable in a fragmented and competitive industry. Fragmented industries tend to be highly price competitive because of the need to increase market share and to undercut prices in an attempt to steal share.

21. C is correct. When comparing ratios of companies using different accounting standards, adjustments may be required. Adjustments made to one financial statement often affect other financial statements as they are linked.

22. B is correct. If the company classifies financial assets as available for sale, unrealized gains and losses are shown as other comprehensive income and bypass the income statement. To make the net income of Company A comparable to the net income of Company B, the unrealized gains on available for sale securities should be added to net income.

23. B is correct. To convert LIFO inventory to FIFO inventory, the LIFO reserves must be added back.

24. C is correct. FIFO Inventory = LIFO Inventory + LIFO reserves
FIFO Inventory = $ 900,000 + $ 90,000= $ 990,000

25. A is correct. Depreciation expense is equal to the difference in accumulated depreciation at the beginning and at the end of the year i.e. $0.4. Average age is equal to accumulated depreciation/ depreciation expense, or 2.0/0.4 = 5 years. Average depreciable life is equal to ending gross investment/depreciation expense = 3.6/0.4 = 9 years.

26. C is correct. Tangible book value can be computed by subtracting goodwill from stockholder's equity.

27. B is correct. The interest coverage ratio is EBIT/Interest expense. The EBIT will increase by a small percentage. The interest expense is likely to increase by a larger percentage. Hence the overall impact is that the ratio is likely to decrease.

28. B is correct.
The adjustment for off-sheet balancing is to add the present value of the operating leases to both debt and assets. The present value of an annuity due of $250 for 5 years at 11% = $1025.6. Remember to set the calculator to BGN mode.
Adjusted debt to total assets = $\frac{2346+1025.6}{5625+1025.6} = \frac{3371.6}{6650.6}$ = 50.69%.

29. B is correct. Assume there are two companies whose economic values are identical. But, one company has grown through acquisitions and the other internally. The company that has grown through acquisition will have more intangibles and goodwill on its balance sheet than the other company. Adjustments must be made to remove the intangibles to make the two companies comparable.

30. B is correct. Calculate the associated measures for current ratio and net PPE to see which statement is accurate.

| | Company X | Company Y |
|---|---|---|
| Current ratio = CA/CL | 1.35 | 1.577 |
| Adjusted current ratio | 1.65 | |
| Net PPE | 5,000 | 12,500 |
| Estimated average remaining useful life | 2.66 years | 4 years |

As we can see from the table above, Company X is more liquid after adjusting for FIFO. The analyst believes that the PP&E of both the companies are of the same age, but the remaining useful life for Company Y is more than that of Company X. This implies that Company Y may be using an aggressive accounting policy such as a longer useful life relative to Company X. So, statement A is incorrect as aggressive accounting policies indicate lower earnings quality.

31. B is correct.
    FIFO COGS = LIFO COGS – change in LIFO reserve.
    Since change in LIFO reserve is negative from the previous year, FIFO COGS will be higher.
    FIFO inventory = LIFO inventory + LIFO reserve.
    FIFO inventory will be higher since LIFO reserve is positive.

32. B is correct. When operating leases are capitalized the liabilities and assets go up by the same amount and there is no change in equity. Hence the debt/equity ratio rises.

**L.O.a: Describe corporate governance.**

1. Which of the following is the *most appropriate* definition of corporate governance?
    A. A system of defined roles for management and the majority shareholders.
    B. A system of checks and balances to minimize the conflicting interests among shareowners.
    C. A system of internal controls and procedures by which individual companies are managed.

2. Analyst 1: Corporate governance is the system of internal controls and procedures by which individual companies are managed.
   Analyst 2: Corporate governance provides a framework that defines the rights, roles and responsibilities of various groups within an organization.
   Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

**L.O.b: Describe a company's stakeholder groups and compare interests of stakeholder groups.**

3. Which of the following is *least* likely a common interest of shareholders and creditors?
    A. High profits.
    B. High return on invested capital.
    C. Dividends.

4. Which of the following scenarios is *least* likely to create a conflict of interest between shareholders and management?
    A. A company's decision to venture into new markets.
    B. A takeover bid from a rival firm.
    C. A proposal to redraft the employee bonus structure.

5. Which of the following is *not* a function of the board of directors?
    A. To protect shareholder interests and provide strategic direction.
    B. To protect the interest of management in front of shareholders.
    C. To monitor company and management performance.

6. Which group of stakeholders is *least* likely to benefit from an increase in the market value of a company?
    A. Company management.
    B. Customers.
    C. Shareholders.

7. Which of the following is *least* likely an interest of the government as a stakeholder?
    A. Higher company profits.
    B. Higher management compensation.
    C. Environmental impact of the business's activities.

**L.O.c: Describe principal–agent and other relationships in corporate governance and the conflicts that may arise in these relationships.**

8. An agency relationship is *most* likely described as:
    A. a relationship arising when a principal is hired to act in the best interest of the agent and involves obligations, trust and expectations of loyalty.
    B. a relationship arising when a principal hires an agent to perform particular tasks or services where the agent is expected to act in the best interests of the principal.
    C. a relationship arising when a principal hires an agent to perform particular tasks or services where the agent is expected to act in the best interests of the stakeholders.

9. The shareholders of a company own a portfolio of several companies and have a high risk tolerance. Such a scenario can create a conflict of interest between:
    A. shareholders and management.
    B. customers and management.
    C. creditors and customers.

10. A company is making a takeover bid on a rival firm and the valuators have proposed a bid at a premium of 50% to the target's share price. The company is currently owned 70% by a majority shareholder and the remaining ownership is fragmented among small shareholders. The said scenario can result in a conflict between:
    A. controlling shareholder and management.
    B. shareholders and the government.
    C. controlling shareholder and minority shareholders.

11. Management and board of director's conflicts can arise as a result of:
    A. limited information provided to the board.
    B. management having an ownership stake in the business.
    C. management's decision to invest in a profitable business line.

**L.O.d: Describe stakeholder management.**

12. Stakeholder management is *best* described as:
    A. identifying, prioritizing, and understanding the interests of stakeholder groups, and, on that basis, managing the company’s relationships with these groups.
    B. identifying, prioritizing, and understanding the interests of shareholders and managing shareholder relationships with other stakeholders.

C. identifying, prioritizing and understanding the interests of stakeholders and serving those interests first that maximize company profits.

13. Which of the following is *not* a stakeholder management infrastructure?
    A. Legal infrastructure.
    B. Environmental infrastructure.
    C. Contractual infrastructure.

14. Governance procedures and practices are part of which of the following?
    A. Legal infrastructure.
    B. Contractual infrastructure.
    C. Organizational infrastructure.

**L.O.e: Describe mechanisms to manage stakeholder relationships and mitigate associated risks.**

15. Which of the following is *least* likely to be done at an extra-ordinary general meeting?
    A. Amendments to a company's bylaws.
    B. Voting on a merger transaction.
    C. Approval of financial statements.

16. Which of the following is typically a means to protect the rights and interests of employees?
    A. Proxy voting.
    B. Code of ethics and business conduct.
    C. Covenants.

17. Which of the following is a mechanism to protect the rights of creditors?
    A. Proxy voting.
    B. Regulations to protect the environment.
    C. Collateral to secure a loan.

**L.O.f: Describe functions and responsibilities of a company's board of directors and its committees.**

18. A company wants to incorporate best practices in its corporate governance procedures relating to the company's compensation committee. The *least appropriate* step would be to:
    A. include a retired executive from the firm.
    B. link compensation with long-term objectives.
    C. include a representative from a different industry.

19. Which of the following committees is *most likely* responsible for establishing criteria for appointment of board of directors and search process?
    A. Nominations committee.

B. Governance committee.
C. Remuneration committee.

20. Which of the following is *not* a responsibility of the governance committee?
    A. Oversee implementation of the corporate governance code.
    B. Ensure compliance with relevant laws and regulations throughout the company.
    C. Determining factors that constitute director independence.

21. The risk committee is *least* likely to:
    A. establish enterprise risk management plans.
    B. determine the risk appetite of the company.
    C. monitor investment in risky projects.

**L.O.g: Describe market and non-market factors that can affect stakeholder relationships and corporate governance.**

22. Which of the following is a form of shareholder activism?
    A. Annual shareholder meetings.
    B. Analyst calls.
    C. Proposing shareholder resolutions.

23. Persuading shareholders to vote for a group seeking a controlling position in a company is known as a:
    A. proxy contest.
    B. tender offer.
    C. hostile takeover.

**L.O.h: Identify potential risks of poor corporate governance and stakeholder management and identify benefits from effective corporate governance and stakeholder management.**

24. Which of the following is *not* a risk of poor corporate governance?
    A. High control on all corporate levels.
    B. Risk of going bankrupt.
    C. Risk of losing employees to competitors.

25. A poor corporate governance structure is *most* likely to:
    A. improve operational freedom and efficiency.
    B. reduce corporate governance costs to increase profits.
    C. increase the cost of debt.

**L.O.i: Describe factors relevant to the analysis of corporate governance and stakeholder management.**

26. Which of the following can create a divorce between ownership and voting control?

A. A skewed shareholding structure where one shareholder owns majority of the company's shares.
B. Dual class of shares with different voting rights.
C. Equal voting power of all outstanding shares.

27. Which of the following can be a red flag while analyzing corporate governance and stakeholder management of a company?
    A. Disclosure of the director's profiles.
    B. Disclosure of the director's bonus and compensation structure.
    C. Multiple directors engaging in related party transactions with the company.

**L.O.j: Describe environmental and social considerations in investment analysis.**

28. An investment analyst would be *most* likely concerned about environmental pollution caused by a company because:
    A. it would lower costs and increase profits.
    B. it would result in environmental degradation.
    C. it can result in regulatory action and penalties.

**L.O.k: Describe how environmental, social, and governance factors may be used in investment analysis.**

29. Excluding companies from investment universe that violate accepted standards of environmental concerns is an example of:
    A. positive screening.
    B. best in class.
    C. negative screening.

30. Considering a single factor in investment, such as energy efficiency or climate change is known as:
    A. best in class.
    B. thematic investing.
    C. impact investing.

**Solutions**

1. C is correct. Corporate governance is the system of internal controls and procedures by which individual companies are managed.

2. C is correct. Both statements are correct.

3. C is correct. Both creditors and shareholders desire high profits, however dividends are only particular to shareholders.

4. A is correct. A decision to venture into new markets would increase the company's revenue and profits which is in the interest of both shareholders and employees. In a takeover scenario, the management may fear losing their employment; however, the offer may be attractive for shareholders. Similarly, a proposal to redraft the bonus structure can create a conflict in that shareholders would want to reduce expenses whereas the management would want higher bonuses.

5. B is correct. The board of director's responsibility is to protect shareholder interests and ensure the management works in the best interest of shareholders. Protecting management interests in front of shareholders is not a responsibility of the board.

6. B is correct. An increase in market value of a company can benefit management because their compensation is likely to be linked with company value. Shareholders directly benefit from higher market value. Customers are least likely to benefit from an increase in market value of the company.

7. B is correct. Management compensation does not directly impact the government's interest as a stakeholder. Being a tax collector, the government is interested in the company's profits whereas as in order to safeguard the interests of the public the government would want to ensure the environmental impact of the business's activities is not negative.

8. B is correct. The agency relationship is a relationship arising when a principal hires an agent to perform particular tasks or services where the agent is expected to act in the best interests of the principal.

9. A is correct. When shareholders have a high risk tolerance, they would support venturing into risky projects. The management however, would be more risk averse in order to secure their employment.

10. C is correct. In the given ownership structure the controlling shareholder would have more influence than minority shareholder and can use this position to the detriment of minority shareholders.

11. A is correct. The board's monitoring role can be compromised when management gives limited information to the board hence creating a conflict.

12. A is correct. Stakeholder management involves identifying, prioritizing, and understanding the interests of stakeholder groups, and, on that basis, managing the company's relationships with these groups.

13. B is correct. The stakeholder management framework includes legal infrastructure, contractual infrastructure, organizational infrastructure and governmental infrastructure.

14. C is correct. Governance procedures and practices are part of the organizational infrastructure.

15. C is correct. Approval of financial statements requires simple majority and is done at ordinary general meetings and do not require an extra-ordinary general meeting.

16. B is correct. A code of ethics and business conduct protects the rights of employees and ensures they are treated fairly.

17. C is correct. Collateral to secure a debt is used to protect creditors.

18. A is correct. A retired executive can have good terms with the senior management and thus the independence of the committee can be compromised.

19. A is correct. The nomination committee establishes criteria for the board of directors and the search process.

20. C is correct. Determination of factors constituting director independence is a responsibility of the nomination committee.

21. C is correct. Monitoring investment is the responsibility of the investment committee.

22. C is correct Proposing shareholder resolutions is a form of shareholder activism.

23. A is correct. In a proxy contest, shareholders are persuaded to vote for a group seeking a controlling position on a company's board of directors

24. A is correct. Effective corporate governance ensures control at all corporate levels which can help identify and manage risks at an early stage.

25. C is correct. Poor corporate governance can hinder a company's ability to meet its debt obligations and therefore increase its cost of debt.

26. B is correct. Dual share classes with different voting rights can create a divorce between ownership and voting control.

27. C is correct. Multiple directors engaging in related party transactions with the company can create a conflict of interest which can be of concern to investors.

28. C is correct Environmental pollution would be a concern for investment analysts as it can invite regulatory action against the company and imposition of penalties, which can lower profits.

29. C is correct. Excluding companies that violate environmental protection standards is an example of negative screening.

30. B is correct. Thematic investing strategies typically consider a single factor, such as energy efficiency or climate change.

**LO.a: Describe the capital budgeting process and distinguish among the various categories of capital projects.**

1. A large corporation embarks on an investment which exposes it to uncertainties and hence involves more people in the decision-making process, the project is *most likely* a:
   A. replacement project.
   B. new product or service.
   C. expansion project.

2. The post-audit stage of capital budgeting *least likely* includes:
   A. rescheduling and prioritizing of projects.
   B. indication of systematic errors.
   C. provision of future investment ideas.

**LO.b: Describe the basic principles of capital budgeting.**

3. When computing the cash flows for a capital project, which of the following is *most likely* to be included?
   A. Accounting income.
   B. Financing costs.
   C. Opportunity costs.

4. A company that sells energy drinks is evaluating an expansion of its production facilities to also produce soda drinks. The company's marketing department recommended producing soda drinks as it would increase the company's energy drinks sales because of an increase in brand awareness. What impact will the cash flows from the expected increase in energy drinks sales *most likely* have on the NPV of the soda drinks project?
   A. Decrease.
   B. Increase.
   C. No effect.

5. Which of the following is *least likely* classified as an externality?
   A. The cash flows generated by an old machine that is to be replaced.
   B. The cash flows from an investment that erodes sales of other products of the company.
   C. An investment that benefits society at large.

6. Which of the following is *least likely* to be included when determining cash flows during capital budgeting?
   A. Externalities.
   B. Opportunity cost.
   C. Sunk cost.

7. In the context of capital budgeting, an appropriate estimate of the incremental cash flows from a project is *least likely* to consider:
   A. opportunity costs.

B. externalities.
C. interest costs.

**LO.c: Explain how the evaluation and selection of capital projects is affected by mutually exclusive projects, project sequencing, and capital rationing.**

8. Two mutually exclusive projects have the following cash flows ($) and internal rates of return

| Project | IRR | Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|---|---|
| X | 26.36% | -2,340 | 240 | 729 | 505 | 3,680 |
| Y | 26.68% | -2,340 | 240 | 729 | 990 | 3,115 |

Assuming a discount rate of 10% annually for both projects, the firm should *most likely* accept:
A. both projects.
B. project X only.
C. project Y only.

9. A firm is analyzing different new projects for investment but cannot choose more than an outlay of $30 million. This is *most likely* due to:
A. capital rationing.
B. project sequencing.
C. new product or service.

10. Consider the following two mutually exclusive projects:

| Project | Year 0 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|
| Project A | -3518 | 2500 | 1450 | 500 |
| Project B | -3846 | 900 | 1500 | 2500 |

At an annual discount rate of 10% for both projects, the firm should *most likely* accept:
A. project A.
B. project B.
C. both projects.

11. Mutually exclusive capital budgeting projects A and B have similar outlays, but different pattern of future cash flows. The required rate of return for both projects is 12 percent, at which the NPV and IRR turn out to be as follows:

| | **Cash Flows** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **0** | **1** | **2** | **3** | **4** | **NPV** | **IRR (%)** |
| Project A | -100 | 0 | 0 | 0 | 200 | 24.20 | 18.92 |
| Project B | -100 | 40 | 40 | 40 | 40 | 19.19 | 21.86 |

The appropriate investment decision in this case is to:
A. invest in Project A because it has the higher NPV.
B. reject both projects as the decision is unclear.
C. invest in Project B because it has the higher IRR.

**LO.d: Calculate and interpret net present value (NPV), internal rate of return (IRR), payback period, discounted payback period, and profitability index (PI) of a single capital project.**

12. A project has the following cash flows (£):

| Year 0 | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|
| –3,250 | 1505 | 550 | 955 | 1,820 |

Assuming a discount rate of 7% annually, the discounted payback period (in years) is *closest* to:
    A. 3.1.
    B. 3.4.
    C. 3.7.

13. The project has the following annual cash flows:

| Year 0: | Year 1: | Year 2: | Year 3: | Year 4: |
|---|---|---|---|---|
| -$85,540 | $42,100 | $23,025 | $30,200 | $16,000 |

With a discount rate of 7%, the discounted payback period (in years) is *closest* to:
    A. 2.8.
    B. 3.1.
    C. 3.5.

14. A project investment of $100 generates after-tax cash flows of $50 in Year 1, $60 in Year 2, $120 in Year 3 and $150 in Year 4. The required rate of return is 15 percent. The net present value is *closest* to:
    A. $153.51.
    B. $158.33.
    C. $168.52.

15. A project manager is working on a complicated large-scale project for a company that will require multiple investments over time while giving cash-inflows in some years over a period of four years. He develops the following cash flow schedule for his project:

| | |
|---|---|
| Year 0 | -£900,000.00 |
| Year 1 | £6,344,400.00 |
| Year 2 | -£8,520,364.00 |
| Year 3 | £2,245,066.00 |
| Year 4 | £650,000.00 |

At which of the following discount rates is the project *least likely* to be undertaken?
    A. 18%.
    B. 16%.
    C. 13%.

16. Given below are the cash flows for a capital project. The required rate of return is 10 percent.

| **Year** | **0** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| Cash flow | (75,000) | 25,000 | 30,000 | 30,000 | 15,000 | 7,500 |

The discounted payback period is:

A. 1.01 years longer than the payback period.
B. 0.81 years longer than the payback period.
C. 1.21 years longer than the payback period.

17. A project has the following annual cash flows:

| Year 0 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| - 450,000 | - 1,000,000 | 1,000,000 | 1,000,000 |

What is the IRR of this project?

A. 7.5%.
B. 15.5%.
C. 19.5%.

18. A capital investment of $90,000 is expected to generate an after-tax cash flow of $50,000 one year from today and a cash flow of $55,000 two years from today. The cost of capital is 12 percent. The internal rate of return is *closest* to:

A. 7.89 percent.
B. 13.45 percent.
C. 10.74 percent.

19. A capital project with a net present value (NPV) of € 14.02 has the following cash flows in euros:

| Year | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Cash Flows | -150 | 40 | 40 | 50 | 60 | 40 |

The internal rate of return (IRR) for the project is *closest to*:

A. 10%.
B. 12%.
C. 16%.

20. An analyst determines the following cash flows for a capital project:

| Year | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Cash Flow ($) | -200 | 80 | 65 | 45 | 45 | 30 |

The required rate of return of the project is 12 percent. The net present value (NPV) of the project is *closest* to:

A. $1.0.
B. $1.5.
C. $3.5.

21. Given below are the cash flows for a capital project.

| **Year** | **0** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| Cash flow | (75,000) | 25,000 | 30,000 | 30,000 | 15,000 | 7,500 |

Assuming the cost of capital is 10 percent, the NPV and IRR are closest to:

<u>NPV</u> <u>IRR</u>

| | | |
|---|---|---|
| A. | 9,962 | 12.3% |
| B. | 5,521 | 15.9% |
| C. | 9,962 | 15.9% |

22. A project requires an initial outlay of $75,000. It is expected to result in positive cash flows of $20,000 for the first two years. Projections for the third and fourth year are $36,000 and $38,000 respectively. Given that the discount rate is 9%, the discounted payback for the project is *closest* to:
    A. 2.6 years.
    B. 3.0 years.
    C. 3.4 years.

23. Alpha Corporation is considering investing €500 million with expected after-tax cash inflows of €110 million per year for six consecutive years. The required rate of return is 8 percent. The project's payback period and discounted payback period, respectively, are *closest* to:
    A. 4.3 years and 5.4 years.
    B. 4.5 years and 5.9 years.
    C. 4.8 years and 5.9 years.

24. A perpetual after-tax cash flow stream of $2,000 is created by an investment of $15,000. The required rate of return is 8 percent. The investment's profitability index is *closest* to:
    A. 1.50.
    B. 1.67.
    C. 1.25.

25. Digital Design Corporation is considering an investment of £400 million with expected after-tax cash inflows of £100 million per year for five years and an additional after-tax salvage value of £50 million in Year 5. The required rate of return is 7.5 percent. What is the investment's PI?
    A. 0.8.
    B. 1.2.
    C. 1.1.

**LO.e: Explain the NPV profile, compare the NPV and IRR methods when evaluating independent and mutually exclusive projects, and describe the problems associated with each of the evaluation methods.**

26. At which point the net present value profiles of two mutually exclusive projects with normal cash flows are *most likely* to intersect the horizontal axis?
    A. Crossover rate for the projects.
    B. Internal rates of return of the projects.
    C. The company's weighted average cost of capital (WACC).

27. Alpha Corporation is considering investing €500 million with expected after-tax cash inflows of €110 million per year for six consecutive years. The required rate of return is 8 percent. The project's NPV and IRR are *closest* to:

| | NPV? | IRR? |
|---|---|---|
| A. | €7 million | 8.6% |
| B. | €9 million | 8.6% |
| C. | €11 million | 5.9% |

28. While developing the net present value (NPV) profiles for two investment projects, the analyst notes the only difference between the two projects is that Project Alpha is expected to receive larger cash flows early in the life of the project, while Project Beta is expected to receive larger cash flows late in the life of the project. The sensitivities of the projects' NPVs to changes in the discount rate is *best* described as:
    A. equal for the two projects.
    B. lower for Project Alpha than for Project Beta.
    C. greater for Project Alpha than for Project Beta.

29. Two mutually exclusive projects have conventional cash flows, but one project has a larger NPV while the other has a higher IRR. Which of the following *most likely* explains this conflict?
    A. The size of the two projects is the same.
    B. Risk of the projects as reflected in the required rate of return.
    C. Differing cash flow patterns.

30. Claude Browning is reviewing a profitable investment project that has a conventional cash flow pattern. If the cash flows of the project, initial outlay, and future after-tax cash flows all reduce by half, Browning would predict that the IRR would:
    A. stay the same and the NPV would decrease.
    B. stay the same and the NPV would stay the same.
    C. decrease and the NPV would decrease.

31. Erika Schneider has evaluated an investment proposal and found that its payback period is two years, it has a negative NPV, and a positive IRR. Is this combination of results possible?
    A. No, because a project with a positive IRR has a positive NPV.
    B. No, because a project with such a rapid payback period has a positive NPV.
    C. Yes.

32. Capital budgeting projects A and B have similar outlays, but different patterns of future cash flows. The required rate of return for both projects is 12 percent, at which the NPV and IRR turn out to be as follows:

| | **Cash Flows** | | | | | | |
|---|---|---|---|---|---|---|---|
| **Year** | **0** | **1** | **2** | **3** | **4** | **NPV** | **IRR (%)** |
| Project A | -50 | 0 | 0 | 0 | 110 | 17.77 | 21.79 |
| Project B | -50 | 22 | 22 | 22 | 22 | 15.02 | 27.18 |

The discount rate which would result in the same NPV for both projects is:
    A. a rate between 21.79 percent and 27.18 percent.

B. a rate between 0.00 percent and 12.00 percent.
C. a rate between 12.00 percent and 21.79 percent.

33. Katrina Lowry is facing multiple IRRs problem regarding an upcoming project.

| Year | 0 | 1 | 2 |
|---|---|---|---|
| Cash flows | -1.6 | 10 | -10 |

The NPV is zero when the discount rate is:
A. 25 percent only.
B. 25 percent and 600 percent.
C. 25 percent and 400 percent.

34. In the context of net present value (NPV) profiles of two projects, the crossover rate is *most appropriately* described as the discount rate at which:
A. two projects have the same NPV.
B. a project's NPV changes sign from negative to positive.
C. two projects have the same internal rate of return.

35. In the context of net present value (NPV) profiles, the point at which a profile crosses the vertical axis is *most appropriately* described as:
A. a project's internal rate of return when the project's NPV is equal to zero.
B. the sum of the undiscounted cash flows from a project.
C. the point at which two projects have the same NPV.

36. In the context of net present value (NPV) profiles, the point at which a profile crosses the horizontal axis is *most appropriately* described as:
A. a project's internal rate of return when the project's NPV is equal to zero.
B. the sum of the undiscounted cash flows from a project.
C. the point at which two projects have the same NPV.

37. A project with an initial investment of 50 has annual after-tax cash flows of 20 for four years. A project reengineering initiative decreases the outlay by 15 and the annual after-tax cash flows by 10. Consequently, the vertical intercept of the NPV profile of the reengineered project shifts:
A. up and the horizontal intercept shifts left.
B. down and the horizontal intercept shifts left.
C. down and the horizontal intercept shifts right.

**LO.f: Describe expected relations among an investment's NPV, company value, and share price.**

38. Gerald Phelps, a financial planner for a large industrial corporation, wants to employ a capital budgeting technique that is most directly related to stock price. He is *most likely* to use the:
A. discounted payback period.

B. net present value.
C. profitability index.

39. A company manager wants to assess the impact of a new project on shareholders' wealth. Which of the following capital budgeting techniques would be *most appropriate*?
    A. Internal rate of return.
    B. Net present value.
    C. Profitability index.

**Solutions**

1. B is correct. New product or service would involve more uncertainties and complex decision making.

2. A is correct. Rescheduling and prioritizing projects is part of the planning stage of the capital budgeting process, not the post-audit.

3. C is correct. Capital budgeting cash flows are based on opportunity costs. Accounting income is different from capital budgeting cash flows since non-cash items are included in it. Financing costs are not included in a cash flow calculation but are considered in the calculation of the discount rate

4. B is correct. The increase in energy drinks sales represents a positive externality that will increase the NPV of the project and should be included in the NPV analysis.

5. A is correct. Choices B & C are examples of an externality.

6. C is correct. Sunk costs are costs that cannot be avoided. These costs do not affect the 'accept or reject' decision. Therefore they are not included as part of the cash flow determination. Externalities include the resulting impact or the effects on a third party. These are taken into consideration when calculating cash flows. Opportunity costs are cash flows the firm will lose by taking up a certain project. These are also considered during capital budgeting.

7. C is correct. Including interest costs in the cash flows would result in double-counting the cost of debt as they are already taken into account when the cash flows are discounted at the appropriate cost of capital.

8. B is correct. Compute the NPV of both the projects at 10% discount rate. Using the financial calculator, enter CF for Years 0 – 4.
   Project X: CF0 = -2340, CF1 = 240, CF2 = 729, CF3 = 505, CF4 = 3680, I = 10, CPT NPV.
   NPV = $1,373.56.
   Project Y: CF0 = -2340, CF1 = 240, CF2 = 729, CF3 = 990, CF4 = 3115, I = 10, CPT NPV.
   NPV = $1,352.05.
   B is correct because Project X has a higher NPV and the projects are mutually exclusive, only Project X should be accepted.

9. A is correct. Capital rationing involves limited budget for investment.

10. A is correct. Plug in the relevant cash flows into the financial calculator for both the projects and compute the NPVs.
    Project A: CF0 = -3518, CF1 = 2500, CF2 = 1450, CF3 = 500, I = 10%, CPT NPV
    $NPV_A$ = $328.73
    Project B: CF0 = -3846, CF1 = 900, CF2 = 1500, CF3 = 2500, I = 10%, CPT NPV
    $NPV_B$ = $90.14

Since both projects are mutually exclusive i.e. the firm can only accept one, it would choose the one with the higher NPV which is A.

11. A is correct. When valuing mutually exclusive projects, the decision should be made with the NPV method because this method uses the most realistic discount rate, namely the opportunity cost of funds. In the example, the reinvestment rate for the NPV project (here 12 percent) is more realistic than the reinvestment rate for the IRR method (here 18.92 percent or 21.86 percent).

12. B is correct.

| **Year** | **Cash flow** | **Discounted cash flow = $\frac{CF_n}{(1.07)^n}$** | **Cumulative discounted cash flow [$CF_0$ – Cumulative PV cash flows]** |
|---|---|---|---|
| 0 | -3,250 | -3,250 | -3,250 |
| 1 | 1505 | 1406.54 | -1843.46 |
| 2 | 550 | 480.39 | -1363.07 |
| 3 | 955 | 779.56 | -583.51 |
| 4 | 1,820 | 1388.47 | 804.96 |

Proportionately, only 0.42 = ($583.51/$1388.47) of the cash flow in the fourth year is necessary to recover all of the investment. This makes the discounted payback equal to 3.4 years.

13. B is correct.

| **Year** | **Cash flow** | **Discounted cash flow $\frac{CF_n}{(1.07)^n}$** | **Cumulative discounted cash flow: [$CF_0$ – Cumulative PV cash flows]** |
|---|---|---|---|
| 0 | -85,540 | -85,540 | -85,540 |
| 1 | 42,100 | 39,346 | -46,194 |
| 2 | 23,025 | 20,111 | -26,083 |
| 3 | 30,200 | 24,652 | -1,431 |
| 4 | 16,000 | 12,206 | |

The discounted payback is 3.1 years: $(3 + \frac{1431}{12206})$

14. A is correct.

$$\text{NPV} = -100 + \frac{50}{1.15} + + \frac{60}{1.15^2} + \frac{120}{1.15^3} + \frac{150}{1.15^4} = 153.51$$

Using a financial calculator, enter the cash flows.

$CF_0$ = - 100, $CF_1$ = 50, $CF_2$ = -60, $CF_3$ = 120, $CF_4$ = 150, I = 15, CPT NPV. NPV = 153.51

15. C is correct. The question requires that NPV be found at each of the discount rates given as answer choices. When the NPV of cash flows is negative, the project is least likely to be undertaken.

Using a financial calculator, first enter the cash flows.

$CF_0$ **= -** 900,000, $CF_1$ = 6,344,400, $CF_2$ = -8,520,364, $CF_3$ = 2,245,066, $CF_4$ = 650,000
Then, determine the NPV for each of the given discount rates
When I = 13%, CPT NPV = -3,581
When I = 16%, CPT NPV = +34,600
When I = 18%, CPT NPV = +59,097
Hence, project will least likely be undertaken when the discount rate is 13% as the NPV is negative, while at the other two discount rates it is positive.

16. B is correct.

| **Year** | **0** | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| Cash flow | (75,000) | 25,000 | 30,000 | 30,000 | 15,000 | 7,500 |
| Cumulative cash flow | (75,000) | (50,000) | (20,000) | 10,000 | 25,000 | 32,500 |
| Discounted cash flow | (75,000) | 22,727.27 | 24,793.39 | 22,539.44 | 10,245.20 | 4,656.91 |
| Cumulative DCF | (75,000) | (52,272.73) | (27,479.34) | (4,939.89) | 5,305.31 | 9,962.22 |

As the table shows, the payback is between 2 and 3 years. The payback period is 2 years plus $\frac{20,000}{30,000}$ = 0.67 of the third year cash flow, or 2.67 years. The discounted payback is between 3 and 4 years. The discounted payback is 3 years plus $\frac{4,939.89}{10,245.20}$ = 0.48 of the fourth year cash flow, or 3.48 years. The discounted payback period is 3.48 – 2.67 = 0.81 years longer than the payback period.

17. C is correct. Enter the following values in a financial calculator: CF0 = -450,000, CF1 = -1,000,000, CF2 = 1,000,000, CF3 = 1,000,000, CPT IRR. IRR = 19.47%

18. C is correct. Enter the following values in a financial calculator: CF0= -90,000, CF1=50,000, CF2=55,000, CPT IRR. IRR = 10.74 percent.

19. C is correct. Enter the following values in a financial calculator: CF0 = -150, CF1 = 40, CF2 = 40, C03 = 50, C04 = 60, C05 = 40, CPT IRR. IRR = 15.57% rounding up to 16%.

20. A is correct. Enter the following values in a financial calculator: CF0 = -200, CF1 = 80, CF2 = 65, CF3 = 45, CF4 = 45, CF5 = 30, I = 12, NPV CPT = 0.897 ~ $1.0

21. C is correct.
Enter the following values in a financial calculator to determine NPV and IRR:
CF0 = -75,000, CF1=25,000, CF2=30,000, CF3=30,000, CF4=15,000, CF5=7,500, I=10, CPT NPV. NPV = 9962.22. CPT IRR. IRR = 15.94%.

22. C is correct.

| | Initial outlay | Year 1 | Year 2 | Year 3 | Year 4 |
|---|---|---|---|---|---|
| **Cash flow** | -75,000 | 20,000 | 20,000 | 36,000 | 38,000 |
| **Discounted cash flow** | -75,000 | 18,349 | 16,834 | 27,799 | 26,920 |
| **Cumulative DCF** | -75,000 | -56,651 | -39,817 | -12,018 | 14,902 |

$$\text{Discounted cash flow} = \frac{\text{Cash flow}}{(1 + \text{discount rate})^{n}}$$

$$\text{Discounted payback period} = 3 + \frac{12018}{26920} = 3.4$$

23. B is correct.

| **Year** | **0** | **1** | **2** | **3** | **4** | **5** | **6** |
|---|---|---|---|---|---|---|---|
| Cash flow | (500) | 110 | 110 | 110 | 110 | 110 | 110 |
| Cumulative cash flow | (500) | (390) | (280) | (170) | (60) | 50 | 160 |

The payback is between 4 and 5 years. The payback period is 4 years plus $\frac{60}{110}$ = 0.55 of the fifth year cash flow, or 4.55 years.

| **Year** | **0** | **1** | **2** | **3** | **4** | **5** | **6** |
|---|---|---|---|---|---|---|---|
| Cash flow | (500) | 110 | 110 | 110 | 110 | 110 | 110 |
| Discounted cash flow | (500) | 101.85 | 94.31 | 87.32 | 80.85 | 74.86 | 69.32 |
| Cumulative DCF | (500) | (398.15) | (303.84) | (216.52) | (135.67) | (60.81) | 8.51 |

The discounted payback is between 5 and 6 years. The discounted payback period is 5 years plus $\frac{60.81}{69.32}$ = 0.88 of the sixth year cash flow, or 5.88 years.

24. B is correct. The present value of future cash flows is PV = $\frac{2,000}{0.08}$ = 25,000

The profitability index is PI = $\frac{\text{PV}}{\text{Investment}}$ = $\frac{25,000}{15,000}$ = 1.67.

25. C is correct. Using the calculator:

CF0 = - 400, C01 = 100, F01 = 5, C02 = 50, F02 = 1, I = 7.5, CPT NPV.  NPV = 36.99.

PI = 1 + $\frac{36.99}{400}$ = 1.1

26. B is correct. For a project with normal cash flows, the NPV profile intersects the horizontal axis at the point where the discount rate is equal to the IRR. The crossover rate is the discount rate at which the NPVs of the projects are equal. While it is possible that the

crossover rate is equal to each project's IRR, it is not a likely event. The IRR for both projects being the firm's WACC will only arise when both projects have a NPV=0.

27. B is correct.
Enter the following values in a financial calculator to determine NPV and IRR.
CF0 = -500, C01 = 110, F01 = 6, I = 8, CPT NPV. NPV = 8.52 million euro. CPT IRR. IRR = 8.56 per cent.

28. B is correct. A delay in the receipt of cash flows (as in Project Beta) will make a project's net present value more sensitive to changes in the discount rate.

29. C is correct. Conflicts between the NPV decision and IRR are due to the scale/size of the project or the different cash flows pattern. Since the size is the same the difference in cash flows will cause the conflict.

30. A is correct. The IRR would stay the same because both the initial outlay and the after-tax cash flows halve, so that the return on each dollar invested remains the same. All of the cash flows and their present values also reduce in half. The difference between the total present value of the future cash flows and the initial outlay (the NPV) also halves.

31. C is correct. If the cumulative cash flows in the first two years equal the outlay and additional cash flows are not very large, this scenario is possible. For example, assume the outlay is 100, the cash flow in Year 1 and 2 is 50 each and the cash flow in Year 3 is 3. The required return is 10 percent. This project would have a payback of 2.0 years, an NPV of -10.97, and an IRR of 1.94 percent.

32. C is correct. For these projects, a discount rate of 15.09 percent would yield the same NPV for both (an NPV of 11.03). The cross over point needs to be before the lower IRR (21.79).

    Note: The discount rate (crossover point) at which both the projects have the same NPV is the IRR for the differences in cash flows of the projects. For instance, in this case, it is CF0 = 0, CF1 = -22, CF2 = -22, CF3 = -22, CF4 = 88, CPT IRR. IRR = 15.09%.

33. C is correct. The table below shows the NPV at different discount rates.

| Rate | 0% | 25% | 100% | 200% | 300% | 400% | 500% |
|---|---|---|---|---|---|---|---|
| NPV | -1.6 | 0.00 | 0.45 | 0.21 | 0.07 | 0.00 | -0.04 |

34. A is correct. The crossover rate is the rate at which the NPVs of the projects are the same.

35. B is correct. The vertical axis represents zero discount rate. The point at which the NPV profile crosses the vertical axis is simply the sum of undiscounted cash flows.

36. A is correct. The horizontal axis represents an NPV of zero. By definition, the project IRR gives an NPV of zero.

37. B is correct. The vertical intercept changes from 30 to 5 (NPV, when cost of capital is 0%), and the horizontal intercept (IRR, when NPV equals zero) changes from 21.86 percent to 5.56 percent.

38. B is correct. The NPV criterion is the criterion most directly related to stock prices. If a corporation invests in positive NPV projects, these should add to the wealth of its shareholders.

39. B is correct. NPV or Net Present Value is the most appropriate capital budgeting technique to be used because positive NPV projects add value to shareholder's wealth and a company's total value is the value of its existing investments in addition to the NPV of all of its future investments. Hence, it is the criterion that is most directly related to stock prices.

**LO.a: Calculate and interpret the weighted average cost of capital (WACC) of a company.**

1. The following data is available for a company:
   Cost of debt: 9%
   Cost of equity: 12%
   Debt-to-equity ratio (D/E): 100%
   Tax rate: 30%
   The weighted average cost of capital (WACC) is *closest* to:
   A. 6.30%.
   B. 9.00%.
   C. 9.15%.

2. The following information is available for a firm:
   Debt-to-equity ratio: 50%
   Tax rate: 30%
   Cost of debt: 12%
   Cost of equity: 19%,
   The firm's weighted average cost of capital (WACC) is *closest to*:
   A. 14.45%.
   B. 15.47%.
   C. 16.33%.

3. The following information is available for a firm:
   Cost of debt: 11%
   Cost of equity: 15%
   Debt-to-equity ratio (D/E): 50%
   Tax rate: 35%
   The weighted average cost of capital (WACC) is *closest* to:
   A. 10.82%.
   B. 11.08%.
   C. 12.39%.

4. A firm's estimated costs of debt, preferred stock, and common stock are 13%, 17%, and 22%, respectively. Assuming equal funding from each source and a 30% tax rate, the weighted average cost of capital is *closest* to:
   A. 15.45%.
   B. 16.03%.
   C. 17.33%.

5. An analyst gathers the following information about the capital structure and before-tax component costs for a company. The company's marginal tax rate is 35 percent.

| **Capital component** | **Book Value(000)** | **Market Value(000)** | **Component cost** |
|---|---|---|---|
| Debt | € 120 | € 100 | 6% |
| Preferred stock | € 60 | € 60 | 9% |
| Common stock | € 300 | € 240 | 13% |

| | | | |
|---|---|---|---|
| | | | |

The company's weighted average cost is *closest* to:

A. 10.13%.
B. 9.55%.
C. 10.56%.

6. A.F. Company has a debt to equity ratio of 60% and is subject to taxation at a rate of 40%. Its cost of equity is 17% while its cost of debt is 12.5%. A.F. Company's weighted average cost of capital is *closest* to:

A. 11.3%.
B. 13.4%.
C. 14.3%.

7. Golden Giants has the following capital structure which is funded from common stock, preferred stock and debt.

| **Source** | **Amount** | **Cost** |
|---|---|---|
| Common Stock | 100,000,000 | 16.0% |
| Preferred Stock | 2,000,000 | 14.5% |
| Debt | 18,000,000 | 12.0% |
| **Total** | 120,000,000 | |

If the tax rate is 35%, the company's weighted average cost of capital is *closest* to:

A. 14.2%.
B. 14.7%.
C. 15.4%.

8. Pamela Peterson computes the weighted average cost of capital (WACC) for the company Atom International. The information used for computation is as follows:

- Common equity has beta 1.2 while the risk free rate and market premium are 5% and 7% respectively.
- The preferred stock has value of $48 with a dividend worth $6.
- The corporate tax rate is 20%.
- Bonds are issued at par and have a coupon rate of 11%.
- Capital structure is 20% preferred stock, 35% debt and 45% common stock.

Atom International's WACC is *closest* to:

A. 9.1%.
B. 11.6%.
C. 12.4%.

9. An analyst gathers the following data about a company to compute its weighted average cost of capital (WACC).

| | |
|---|---|
| Before-tax cost of new debt | 10 percent |
| Tax rate | 35 percent |
| D/E | 0.6660 |

| | |
|---|---|
| Stock price | $30 |
| Next year's dividend | $2.50 |
| Estimated growth rate | 6.5 percent |

Using the dividend discount model, the company's WACC is *closest* to:

A. 11.50 percent.
B. 12.25 percent.
C. 13.00 percent.

10. Digital Design Corporation has an after-tax cost of debt capital of 7 percent, a cost of preferred stock of 9 percent, a cost of equity capital of 11 percent, and a weighted average cost of capital of 8.5 percent. In raising additional capital, the company intends to maintain its current capital structure. In order to make a capital - budgeting decision for an average risk project, the relevant cost of capital is:

    A. 7 percent.
    B. 8.5 percent.
    C. 11 percent.

**LO.b: Describe how taxes affect the cost of capital from different capital sources.**

11. A firm with a marginal tax rate of 40% has a weighted average cost of capital of 7.11%. The before-tax cost of debt is 6%, and the before-tax cost of equity is 9%. The weight of equity in the firm's capital structure is *closest* to:

    A. 27%.
    B. 65%.
    C. 89%.

12. Which of the following statements is *most likely* true?

    A. The investment opportunity schedule, for a given company, is upward sloping because as a company invests more in capital projects, the returns from investing keep on increasing.
    B. In order to determine the after-tax cost of debt, the appropriate tax rate to use is the average rate.
    C. The after-tax debt cost, for a given company, is generally less than both the cost of preferred equity and the cost of common equity.

13. Which of the following components of WACC is affected by taxes?

    A. Cost of equity.
    B. Cost of debt.
    C. Cost of preferred shares.

**LO.c: Describe the use of target capital structure in estimating WACC and how target capital structure weights may be determined.**

14. Gaven Warren at California Investment Advisors wants to estimate the cost of capital for Semiactive Conductors as well as projected cash flows for two of their projects to determine

the effect of these new projects on the value of Semiactive Conductors. Warren has gathered following information on Semiactive Conductors:

| | **Current ($)** | **Target ($)** |
|---|---|---|
| Book Value of Debt | 62 | 62 |
| Market Value of Debt | 59 | 63 |
| Book Value of Shareholder's Equity | 78 | 88 |
| Market Value of Shareholder's Equity | 230 | 240 |

Weights that should be applied to estimating the cost of debt and equity capital for Semiactive Conductors respectively are:

A. wd = 0.262; we = 0.738
B. wd = 0.208; we = 0.792
C. wd = 0.413; we = 0.587

15. In collecting information to conduct financial analysis on Budweiser's new product line of sparkling water, Simon Hayes found that Budweiser currently has a debt-to-equity ratio of 0.55 and the new product line would be financed with $45 million of debt and $65 million of equity. Hayes has estimated the equity beta and asset beta of comparable companies to determine the valuation impact of the new product line on Budweiser's value. Which of the following statements for calculating the equity beta for this new line of product is *most* accurate?
    A. Using the new debt-to-equity ratio of Budweiser that would result from the additional $45 million debt and $65 million equity is appropriate.
    B. Using the current debt-to-equity ratio of 0.55 is appropriate.
    C. Using the current debt-to-equity ratio of 0.55 is not appropriate, but the debt-to-equity ratio of the new product line i.e. 0.69 is appropriate.

**LO.d: Explain how the marginal cost of capital and the investment opportunity schedule are used to determine the optimal capital budget.**

16. An optimal capital budget occurs when the marginal cost of capital:
    A. is below the investment opportunity schedule.
    B. is above the project's rate of return.
    C. intersects the investment opportunity schedule.

17. Analyst 1: A company's optimal capital budget occurs at the intersection of the net present value and the internal rate of return profiles.
    Analyst 2: A company's optimal capital budget occurs at the intersection of the marginal cost of capital and the investment opportunity schedule.
    Which analyst's statements is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

**LO.e: Explain the marginal cost of capital's role in determining the net present value of a project.**

18. Information about a company is provided below. It is expected that the company will fund its capital budget without issuing any additional shares of common stock:

| Source of capital | Capital structure proportion | Marginal after-tax cost |
|---|---|---|
| Long-term debt | 30% | 12% |
| Preferred stock | 5% | 15% |
| Common equity | 65% | 20% |

Net present values of three independent projects:
Storage project: $348
Upgrade project: $0
Production line improvement project: -$231
If no significant size or timing differences exist among the projects and the projects all have the same risk as the company, which project has an internal rate of return that exceeds 17.35 percent?
   A. All three projects.
   B. Storage project only.
   C. Storage project and upgrade project.

19. If we use the company's marginal cost of capital in the calculation of the NPV of a project, we are *least likely* assuming that:
   A. the project has the same risk as the average-risk project of the company.
   B. no new projects will be undertaken until the current project is completed.
   C. the project will have a constant target capital structure throughout its useful life.

**LO.f: Calculate and interpret the cost of debt capital using the yield-to-maturity approach and the debt-rating approach.**

20. Which of the following is the *least appropriate* method for an external analyst to estimate a company's cost of debt?
   A. Yield-to-maturity approach.
   B. Bond yield plus risk premium approach.
   C. Debt rating approach.

21. If the bond rating approach is used to determine the cost of debt, then:
   A. yield is based on the interest coverage ratio.
   B. company is rated and the rating can be used to assess the credit default spread of the company's debt.
   C. coupon rate is the yield.

22. A company is considering issuing a 5-year option-free, 8 percent coupon bond, paid semi-annually. The bond is expected to sell at 98 percent of par value ($1,000). If the company's marginal tax rate is 35 percent, then the after-tax cost of debt is *closest* to:
   A. 8.50%.
   B. 5.53%.
   C. 6.35%.

23. A company issued $20 million in long-term bonds at par value three years ago with a coupon rate of 10 percent. The company has decided to issue an additional $20 million in bonds and expects the new issue to be priced at par value with a coupon rate of 8 percent. There is no other outstanding debt. The applicable tax rate is 35 percent. The appropriate after-tax cost of debt in order the compute the weighted average cost of capital is *closest* to:
    A. 5.2 percent.
    B. 5.8 percent.
    C. 6.1 percent.

24. ACME Minerals has determined that it could issue at $750 a seven-year maturity bond that pays 9.5% coupon semi-annually with a face value of $1000. If the marginal tax rate applicable in the company is 30%, its after-tax cost of debt will *most likely* be:
    A. 5.4 percent.
    B. 10.8 percent.
    C. 12.7 percent.

25. Which of the following statements describe matrix pricing *most accurately?* Matrix pricing:
    A. is used to calculate the coupon rate of a bond.
    B. helps to determine the equity risk premium in the market.
    C. is used in pricing bonds through the debt-rating approach.

**LO.g: Calculate and interpret the cost of noncallable, nonconvertible preferred stock.**

26. A company's $100 par value preferred stock with a dividend rate of 15.0% per year is currently priced at $105.85 per share. The company's earnings are expected to grow at an annual rate of 3% for the foreseeable future. The cost of the company's preferred stock is *closest* to*:*
    A. 12.9%.
    B. 13.5%.
    C. 14.2%.

27. RBS Insurance Limited issued to retail investors a fixed-rate perpetual preferred stock four years ago at par value of $10 per share with a $2.85 dividend. If the company had issued the preferred stock today, the yield would be 8.5 percent. The current value of the stock is:
    A. $10.00.
    B. $33.53.
    C. $43.85.

28. MTI issued a noncallable, nonconvertible, fixed rate perpetual preferred stock five years ago. The stock was issued at $15 per share with a $1.25 dividend. If the company were to issue preferred stock today, the yield would be 8.75 percent. The stock's current value is *closest* to:
    A. $13.26.
    B. $15.00.
    C. $14.29.

**LO.h: Calculate and interpret the cost of equity capital using the capital asset pricing model approach, the dividend discount model approach, and the bond-yield-plus risk-premium approach.**

29. The cost of equity capital is equal to the:
    A. rate of return required by stockholders.
    B. cost of retained earnings minus dividend yield.
    C. expected market return.

30. Using the dividend discount model, the cost of equity capital for a company which will pay a dividend of £2.00 next year, has a payout ratio of 35 percent, a return on equity (ROE) of 15 percent, and current stock price of £40, is:
    A. 10.51 percent.
    B. 12.25 percent.
    C. 14.75 percent.

31. The following information is available for a firm:
    Bonds are priced at par and they have an annual coupon rate of 10.3%
    Preferred stock is priced at $15.80 and it pays an annual dividend of $2.2
    Common equity has a beta of 1.1
    The risk-free rate is 3% and the market premium is 12%
    Capital structure: Debt = 35%; Preferred stock = 15%; Common equity = 50%
    The tax rate is 40%
    The weighted average cost of capital (WACC) for the company is *closest* to:
    A. 11.40.
    B. 12.35.
    C. 13.33.

32. A company wants to determine the cost of equity to use in calculating its weighted average cost of capital. The controller has gathered the following information:
    Rate of return on 3-month Treasury bills: 2.0%
    Rate of return on 10-year Treasury bonds: 2.4%
    Market equity risk premium: 4.0%
    The company's estimated beta: 1.2
    The company's after-tax cost of debt: 7.0%
    Risk premium of equity over debt: 3.0%
    Corporate tax rate: 30%
    Using the capital asset pricing model (CAPM) approach, the cost of equity (%) for the company is *closest* to:
    A. 6.8.
    B. 7.2.
    C. 7.9.

33. An analyst gathers the following information about a company and the market:

| | |
|---|---|
| Current market price per share of common stock | C$45.00 |
| The next dividend that the company will | C$2.50 |

| | |
|---|---|
| pay per share on common stock | |
| Expected dividend payout rate | 30% |
| Expected return on equity (ROE) | 12% |
| Beta for common stock | 1.2 |
| Expected return on the market portfolio | 9% |
| Risk free rate | 3% |

Using the dividend discount model approach, the cost of common equity for the company is *closest* to:

A. 10.20%.
B. 13.96%.
C. 12.50%.

34. An analyst has collected following information about a company and the market:

| | |
|---|---|
| Current market price per share of common stock | \$17.00 |
| Latest dividend ($D_0$) paid on common stock | \$ 1.50 |
| Expected dividend payout rate | 80% |
| Expected return on equity (ROE) | 17% |
| Beta | 0.75 |
| Expected rate of return on market portfolio | 15% |
| Risk-free rate of return | 5.25% |

According to the dividend discount model (DDM), the cost of retained earnings for the company is *closest* to:

A. 12.2 percent.
B. 11.9 percent.
C. 12.5 percent.

35. An analyst has collected following information about a company and the market:

| | |
|---|---|
| Current market price per share of common stock | \$17.00 |
| Latest dividend ($D_0$) paid on common stock | \$ 1.50 |
| Expected dividend payout rate | 80% |
| Expected return on equity (ROE) | 17% |
| Beta | 0.75 |
| Expected rate of return on market portfolio | 15% |
| Risk-free rate of return | 5.25% |

According to the Capital Asset Pricing Model (CAPM) approach, the cost of retained earnings for the company is *closest* to:

A. 12.6 percent.
B. 12.2 percent.
C. 13.2 percent.

**LO.i: Calculate and interpret the beta and cost of capital for a project.**

36. The average levered and average unlevered betas for the group of comparable companies of a private subcontractor of autoparts, are 1.5 and 1.01 respectively. The debt-equity ratio is 1.3 and corporate tax rate is 40%. The estimated beta for the private subcontractor is *closest* to:

A. 1.978.
B. 1.698.
C. 1.798.

37. A company has an equity beta of 1.2 and is 70% funded with debt. Assuming a tax rate of 30%, the company's asset beta is *closest* to:
    A. 0.46.
    B. 0.63.
    C. 0.71.

38. A company has an equity beta of 1.4. If the tax rate is 40%, and debt-to-equity ratio is 0.5, the asset beta is *closest* to:
    A. 1.08.
    B. 1.4.
    C. 1.96.

39. Kyushu Motors has historically maintained a long-term stable debt-to-equity ratio of 0.60. To finance expansion plans in Africa, recent bank borrowing raised this ratio to 0.75. The *most likely* effect of this increased leverage on the asset beta and equity beta of the company is that:
    A. the asset beta will rise and the equity beta will also rise.
    B. the asset beta will remain the same and the equity beta will rise.
    C. the asset beta will decline and the equity beta will also decline.

40. Cyndi collects data related to a company called Dinah Ltd. The asset beta of the company equals 0.64 while the equity beta is 1.80. Given that the tax rate is 40%, the percentage of capital funded by debt is *closest* to:
    A. 30%.
    B. 75%.
    C. 80%.

41. Morgan Private Limited currently has 1.5 million common shares of stock outstanding and the stock has a beta of 1.5. It also has a $9 million face value of bonds that have seven years remaining to maturity and 8 percent coupon with semi-annual payments, and are priced to yield 15.00 percent. If Morgan issues up to $2.0 million of new bonds, the bonds will be priced at par and have a yield of 15.00 percent; if it issues bonds beyond $2.0 million, the expected yield on the entire issuance will be 18 percent. Morgan has learned that it can issue new common stock at $10 a share. The current risk-free rate of interest is 5 percent and the expected market return is 12 percent. Morgan's marginal tax rate is 35 percent. If Morgan raises $7.5 million of new capital while maintaining the same debt-to-equity ratio, its weighted average cost of capital is be *closest* to:
    A. 10.2 percent.
    B. 12.2 percent.
    C. 14.4 percent.

**The following information is related to Questions 42-45**

David Burke, CFA, an investment banking analyst at Fundamental Analytics is working on initial public offering of a UK based small-cap mobile phone software development company, TagHere. For the previous three years, the industry has grown at a rate of 26 percent per year. The industry is dominated by large players, but comparable "pure-play" companies such as Galicia Ltd., Venus Inc., and ImPro Software Pvt. Ltd. also exist. Although each of these companies has their shares of stock traded on the London Stock Exchange, each one is domiciled in a different country. The debt ratio of the industry has risen slightly in recent years.

| **Company** | **Sales in Millions (£)** | **Market Value Equity in Millions (£)** | **Market Value Debt in Millions (£)** | **Equity Beta** | **Tax Rate** | **Share Price (£)** |
|---|---|---|---|---|---|---|
| Galicia Ltd. | 843 | 2,150 | 6.5 | 2.450 | 25 percent | 15 |
| Venus Inc. | 211 | 910 | 13.0 | 4.123 | 25 percent | 27 |
| ImPro Software Pvt. Ltd. | 752 | 4,315 | 0.0 | 1.514 | 25 percent | 12 |

Burke uses the information from the information memorandum for TagHere's initial offering. The company intends to issue 1 million new shares. While finalizing the price of the deal, it was concluded that the offering price will be between £5 and £10. The current capital structure of TagHere consists of a £3.6 million five-year non-callable bond issue and 2 million common shares. Other information is given below:

| | |
|---|---|
| Currently outstanding bonds | £3.6 million five-year bonds, coupon of 10.5 percent, with a market value of £3.234 million |
| Risk-free interest rate | 4.35 percent |
| Estimated equity risk premium | 5 percent |
| Tax rate | 25 percent |

42. The asset betas for Galicia Ltd., Venus Inc., and ImPro Software Pvt. Ltd., respectively, are:
    A. 2.44, 4.08 and 1.51.
    B. 1.56, 2.76 and 4.77.
    C. 2.44, 3.12 and 4.08.

43. The average asset beta for the pure players in this industry Galicia Ltd., Venus Inc., and ImPro Software Pvt. Ltd., weighted by market value of equity is *closest* to:
    A. 1.19.
    B. 2.10.
    C. 2.26.

44. Using the CAPM model, the cost of equity capital for a company in this industry with a debt-to-equity ratio of 0.03, asset beta of 3.14 and a marginal tax rate of 25 percent is *closest* to:
    A. 22.41 percent.
    B. 20.36 percent.
    C. 20.40 percent.

45. The marginal cost of capital for TagHere, based on an average asset beta of 3.14 for the industry and assuming that new stock can be issued at £7 per share, is *closest* to:
    A. 20.1 percent.
    B. 20.3 percent.
    C. 21.3 percent.

46. An analyst has collected following information about a private company and its publicly traded competitor:

| **Comparable Companies** | **Tax Rate (%)** | **Debt/Equity** | **Equity Beta** |
|---|---|---|---|
| Private company | 35.0 | 0.90 | N.A. |
| Public company | 30.0 | 0.70 | 1.15 |

Using the pure-play method, the estimated equity beta for the private company is *closest* to:
    A. 2.221.
    B. 3.221.
    C. 1.223.

**LO.j: Describe uses of country risk premiums in estimating the cost of equity.**

47. A developing country's equity premium *least likely* includes:
    A. sovereign yield spread.
    B. annualized standard deviation of the sovereign bond markets in terms of the developing country's currency.
    C. annualized standard deviation of the developing country's equity index.

48. An analyst has gathered the following information about the capital markets in the U.S. and in Montila, a developing country.

| **Selected Market Information (%)** | |
|---|---|
| Yield on U.S. 10-year Treasury bond | 6.5 |
| Yield on Montila, 10-year government bond | 12.5 |
| Annualized standard deviation of Montila stock index | 40.0 |
| Annualized standard deviation of Montila dollar-denominated government bond | 25.0 |

Based on the analyst's data, the estimated country equity premium for Montila is *closest* to:
    A. 8.41%.
    B. 9.60%.
    C. 10.40%.

**The following information related to Questions 49-54**

Shawn Miller, CFA, is a buy-side analyst for a foundation managing a global large-cap fund. He has hired the services of a telecommunications industry expert, Phillipa Jenkens. Miller is analyzing one of the fund's largest holdings, a mobile phone manufacturer Satellite QS operating globally in 50 countries with historical global revenues of $12.4 billion. Recently, Satellite's management announced expansion plans for a greenfield investment in Indonesia. Miller is concerned about the implications of the expansion plans on Satellite's risk profile and is wondering whether he should issue a 'sell' recommendation on the fund holding.

Miller provides Jenkens with basic company information. Satellite's global annual free cash flow to the firm is $700 million, which is expected to level off at a 3.5 percent growth rate and earnings are $550 million. Miller estimates that Satellite's after-tax free cash flows to the firm on the Indonesia project for the next four years are $60 million, $64 million, $67.5 million and $70.4 million. The company has just recently announced a dividend of $2.5 per share of stock. To keep the analysis simple, Miller asks Jenkens to ignore any possible exchange rate fluctuations. For the first four years, the Indonesian plant is expected to serve Indonesian customers only. Jenkens has been assigned to evaluate Satellite's financing plans of $130 million with a $97.50 million public offering of 8-year debt in the US and the remainder to be financed by means of equity offering.

**Additional information:**

| | |
|---|---|
| Equity risk premium, US | 3.20 percent |
| Risk-free rate of interest, US | 1.50 percent |
| Industry debt-to-equity ratio | 0.45 |
| Market value of Satellite's debt | $750 million |
| Market value of Satellite's equity | $3.2 billion |
| Satellite's equity beta | 1.05 |
| Satellite's before-tax cost of debt | 5.25 percent |
| Indonesia credit A2 country risk premium | 4.58 percent |
| Corporate tax rate | 35 percent |
| Interest payments each year | Level |

49. Satellite's cost of equity capital for a typical project using the capital asset pricing model is *closest* to:
    A. 2.94 percent.
    B. 4.59 percent.
    C. 4.86 percent.

50. The weighted average cost of capital of Satellite QS prior to investing in Indonesia is *closest* to:
    A. 2.94 percent.
    B. 4.59 percent.
    C. 4.86 percent.

51. In estimating the project's cost of capital, the estimated asset beta of Satellite QS prior to investing in Indonesia is *closest* to:
    A. 0.911.
    B. 0.915.
    C. 1.302.

52. Miller wants to conduct sensitivity analysis for the effect of the new project on the company's cost of capital. The estimated project beta for Indonesia project if it is financed with 75% with debt and has the same asset risk as Satellite, is *closest* to:

A. 3.841.
B. 2.699.
C. 2.688.

53. The cost of equity capital for the Indonesia project considering that this project requires to capture the country risk premium, that would form part of the sensitivity analysis that Miller wants to conduct for the effect of the new project on the company's cost of capital, is *closest* to:
    A. 22.41 percent.
    B. 23.17 percent.
    C. 26.87 percent.

54. In the final presentation to the senior fund manager, Miller wants to discuss the sensitivity of the project's NPV to the estimation of the cost of equity. The Indonesia project's NPV calculated without the country risk premium and with the country risk premium are, respectively:
    A. \$95 million and \$73 million.
    B. \$101 million and \$85 million.
    C. \$101 million and \$73 million.

**LO.k: Describe the marginal cost of capital schedule, explain why it may be upward-sloping with respect to additional capital, and calculate and interpret its break-points.**

55. An analyst gathers the following information about the cost and availability of raising various amounts of new debt and equity capital for a company:

| Amount of new debt (in millions) | Cost of debt (After tax) | Cost of new equity (in millions) | Cost of equity |
|---|---|---|---|
| ≤ \$5.0 | 3% | ≤ \$6.0 | 12% |
| > \$5.0 | 5% | >\$6.0 | 14% |

The company's target capital structure is 65% equity and 35% debt. If the company raises \$12.5 million in new financing, the marginal cost of capital is *closest to*:
    A. 9.8%.
    B. 11%.
    C. 10.15%.

56. Which of the following is *least likely* a reason for why the marginal cost of capital of a company rises as additional funds are raised?
    A. Debt covenants restrict the company from issuing senior debt and consequently it issues subordinate debt.
    B. The company deviates from its target capital structure.
    C. The company issues additional equity at a time when the cost of equity is significantly lower than historical levels; it also issues additional debt to maintain the overall debt/equity ratio at an optimal level.

**LO.l: Explain and demonstrate the correct treatment of flotation costs.**

57. Scott Harris, a financial planner for a manufacturing corporation, wants to account for the floatation costs in his capital budgeting. The *most appropriate* treatment of floatation costs is to:
    A. expense in the current period.
    B. incorporate into the estimated cost of capital.
    C. deduct as one of the project's initial-period cash flows.

58. Analyst 1: Using the adjustment for the flotation costs in the cost of capital may be useful if specific project financing cannot be identified.
    Analyst 2: By adjusting the cost of capital for the flotation costs, it is easier to demonstrate how costs of financing a company change as a company exhausts internally generated equity (i.e., retained earnings) and switches to externally generated equity.
    Which analyst's statements is (are) *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

**Solutions**

1. C is correct. $w_d = \frac{\frac{D}{E}}{1+\frac{D}{E}} = \frac{1}{1+1} = 50\%$
   $w_e = 1 - w_d = 50\%$
   $WACC = w_d r_{d(1-t)} + w_e r_e$
   $WACC = 50\% * 9\% * (1 - 30\%) + 50\% * 12\% = 9.15\%$

2. B is correct. $w_d = \frac{\frac{D}{E}}{1+\frac{D}{E}} = \frac{0.5}{1+0.5} = 33.3\%$
   $w_e = 1 - w_d = 66.7\%$
   $WACC = w_d r_{d(1-t)} + w_e r_e$
   $WACC = 33.3\% * 12\% * (1 - 30\%) + 66.7\% * 19\% = 15.47\%$

3. C is correct. $w_d = \frac{\frac{D}{E}}{1+\frac{D}{E}} = \frac{0.5}{1+0.5} = 33.3\%$
   $w_e$= 1 - = 66.7%
   $w_e = 1 - w_d = 66.7\%$
   $WACC = w_d r_{d(1-t)} + w_e r_e$
   $WACC = 33.3\% * 11\% * (1 - 35\%) + 66.7\% * 15\% = 12.39\%$

4. B is correct. $WACC = w_d r_d (1 - t) + w_p r_p + w_e r_e = \frac{[0.13 * (1 - 0.30) + 0.17 + 0.22]}{3} = 16.03\%.$

5. A is correct. The company's weighted average cost WACC is equal to:
   $WACC = w_d r_d (1 - t) + w_p r_p + w_e r_e$
   The target capital structure is:
   Market value of equity = $\frac{240}{400}$ = 60%
   Market value of debt = $\frac{100}{400}$ = 25%
   Market value of preferred stock = $\frac{60}{400}$ = 15%
   $r_d(1 - t) = 6\% (1 - 35\%) = 3.90\%$
   $r_e = 13\%$
   $r_p = 9\%$
   $WACC = 0.25 * 3.9\% + 0.15 * 9\% + 0.60 * 13\% = 10.13\%$

6. B is correct. $w_d = \frac{\frac{D}{E}}{1+\frac{D}{E}} = \frac{0.6}{1+0.6} = 0.375$
   $w_e = 1 - w_d = 1 - 0.375 = 0.625$
   $WACC = w_d r_{d(1-t)} + w_e r_e = (0.375 * 0.125 * (1 - 0.4)) + (0.625 * 0.17)$
   $= 13.44\%$

7. B is correct. $WACC = w_d r_d (1 - t) + w_p r_p + w_e r_e$

$= [\left(\frac{18}{120}\right) * 0.12 * (1 - 0.35)] + [\left(\frac{2}{120}\right) * 0.145] + [\left(\frac{100}{120}\right) * 0.16]$
= 14.745%

8. B is correct. WACC = $w_d r_d \left(1 - t\right) + w_p r_p + w_e r_e$

   $r_e = \text{Risk free rate} + \beta\,(\text{Market risk premium})$
   $r_e = 5 + 1.2(7) = 13.4\%$
   $r_d = \text{Debt rate}\,(1 - \text{tax rate})$
   $r_d = 11\,(1 - 0.2) = 8.8\%$
   $r_p = \frac{\text{Dividend}}{\text{Price}} = \frac{6}{48} = 12.5\%$
   $\text{WACC} = .134 * 0.45 + .088 * 0.35 + .125 * 0.20$
   WACC = 11.6%

9. A is correct. Cost of equity = $\left(\frac{D_1}{P_0}\right) + g = \left(\frac{\$2.50}{\$30}\right) + .065$ = 8.3% + 6.5% = 14.8%
   $w_d = \frac{D/E}{D/E + 1} = \frac{0.6660}{1.6660} = 0.40$
   $\text{WACC} = [(0.40)\,(0.10)\,(1 - 0.35)] + [(0.60)(0.148)] = 11.5\%$

10. B is correct. The best estimate of cost of capital for an average-risk project of a company is the weighted average cost of capital using weights derived from the current capital structure.

11. B is correct. Taxes affect cost of debt only, since interest is tax deductible.
    $\text{WACC} = w_d\, r_d\, (1 - t) + w_e\, r_e$, where $w_d + w_e = 1$
    $7.11 = (1 - w_e) * 6 * (1 - 0.4) + w_e * 9$
    $w_e = 65\%$

12. C is correct. Generally, debt is less costly than both preferred and common stock. If interest expense is tax deductible, then the cost of debt is further reduced.

13. B is correct. Interest is tax deductible and it provides tax savings which lowers the cost of debt.

14. B is correct. Use the market values of debt and equity to calculate their weights.
    $w_d = \frac{\$63}{\$63 + \$240} = 0.208$
    $w_e = \frac{\$240}{\$63 + \$240} = 0.792$

15. C is correct. When making adjustments from the asset beta, derived from the comparables, to calculate the equity beta of the new product, the correct approach is to use the debt-to-equity ratio of the new product line.

16. C is correct. An optimal capital budget occurs when the marginal cost of capital intersects the investment opportunity schedule.

17. B is correct. The point at which the marginal cost of capital intersects the investment opportunity schedule is the optimal capital budget.

18. B is correct.
The WACC of the company is calculated as follows:
$0.3(12\%) + 0.05(15\%) + 0.65(20\%) = 17.35\%$. To have a positive NPV, a project must have an IRR greater than the WACC used to calculate the NPV. Only the storage project has a NPV greater than $0 (at the company's WACC of 17.35%), therefore only the storage project has an IRR that exceeds 17.35%.

19. B is correct. Statement B is not an assumption we make when using the company's marginal cost of capital to calculate the NPV of a project.

20. B is correct. Bond yield plus risk premium is used to calculate cost of equity not cost of debt. The other two are approaches to calculate cost of debt.

21. B is correct. The bond rating approach depends on knowledge of the company's rating and can be compared with yields on bonds in the public market.

22. B is correct. Using the financial calculator, determine the yield.
N = 10, PV = -980, PMT = 80/2 = 40, FV = 1000, CPT I/Y = 4.25 semi-annual
Annual yield = 4.25 * 2 = 8.50 before tax
After-tax cost of debt: 8.50% (1 – 35%) = 5.525~ 5.53%

23. A is correct. The appropriate cost is the marginal cost of debt. The before-tax cost of debt can be calculated by the yield to maturity on a comparable outstanding. After adjusting for tax, the after-tax cost of debt is 8(1 – 0.35) = 8(0.65) = 5.2%.

24. B is correct.
$FV = \$1000;\ PMT = \$47.5;;\ N = 14;\ PV = \$750$, CPT I/Y
I/Y = 7.7361%; $YTM = 7.7361\% * 2 = 15.47220\%$
After-tax cost of debt: $r_d(1-t) = 15.47220\%(1 - 0.30) = 10.8305\%$

25. C is correct. Debt-rating approach which is used to estimate the before-tax cost of debt is an example of the matrix pricing method. Matrix pricing method involves pricing on the basis of valuation-relevant characteristics.

26. C is correct. $r_p = \frac{D_p}{P_p}$ (or Dividend / Price) = $\frac{\$100 * 0.15}{\$105.85}$ = 14.17%

27. B is correct. The company can issue preferred stock today at 8.5%.
$$P_p = \frac{\$2.85}{0.085} = \$33.53$$

28. C is correct. Value of preferred stock = $P_p = \frac{D_p}{r_p}$

$$P = \frac{1.25}{.0875} = \$14.29$$

29. A is correct. The cost of equity capital is the rate of return required by stockholders.

30. C is correct. Using the sustainable growth calculation, the growth rate is calculated as:

$$g = (1 - \text{Dividend payout ratio})(\text{Return on Equity}) = (1 - 0.35)(15\%) = 9.8\%$$

$$r_e = \left(\frac{D_1}{P_0}\right) + g = \left(\frac{\$2.00}{\$40}\right) + 9.80\% = 14.75\%$$

31. B is correct. $r_d$ = 10.3%, the yield to maturity on a par value bond is the coupon rate of the bond.

$$r_p = \frac{D_p}{P_p} = \frac{2.2}{15.8} = 13.9\%$$

$$r_e = RF + [(RM) - RF] = 3\% + 1.1[12\%] = 16.2\%$$

$$WACC = w_d r_d (1 - t) + w_p r_p + w_e r_e$$

$$= 35\% * 10.3\% * (1 - 40\%) + 15\% * 13.9\% + 50\% * 16.2\% = 12.35\%$$

32. B is correct. The cost of equity using CAPM:

Cost of equity = 2.4 + 1.2 * (4.0) = 7.2%.

33. B is correct. Using the DDM cost of common equity= dividend yield + growth = $\frac{D_1}{P} + g$

Growth = Retention rate * ROE = (1-payout) * ROE = $(1 - 0.30) * 12\% = 8.40\%$

Dividend yield = $\frac{2.50}{45.00}$ =5.56%

Hence cost of common equity = 5.56% + 8.40% = 13.96%

34. C is correct.

Expected return = expected dividend yield + expected growth = $\frac{D_1}{P} + g$

Expected growth = $(1 - 0.80)17\%$ = 3.4%.

Expected dividend yield = $\frac{1.5 * 1.034}{17} = 0.091$ = 9.1%.

Expected return = 3.4% + 9.1% = 12.5%.

35. A is correct. Using the CAPM method, 5.25% + 0.75 (9.75%) = 12.56%.

36. C is correct.

Estimated beta = $1.01[1 + (1.3)(1 - 40\%)]$ = 1.798.

37. A is correct. Note: 70% debt financing is equivalent to a D/E ratio of 2.33 = $\frac{0.70}{1 - 0.70}$.

$$ß_A = ß_E * \left[\frac{1}{1+\frac{[1-t]D}{E}}\right] = \frac{1.2}{1 + (1 - 0.30) * 2.33} = 0.46.$$

38. A is correct. $\beta_E = \beta_A * \left[1 + (1 - t) * \frac{D}{E}\right]$
$1.4 = \beta_A [1 + (1 - 0.4) * 0.5]$
$1.4 = \beta_A * [1 + 0.6 * 0.5]$
$1.4 = \beta_A * 1.3$
$\beta_A = 1.08$

39. B is correct. Asset risk does not change with a higher debt-to-equity ratio. Equity risk rises with higher debt.

40. B is correct. $\beta_E = \beta_A * \left[1 + (1 - t) * \frac{D}{E}\right]$
$1.8 = 0.64 \left[1 + (1 - 0.4)\left(\frac{D}{E}\right)\right]$
$\frac{D}{E} = 3.02$
% of debt = $\frac{3.02}{3.02+1} = 75\%$

41. C is correct. The steps to determine WACC are outlined below:
- First calculate the market value of debt
  FV = $9,000,000, PMT = $360,000, N = 14, I/Y = 7.50%, CPT PV. PV = $ 6,325,917.
- Calculate the market value of equity. 1.5 million shares outstanding at $10 = $15,000,000
- Calculate the weights of debt and equity in the capital structure.

| | | |
|---|---|---|
| Market value of debt | $6,325,917 | 30% |
| Market value of equity | 15,000,000 | 70% |
| Total capital | $21,325,917 | 100% |

- Calculate the before-tax cost of debt. To raise $7.5 million of new capital while maintaining the same capital structure, the company would issue $7.5 million * 30% = $2.25 million in bonds, which results in a before-tax rate of 18 percent.
- Calculate WACC:
  $r_d (1 – t) = 0.18(1 – 0.35) = 0.117$ or 11.7%
  $r_e = 0.05 + 1.5 (0.12 - 0.05) = 0.155$ or 15.5%
  WACC = $[0.30(0.117)] + [0.70(0.155)] = 0.0351 + 0.1085 = 0.1436$ or 14.36%

42. A is correct. Asset betas = $\frac{\beta_{equity}}{\left[1 + (1 - t)\left(\frac{D}{E}\right)\right]}$
Galicia: $\frac{2.450}{[1 + (1 - 0.25)(0.003)]} = 2.444$
Venus: $\frac{4.123}{[1 + (1 - 0.25)(0.014)]} = 4.079$

ImPro: $\frac{1.514}{[1+(1-0.25)(0)]}$ = 1.5140

43. B is correct.
Weights are calculated using relative market values:

| Pure-Play | Market Value of Equity in Millions | Proportion of Total |
|---|---|---|
| Galicia | £2,150 | 0.2915 |
| Venus | 910 | 0.1234 |
| ImPro | 4,315 | 0.5851 |
| Total | £7,375 | 1.000 |

Weighted average beta (0.2915) (2.444) + (0.1234) (4.079) + (0.5851) (1.5140) = 2.10.

44. C is correct.
Asset beta = 3.14
Levered beta = $3.14\left(1+\left[\left(1-0.25\right)(0.03)\right]\right)$ = 3.2107
Cost of equity capital = 0.0435 + (3.2107) (0.05) = 0.2040 or 20.40%

45. B is correct.
For debt: FV = 3,600,000; PV = - 3,234,000; N = 10; PMT = 189,000, CPT I/Y. I/Y = 0.06676. YTM = Before-tax cost of debt = 13.4%
Market value of equity = 2 million shares outstanding + 1 million newly issued shares = 3 million shares at £7 = £21 million
Total market capitalization = £3.234 million + £21 million = £24.234 million
Levered beta = $3.14\left[1+\left[\left(1-0.25\right)\left(\frac{3.234}{21}\right)\right]\right]$ = 3.5027
Cost of equity = $0.0435 + (3.5027)(0.05)$ = 0.2186 or 21.86%
Debt weight = $\frac{£3.234}{£24.234}$ = 0.1334
Equity weight = £21/£24.234 = 0.8666
TagHere's MCC = $[(0.1334)(0.134)(1-0.25)] + [(0.8666)(0.2186)] = 0.01336 + 0.18946$ = 0.20282 or 20.28%

46. C is correct. The asset (unlevered) beta for the public company is calculated as follows:
$\frac{1.15}{[1+(1-0.30)(0.70)]}$ = 0.772.
Now calculating the levered beta for the private firm using its target debt ratio:
$$0.772 * [1+(1-0.35)(0.90)]$$
= 1.223.

47. B is correct. The annualized standard deviation of the sovereign bond market in terms of the developing country's currency is not part of the equity premium calculation.

Country equity risk premium

$$= \text{Sovereign yield spread} * \frac{\text{annualized standard deviation of equity index}}{\begin{array}{c}\text{annualized standard deviation of the}\\ \text{sovereign}\\ \text{bond market in terms of the}\\ \text{developed market currrency}\end{array}}$$

48. B is correct. The country equity premium can be estimated as the sovereign yield spread times the volatility of the country's stock market relative to its bond market.
    Montila's equity premium = $(0.125 - 0.065)\left(\frac{0.4}{.25}\right)$= 6% * 1.6 = 9.60%

49. C is correct. $r_e$ = 0.0150 + (1.05) (0.0320) = 0.0486 or 4.86%

50. B is correct.
    WACC = $\left[\left(\frac{\$750}{\$3{,}950}\right)(0.0525)(1 - 0.35)\right] + \left[\left(\frac{\$3{,}200}{\$3{,}950}\right)(0.0486)\right]$ = 0.0459 or 4.59%

51. A is correct. Asset beta = Unlevered beta = $\frac{1.05}{1+\left[(1 - 0.35)\left(\frac{\$750}{\$3{,}200}\right)\right]}$ = 0.911

52. C is correct. Project beta = $0.911\left[1 + \left[(1 - 0.35)\left(\frac{\$97.5}{\$32.5}\right)\right]\right]$ = 0.911 {2.96} = 2.688

53. A is correct. $r_e$ = 0.0150 + 2.688(0.0320 + 0.0458) = 0.2241 or 22.41%

54. B is correct.
    Cost of equity without the country risk premium:
    $r_e$ = $0.0150 + 2.688(0.0320)$ = 0.1010 or 10.10%
    Cost of equity with the country risk premium:
    $r_e$ = $0.0150 + 2.688(0.0320 + 0.0458)$ = 0.2241 or 22.41%
    Weighted average cost of capital without the country premium:
    WACC = [0.75(0.0525) (1 – 0.35)] + [0.25(0.1010)] = 0.0508 or 5.08%
    Weighted average cost of capital with the country premium:
    WACC = [0.75(0.0525) (1 – 0.35)] + [0.25(0.2241)] = 0.0816 or 8.16%

    NPV without the country risk premium:
    Enter the following values in a financial calculator to calculate the NPV:
    CF0 = -130, CF1 = 60, CF2=64, CF3=67.5, CF4 = 70.4, I = 5.08, CPT NPV; NPV = 100.97

    NPV with the country risk premium:
    Enter the following values in a financial calculator to calculate the NPV:
    CF0 = -130, CF1 = 60, CF2=64, CF3=67.5, CF4 = 70.4, I = 8.16, CPT NPV; NPV = 84.96

55. C is correct. As a company raises more funds, the costs of different sources of capital may change, resulting in a change in the weighted average cost of capital.
    $\text{WACC} = w_d(1 - t)r_d + w_p r_p + w_e r_e$

The target capital structure is:
Equity = 65%
Debt = 35%
New financing \$12.5 million
65% of 12.5 m = \$8.125 million
35% of 12.5 m = \$ 4.375 million
$r_d(1 – t) = 3\%$; $r_e = 14\%$
Hence WACC = 0.35 * 3% + 0.65 * 14% = 10.15%.

56. C is correct. Issuing subordinate debt will cause the cost of debt and hence the cost of capital to increase. If a company deviates from its target capital structure it is likely that the cost of capital will rise. If the company issues additional equity when the cost of equity is relatively low, this is likely to reduce the cost of capital as long as the company maintains its capital structure.

57. C is correct. Floatation costs are an additional cost of the project and should be incorporated as an adjustment to the initial-period cash flows in the valuation computation.

58. C is correct. Both statements on why we see the adjustment of floatation costs in the cost of capital instead of the net present value calculation are correct.

**cLO.a: Define and explain leverage, business risk, sales risk, operating risk, and financial risk, and classify a risk.**

1. The risk associated with the market demand for a product and the price received for it is *best* described as:
    A. Business risk.
    B. Operating risk.
    C. Sales risk.

2. Business risk of a company reflects both its:
    A. Sales risk and financial risk.
    B. Financial risk and operating risk.
    C. Operating risk and sales risk.

3. Financial risk is *least likely* affected by:
    A. Debt.
    B. Dividends.
    C. Long-term leases.

**LO.b: Calculate and interpret the degree of operating leverage, the degree of financial leverage, and the degree of total leverage.**

4. The unit contribution margin for a product is $12. A firm's fixed operating cost is $600,000. The degree of operating leverage (DOL) is *most likely* the lowest at which of the following production levels (in units)?
    A. 100,000.
    B. 200,000.
    C. 300,000.

5. While analyzing the impact of the economy's growth on the revenues generated by Com Point, Mr. Shah recorded earnings of Rs.200 billion and expected them to grow by 10% due to the increasing demand. To evaluate the impact of this, he wants to calculate the operating leverage with the following data:

| | |
|---|---|
| Sales in 2009 | 22.5 million computers |
| Average price per computer | Rs.90,000 |
| Fixed costs for the period | Rs.33 billion |
| Variable costs per computer | Rs.70,000 |

What is the degree of operating leverage (DOL)?
    A. 1.03.
    B. 1.08.
    C. 1.33.

6. Degree of operating leverage is best described as a measure of the sensitivity of:
    A. Net earnings to changes in sales.
    B. Fixed operating costs to changes in variable costs.

C. Operating earnings to changes in the number of units sold.

7. Soma Autos employs debt financing, borrowing at a rate of 10%. The interest cost at this rate equals Rs.65 billion. For 8 million cars, what is the degree of financial leverage (DFL) for Soma given revenue per car is Rs.25,000, variable cost per car is Rs.14,000 and fixed costs equal Rs.15 billion?
   A. 8.67.
   B. 9.13.
   C. 10.76.

8. For firms with a high proportion of fixed costs relative to total costs, a small change in sales will cause a:
   A. Large change in earnings.
   B. Decrease in debt to equity ratio.
   C. Small change in earnings.

9. The following data is available for two companies.

| | **Siptea** | **Brewers** |
|---|---|---|
| Number of units sold | 200,000 | 200,000 |
| Sales price per unit | $150 | $150 |
| Variable cost per unit | $43 | $98 |
| Fixed operating cost | 500,000 | 150,000 |
| Fixed financing cost | 100,000 | 50,000 |

The DOL for Siptea and Brewers are *closest* to:

   A. 1.54 and 1.32 respectively.
   B. 1.024 and 1.015 respectively.
   C. 1.067 and 1.021 respectively.

10. Asparagus Inc. and Supras Inc. have the same revenue and operating income but Asparagus is more highly leveraged relative to Supras. Which of the following statements is *least likely* correct?
   A. Asparagus will have a lower net income relative to Supras.
   B. Asparagus will have a higher ROE relative to Supras.
   C. Both companies will have the same operating leverage.

11. The following data is available for Ejaz Business:

| | **Ejaz Business** |
|---|---|
| Number of units sold | 1 million |
| Sales price per unit | Rs. 100 |
| Variable cost per unit | Rs. 20 |
| Fixed operating cost | 5 million |
| Fixed financing cost | 1 million |

The degree of total leverage for the company is *closest* to:
   A. 1.02.

B. 1.08.
C. 1.12.

12. Which of the following is not affected by changes in tax rate?
    A. Net Profit Margin.
    B. WACC.
    C. DFL.

13. Which of the following is the *most appropriate* reason for analysts to understand a company's use of operating and financial leverage?
    A. To analyze the past performance of the company.
    B. To evaluate the operating margin of the company.
    C. To forecast future cash flows and select an appropriate discount rate.

14. Using the firm's income statement presented below, its degree of financial leverage is *closest* to:

| **Income Statement** | **$ millions** |
|---|---|
| Revenues | 15.2 |
| Variable Operating Costs | 9.8 |
| Fixed Operating Costs | 3.5 |
| Operating Income | 1.9 |
| Interest | 1.0 |
| Taxable Income | 0.9 |
| Tax | 0.2 |
| Net Income | 0.7 |

    A. 1.6.
    B. 2.1.
    C. 2.7.

15. Using the company's income statement presented, its degree of operating leverage is *closest* to:

| **Income Statement** | **$ millions** |
|---|---|
| Revenues | 10.5 |
| Variable Operating Costs | 6.8 |
| Fixed Operating Costs | 2.5 |
| Operating Income | 1.2 |
| Interest | 0.4 |
| Taxable Income | 0.8 |
| Tax | 0.2 |
| Net Income | 0.6 |

    A. 3.1.
    B. 3.4.
    C. 6.2.

16. A manufacturing company has the following income statement.

| **Income Statement** | **$ millions** |
|---|---|

| | |
|---|---|
| Revenues | 1100 |
| Variable costs | 450 |
| Fixed costs | 225 |
| EBIT | 425 |
| Interest | 70 |
| Taxable Income | 355 |
| Tax | 142 |
| Net Income | 213 |

The degree of total leverage for the company is *closest* to:

A. 1.20.
B. 1.53.
C. 1.83.

17. Fred has the following information available.

| | |
|---|---|
| Operating income | $500,000 |
| Net income | $275,000 |

Given that the degree of total leverage is 3.63, the degree of operating leverage is *closest* to:

A. 1.30.
B. 1.81.
C. 2.00.

**LO.c: Analyze the effect of financial leverage on a company's net income and return on equity.**

18. Alpha and Beta both operate in the automobile sector with the same degree of operating leverage. Alpha has a capital structure of 40% debt and 60% equity, while Beta is financed completely by equity. Which of the following statements is *most* accurate? Compared to Beta, Alpha has:

A. The same sensitivity of operating income to changes in unit sales.
B. The same sensitivity of net income to changes in operating income.
C. A lower sensitivity of net income to changes in unit sales.

19. All else equal, company A has greater financial leverage compared to its counterpart company B. Which of the following statements is *least* accurate?

A. Company A has a greater risk of default.
B. Company A has higher net income.
C. Company A has higher return on equity.

**LO.d: Calculate the breakeven quantity of sales and determine the company's net income at various sales levels.**

20. A company manufactures items with a selling price of $125 at a variable cost of $62.5 per unit. The operating fixed costs incurred by the company are $250,000, while the fixed interest charges incurred are $65,000. The company is liable to pay taxes at a rate of 35%.

The quantity of items that the company should manufacture and sell to break-even is *closest* to:

A. 5,040.
B. 4,676.
C. 4,000.

21. Soomros now sells 1 million units at Rs.3,972 per unit. Fixed operating costs are Rs.1,960 million and variable operating costs are Rs.1,250 per unit. If the company pays Rs.376 million in interest, the levels of sales at the operating breakeven and the level of sales at the breakeven points are, respectively:

A. Rs.2,860,073,475 and Rs.3,408,740,632.
B. Rs.2,875,073,470 and Rs.3,428,740,630.
C. Rs.3,560,073,475 and Rs.4,105,740,632.

22. In order to assess the riskiness of two companies in the same industry, Mr. Habitt collected the following information from the latest financial statements and management discussions for Habitt and Machinesque respectively:

- Number of units produced and sold: 2.7 million and 3.5 million
- Sales price per unit: Rs.2000 each
- Variable cost per unit: Rs.1200 and Rs.1000
- Fixed operating cost: Rs.40 million and Rs.75 million
- Fixed financing expense: Rs.30 million each

Based on this information, the breakeven points for Habitt and Machinesque are *closest* to:

A. 0.0875 million and 0.105 million respectively.
B. 0.536 million and 1.1 million respectively.
C. 1.1 million and 0.075 million respectively.

23. The owner of a TV store is forecasting for the year 2014 and wants to find out the breakeven point of 2013 with the following data to ensure accuracy:

| | |
|---|---|
| Revenue | Rs. 0.12 million per TV set |
| Variable cost | Rs. 0.053 million per TV set |
| Fixed cost (including interest cost) | Rs. 200 billion |

The breakeven quantity is *closest to*:

A. 2.0 million TV sets.
B. 2.5 million TV sets.
C. 3.0 million TV sets.

**LO.e: Calculate and interpret the operating breakeven quantity of sales.**

24. The unit contribution margin for a product is \$15. Assuming fixed costs of \$15,000, interest costs of \$4,000, and a tax rate of 40%, the operating breakeven point (in units) is *closest to:*

A. 870.
B. 1,000.
C. 1,200.

25. The per unit contribution margin for a product is $24. Assuming fixed costs of $48,000, interest costs of $5,000, and taxes of $3,000, the operating breakeven point (in units) is *closest* to:
    A. 1,667.
    B. 2,000.
    C. 2,333.

26. The unit contribution margin for a product is $20. Assuming fixed costs of $200,000, interest costs of $25,000, and a tax rate of 35%, the operating breakeven point (in units) is *closest* to:
    A. 11,250.
    B. 10,813.
    C. 10,000.

**Solutions**

1. C is correct. Sales risk is associated with uncertainty with respect to total revenue, which in turn, depends on price and units sold.

2. C is correct. Business risk is the risk associated with operating earnings and reflects both sales risk (uncertainty with respect to the price and quantity of sales) and operating risk (the risk related to the use of fixed costs in operations).

3. B is correct. By taking on fixed obligations, such as debt and long-term leases, the company increases its financial risk.

4. C is correct. DOL = $\frac{\text{quantity}*\text{contribution margin}}{[(\text{quantity}*\text{contribution margin})-\text{fixed costs}]}$
   DOL (100,000 units) =$\frac{\$12*100{,}000}{(\$12*100{,}000)-600{,}000}$ = 2.00
   DOL (200,000 units) = $\frac{\$12*200{,}000}{(\$12*200{,}000)-600{,}000}$ = 1.33
   DOL (300,000 units) = $\frac{\$12*300{,}000}{(\$12*300{,}000)-600{,}000}$ = 1.20
   The DOL is lowest at the 300,000 unit production level.

5. B is correct.
   $\text{DOL} = \frac{[Q*(P-V)]}{[Q(P-V)-F]} = \frac{22.5 \text{ million } (\text{Rs}.90{,}000 - \text{Rs}.70{,}000)}{22.5 \text{ million } (\text{Rs}.90{,}000 - \text{Rs}.70{,}000) - 33 \text{ billion}} = 1.08$
   For a 10 percent increase in computers sold, operating income increases by 1.08 * 10% = 10.08%.

6. C is correct. The degree of operating leverage is the elasticity of operating earnings with respect to the number of units produced and sold. As elasticity, the degree of operating leverage measures the sensitivity of operating earnings to a change in the number of units produced and sold.

7. B is correct.
   Operating income for 8 million cars = 8 million (25,000 – 14,000) – 15 billion = 73 billion.
   $\text{DFL} = \frac{[Q(P-V)-F]}{[Q(P-V)-F-C]} = \frac{\text{Rs}.73 \text{ billion}}{\text{Rs}.73 \text{ billion} - \text{Rs}.65 \text{ billion}} = 9.13$

8. A is correct. For highly leveraged firms, that is firms with a high proportion of fixed costs relative to total costs, a small change in sales will have a big impact on earnings.

9. B is correct.
   DOL for Siptea: $\frac{200{,}000\ (\$150 - \$43)}{200{,}000\ (\$150 - \$43) - 500{,}000} = 1.024$
   DOL for Brewers: $\frac{200{,}000\ (\$150 - \$98)}{200{,}000\ (\$150 - \$98) - 150{,}000} = 1.015$

10. B is correct. A is a true statement because higher leverage implies a greater interest expense and hence a lower net income. C is true because both companies have the same revenue and operating income. B is least likely true because Asparagus will have a lower ROE relative to Supras.

11. B is correct.
$$\text{DTL} = \frac{[Q(P-V)]}{[Q(P-V)-F-C]} = \frac{1 \text{ million } (\text{Rs.}100 - \text{Rs.}20)}{1 \text{ million } (\text{Rs.}100 - \text{Rs.}20) - 5 \text{ million} - 1 \text{ million}} = 1.08$$

12. C is correct. DFL is not affected by the tax rate whereas WACC and net profit margin are both impacted by changes in tax rate.

13. C is correct. Analysts need to understand a company's use of operating and financial leverage to forecast future cash flows and select an appropriate discount rate.

14. B is correct. DFL = $\frac{\text{Operating income}}{\text{Operating income} - \text{Interest expense}} = \frac{Q(P-V)-F}{[Q(P-V)-F-C]} = \frac{\$1.9}{\$0.9} = 2.11$.

15. A is correct. DOL = $\frac{\text{Revenues} - \text{Variable operating costs}}{\text{Revenues} - \text{Variable operating costs} - \text{Fixed operating costs}} = \frac{Q(P-V)}{[Q(P-V)-F]} = \frac{10.5 - 6.8}{10.5 - 6.8 - 2.5} = 3.1$

16. C is correct.
$$\text{DTL} = \frac{[Q(P-V)]}{[Q(P-V)-F-C]} = \frac{1100 - 450}{355} = 1.83$$

17. C is correct. First, compute the degree of financial leverage: 500,000/275,000 = 1.818. Next, compute the degree of operating leverage: $\text{DTL} = \text{Degree of financial leverage} * \text{Degree of operational leverage}$. $3.63 = 1.818 * \text{Degree of operational leverage}$. $\text{DOL} = 2$

18. A is correct. Alpha's degree of operating leverage is the same as Beta's, whereas Alpha's degree of total leverage and degree of financial leverage are higher.

19. B is correct. Financial leverage reduces net income by the interest cost, but increases return on equity because net income is generated with less equity.

20. A is correct. $\text{Breakeven quantity} = \frac{\text{Fixed operating costs} + \text{fixed financial costs}}{\text{Price per unit} - \text{variable cost per unit}} = \frac{F+C}{P-V} =$
$= \frac{250{,}000 + 65000}{125 - 62.5} = 5{,}040$

21. A is correct.
$$\text{Operating breakeven units} = \frac{F}{P-V} = \frac{\text{Rs. }1{,}960 \text{ million}}{(\text{Rs. }3{,}972 - \text{Rs. }1{,}250)} = 720{,}058.7803 \text{ units}$$
$$\text{Operating breakeven sales} = \text{Rs. }3{,}972 * 720{,}058.7803 \text{ units} = \text{Rs. }2{,}860{,}073{,}475$$

or

$$\text{Operating breakeven sales} = \frac{\text{Rs. 1,960 million}}{1 - (\text{Rs. 1,250/ Rs. 3,972})} = \text{Rs. 2,860,073,475}$$

$$\text{Total breakeven} = \frac{\text{Rs. 1,960 million} + \text{Rs. 376 million}}{(\text{Rs. 3,972} - \text{Rs. 1,250})} = \frac{\text{Rs. 2,336 million}}{2{,}722} = 858{,}192.5055$$

$$\text{Breakeven sales} = \text{Rs. 3,972} * 858{,}192.5055 \text{ units} = \text{Rs. 3,408,740,632}$$

or

$$\text{Breakeven sales} = \frac{\text{Rs. 2,336 million}}{1 - (\text{Rs. 1,250/ Rs. 3,972})} = \text{Rs. 3,408,740,632}$$

22. A is correct.

For Habitt:

$$Q_{BE} = \frac{F + C}{P - V} = \frac{\text{Rs. 40million} + \text{Rs. 30million}}{\text{Rs. 2000} - \text{Rs. 1200}} = 87{,}500$$

For Machinesque:

$$Q_{BE} = \frac{F + C}{P - V} = \frac{= \text{Rs. 75million} + \text{Rs. 30million}}{\text{Rs. 2000} - \text{Rs. 1000}} = 105{,}000$$

23. C is correct.

$$Q_{BE} = \frac{F + C}{P - V} = \frac{\text{200 billion}}{(0.12 - 0.053)\text{million}} = 2.99 \text{ million}$$

24. B is correct.

$$Q_{OBE} = \frac{\text{Fixed cost}}{\text{Contribution margin}} = \frac{F}{P - V} = \frac{15{,}000}{15} = 1{,}000$$

25. B is correct. The operating breakeven point is:

$$Q_{OBE} = \frac{\text{Fixed cost}}{\text{Contribution margin}} = \frac{\$48{,}000}{\$24} = 2{,}000$$

26. C is correct.

$$Q_{OBE} = \frac{\text{Fixed cost}}{\text{Contribution margin}} = \frac{200{,}000}{20} = 10{,}000$$

**LO.a: Describe regular cash dividends, extra dividends, liquidating dividends, stock dividends, stock splits, and reverse stock splits, including their expected effect on shareholders' wealth and a company's financial ratios.**

1. The following data is available for PL Manufacturers:

| | **2013** | **2012** |
|---|---|---|
| Net Income | 32.6 | 28.3 |
| Issued Share Capital | 150 | 150 |
| Accumulated Retained Earnings | | 15.2 |

   The retention ratio for the company earnings has remained constant at 65% while the rest is given out as dividends to shareholders. Given the above data, the 2013 accumulated retained earnings is *closest* to:
   A. 21.19.
   B. 26.61.
   C. 36.39.

2. K-Electric Power Company is a power generation company, while Procter and Gamble is a consumer products company and Toyota Motors is an automobile manufacturing company. Which of the following is *most likely* to issue special dividends for sharing profits with shareholders in times of profitability, but conserve cash otherwise?
   A. K-Electric Power Company.
   B. Procter and Gamble.
   C. Toyota Motors.

3. Which of the following is *most likely* to decrease the market value of a firm?
   A. A stock dividend.
   B. A special dividend.
   C. A stock split.

4. In the previous year, a company had earnings of 100 million and retained 80 million. The payout ratio was:
   A. 80%.
   B. 20%.
   C. 50%.

5. Alan D'Cruz owns 50,000 shares of Matrix Manufacturing Company at the prevailing market price of Rs.149.5 per share. Matrix declares a 15% stock dividend to all shareholders as per record as of 31$^{st}$ December. The market price of the stock and D'Cruz ownership value in the company given the following information is *closest* to:

| | |
|---|---|
| Shares outstanding | 1 billion |
| Earnings per share (EPS) | Rs. 6.9 |

   A. Rs. 149.5 and Rs. 7.5 million respectively.
   B. Rs. 130 and Rs. 8.6 million respectively.
   C. Rs. 130 and Rs. 7.5 million respectively.

6. Santa Inc.'s common shares currently trade at a very low price and there is a risk of the company being delisted from the stock exchange. Which of the following would be the *most appropriate* action to consider?
    A. Stock dividend.
    B. Reverse stock split.
    C. Stock split.

7. While planning company prospects, Sanjay made two statements:
   **Statement 1:** "A significant apprehension of implementing a stock split is that it increases the company's price-to-earnings ratio."
   **Statement 2:** "A stock dividend will increase share price, given all the other factor remain constant."
   Are these two statements about the effects of the stock dividend and stock split correct?
    A. Yes for Statement 1 and no for Statement 2.
    B. Yes for Statement 2 and no for Statement 1.
    C. No for both statements.

8. Stock splits and stock dividends are *most likely* to:
    A. increase the debt/equity ratio.
    B. have no impact on the debt/equity ratio.
    C. decrease the debt/equity ratio.

9. In a sales-driven pro forma analysis, net income grows from \$1.58 million to \$1.74 million. Assuming a dividend payout ratio of 50%, the increase in retained earnings is *closest* to (in \$ millions):
    A. 0.79.
    B. 0.87.
    C. 0.91.

10. DeltaCom Company's taxable income is 21.2% of sales. Assuming taxes of 33% and a dividend payout of 50%, the net profit margin is *closest* to:
    A. 12.65%.
    B. 14.20%.
    C. 16.28%.

11. A two-for-one stock split will *most likely* impact the:
    A. earnings per share.
    B. price to earnings ratio.
    C. dividend payout ratio.

**LO.b: Describe dividend payment chronology, including the significance of declaration, holder-of-record, ex-dividend, and payment dates.**

12. On 15 May 2014, Company A reported to pay a dividend of € 1.10 per share in May 2014. The ex-dividend date is 19 May and payment date is 22 June. An investor who wants to receive the dividends should buy the shares by:

A. 19 May.
B. 22 June.
C. 18 May.

13. Supers Controlisque recently declared a quarterly dividend of $1.13 payable on Thursday, March 6, to holders of record on Friday, February 21. What is *most likely* to be the last day an investor could purchase Supers' stock and still receive the quarterly dividend?
    A. February 18.
    B. February 23.
    C. February 21.

14. Copper Suite has recently declared a regular quarterly dividend of Rs.2, payable on 10 March, with an ex-dividend date of 26 February. Given the following options include all business days, which of the following is *most likely* to be the holder-of-record date assuming trades settle three business days after the trade date?
    A. 25 February.
    B. 28 February.
    C. 9 March.

15. The purchaser of a stock will receive the upcoming dividend, if the stock is purchased before the:
    A. holder-of-record date.
    B. ex-dividend date.
    C. declaration date.

**LO.c: Compare share repurchase methods.**

16. A company decides to repurchase stock by making an offer to repurchase a specific number of shares at a price that is higher than the current market price. This is *most likely* referred to as a:
    A. tender offer.
    B. premium offer.
    C. first-rate offer.

17. Fugi firm announces a share repurchase initiating it by communicating to shareholders a specific number of 500,000 shares and a range of acceptable prices from $50 to$70. This is *most likely* to be a(n):
    A. fixed price tender offer.
    B. open market repurchase.
    C. Dutch auction.

18. A company wants to repurchase shares while avoiding a lengthy procedure for it. The method of repurchase that the company would *least likely* adopt due to the long execution time is:
    A. Dutch auction.
    B. fixed price tender offer.

C. open market repurchase.

19. A company is deciding to repurchase 10 million shares of stock that has a current price of $99. The forecasted information of shares available for purchase is presented below.

| Price | Number of Shares Available for Purchase (in millions) |
|---|---|
| $100.00 | 18.00 |
| $99.80 | 10.00 |
| $99.60 | 6.00 |
| $99.40 | 2.00 |
| $99.20 | 1.00 |
| $99.00 | 1.00 |

Which of the following repurchase methods will *most likely* result in the average repurchased cost being $99.60?

A. Open market repurchase.
B. Repurchase by direct negotiation.
C. Dutch auction.

**LO.d: Calculate and compare the effect of a share repurchase on earnings per share when 1) the repurchase is financed with the company's excess cash and 2) the company uses debt to finance the repurchase.**

20. A firm's price-to-earnings ratio (P/E) is 10.5. The firm has decided to repurchase shares using external funds that have an after-tax cost of 6%. After the repurchase, the earnings per share (EPS) will *most likely*:

A. increase.
B. decrease.
C. remain unchanged.

21. The following information is available for a firm:
Number of shares outstanding: 2 million
Tax rate: 40%
Cost of debt (pretax): 8%
Current stock price: $25.00
Net income: $4 million
A plan to repurchase $1 million worth of shares using debt will *most likely* cause the earnings per share to:

A. decrease.
B. increase.
C. remain unchanged.

22. A firm's P/E ratio is 8.7. It decides to repurchase shares using external funds. The *maximum* after tax cost of the funds which results in EPS not declining will be:

A. 8.7%.
B. 10.2%.

C. 11.5%.

23. Gregor, Inc., (GRE) plans to repurchase shares using borrowed funds. The following information is compiled from the financial statements of the firm:
    - Share price at the time of buyback = $40
    - Shares outstanding before buyback = 80 million
    - EPS before buyback = $4.76
    - Earnings yield = $4.76/ $40 = 11.9%
    - After-tax cost of borrowing = 9%
    - Planned buyback = 0.75 million shares

    The EPS after the buyback is *closest* to:
    A. $4.56.
    B. $4.77.
    C. $5.03.

24. Share repurchase using borrowed funds will:
    A. increase EPS if the cost of debt is greater than the earnings yield.
    B. decrease EPS if the cost of debt is less than the earnings yield.
    C. decrease EPS if the cost of debt is greater than the earnings yield.

25. A company with 2 million shares outstanding and earnings of $4 million decides to use $20 million in idle cash to repurchase shares in the open market. The company's shares are trading at $100 per share. If the company uses the whole amount of idle cash to repurchase shares at the market price, the company's earnings per share will be closest to:
    A. 1.11.
    B. 2.00.
    C. 2.22.

26. Cuzen Corp plans to borrow funds in order to repurchase 200,000 shares. The following information is available:

| | |
|---|---|
| Shares outstanding before buyback | 4.7 million |
| Earnings per share before buyback | $5.5 |
| Share price at time of buyback | $65 |
| After-tax cost of borrowing | 6% |

The EPS after the buyback is *closest* to:
A. $4.73.
B. $5.12.
C. $5.57.

27. What is the *most likely* impact on earnings per share (EPS) if borrowed funds are used to finance a share repurchase where the after-tax cost of debt is greater than the earnings yield?
    A. EPS decreases.
    B. EPS increases.

C. EPS stays constant.

**LO.e: Calculate the effect of a share repurchase on book value per share.**

28. The market price of a company's share is $11 per share with a price-to-book value of 0.80. It has 20 million shares outstanding and announces a buyback of 10% of its shares. If the buyback is done at $11 per share, the post-buyback book value per share is *closest* to:
    A. $10.
    B. $11.
    C. $14.

29. Techo Ltd. and Windows Inc. are operating in the same industry.

| | Techo Ltd. | Windows Inc. |
|---|---|---|
| Share Price | $53 | $53 |
| Shares outstanding before buyback | 12 million | 12 million |
| Book Value | $475million | $950 million |

Both companies announce a $5 million share buyback. Which of the following statements is most likely true about the book value per share (BVPS) for the two companies?
    A. The BVPS does not change for either company.
    B. The BVPS increases for Techno but decreases for Windows.
    C. The BVPS increases for Windows but decreases for Techo.

30. The market price of a company's stock is $5 per share with 100 million shares outstanding. The company decides to use its cash reserves to undertake a $20 million share buyback. Just prior to the buyback, the company reports total assets of $1300 million and total liabilities of $900 million. The company's book value per share after the share buyback is *closest* to:
    A. $3.96.
    B. $4.25.
    C. $3.60.

**LO.f: Explain why a cash dividend and a share repurchase of the same amount are equivalent in terms of the effect on shareholders' wealth, all else being equal.**

31. The following information is extracted from the financial statements and reports of Meds Inc. (Med):

| | |
|---|---|
| Shares outstanding | 35 million |
| Current market value | $65 per share |
| Profit made in FY Q4 ended Dec, 2013 | $125 million |

The company is considering two methods for returning cash to shareholders:

- Pay a cash dividend of $40 million / 35 million shares = $1.143 per share.
- Repurchase $40 million worth of common stock.

Assuming the same tax rate for dividends and capital gains, shareholder wealth will *most likely*:

A. decrease in case of repurchase but increase if cash dividend is paid.
B. increase for both options.
C. remain unaffected in both cases.

32. Sparks Ltd. faces a choice to either repurchase shares at the current market price with its positive cash flows or use that amount to pay a special cash dividend. Shareholders' wealth under the two options will be equivalent unless the:
    A. company's book value per share is greater than the current market price.
    B. tax consequences for each choice are dissimilar.
    C. company's book value per share is less than the current market price.

33. Assume that a company is based in a country that has no taxes on dividends or capital gains. If the company considers either paying a special dividend or repurchasing its own shares, which of the following will the company shareholders *most likely* prefer?
    A. Greater wealth if the company paid a special cash dividend.
    B. Greater wealth if the company repurchased its shares.
    C. Constant wealth under either a cash dividend or share repurchase program.

34. Analyst 1: All else equal, a cash dividend increases shareholder wealth as compared to a share repurchase of the same amount.
    Analyst 2: All else equal, a share repurchase increases shareholder wealth as compared to a cash dividend of the same amount.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

**Solutions**

1. C is correct.
   Increase in retained earnings = Retention ratio $*$ Net income= $0.65 * 32.6$ = 21.19
   Total retained earnings balance = 21.19 + 15.2 = 36.39.

2. C is correct. Many cyclical firms (e.g., automakers) will use a special dividend to share profits with shareholders when times are good but maintain the flexibility to conserve cash when profits are down.

3. B is correct. With an irregular dividend a company pays cash and the share price drops. The total number of shares outstanding remains the same. Hence the market value (share price x number of shares outstanding) comes down. With the other two options, the number of shares increases and the share price decrease. The overall market value, however, remains the same.

4. B is correct. The payout ratio is 20%.

5. C is correct.
   $\text{Stock price } = \frac{\text{Rs.}\,149.5}{1.15} = \text{Rs.}\,130$
   $\text{Ownership value} = \text{Shares owned} * \text{Stock price}$
   $= (50{,}000 * 1.15) * \text{Rs.}\,130 = \text{Rs.}\,7{,}475{,}000$

6. B is correct. A reverse stock split would increase the price per share of the stock.

7. C is correct. A stock dividend will decrease the price per share. A stock split will reduce the price and earnings per share proportionately, leaving the price-to-earnings ratio constant.

8. B is correct. Stock splits and stock dividends do not impact financial ratios.

9. B is correct. The retained earnings in a pro forma analysis increases by net income less dividends:
   $\text{Dividend} = \text{Net income} * \text{Dividend payout ratio} = \$1.74 \text{ million} * 50\% = 0.87 \text{ million}$
   $\text{Increase in retained earnings} = \$1.74 \text{ million} - \$0.87 \text{ million} = 0.87 \text{ million}$

10. B is correct. Net profit margin = $\frac{\text{Net income}}{\text{Sales}} = \frac{\left[(\text{Earnings before tax}) * \left(1 - (\text{Tax rate})\right)\right]}{\text{Sales}}$
    $= (0.212 * \text{Sales}) * \frac{1 - 0.33}{\text{Sales}} = 0.212 * (1 - 0.33) = 14.20\%$

11. A is correct. A two-for-one stock split will double the number of shares, thus reducing the EPS to half of its pre-split value. P/E will remain unchanged because the price also reduces by half and exactly cancels out the effect of the reduced EPS. The dividend payout ratio remains unchanged because the same proportion of earnings will still be used after the split.

12. C is correct. Before the ex-dividend date.

13. A is correct. If an investor purchases shares of stock on or after the ex-dividend date, the dividend will not be paid. The ex-dividend day is always two business days before the holder-of-record date and hence stock must be purchased two days before this date to receive the dividend. Two days before February 21 is February 19; hence the last day the investor can purchase shares and still receive the dividend is February 18.

14. B is correct. The holder-of-record date, 28 February, is two business days after the ex-dividend date, 26 February.

15. B is correct. The chronology of a dividend payout is declaration date, ex-dividend date, holder-of record date, and payment date. The ex-dividend date is the cutoff date for receiving the upcoming dividend.

16. A is correct. A company may repurchase stock by making a tender offer to repurchase a specific number of shares at a price that is usually higher than the current market price.

17. C is correct. Dutch auctions begin with the company communicating to shareholders a specific number of shares and a range of acceptable prices. In a fixed price tender offer, the company announces a fixed number of shares to be repurchased and a fixed price. When companies repurchase shares in the open market, they buy at market prices and in quantities as conditions warrant.

18. C is correct. Of the methods listed, open market repurchases take the longest time to execute.

19. C is correct. A Dutch auction uncovers the minimum price at which the company can buy back the desired number of shares with the company paying that price to all qualifying bids. Here the qualifying bids are from $99 to $99.60 to satisfy the required 10 million share requirement. Under a Dutch auction, 10 million shares can be purchased for $99.60 because at that price point, sufficient volume is available in the shares. Using an open market share repurchase process, shares are bought at prices that vary between $99 and $99.60. The open market share repurchase will result in the average cost per share of $99.46.

| **Price** | **Volume** | **Price × Volume** |
|---|---|---|
| $99.60 | 6,000,000 | $597,600,000 |
| $99.40 | 2,000,000 | $198,800,000 |
| $99.20 | 1,000,000 | $99,200,000 |
| $99.00 | 1,000,000 | $99,000,000 |
| **Total Cost** | | $994,600,000 |
| Average repurchased cost per share | | $99.46 |

20. A is correct. Convert P/E to the earnings yield (E/P): $\frac{1}{10.5}$ = 9.5%. Because the after-tax cost of the external funds is lower than the earnings yield (i.e., 6% < 9.5%), the EPS will increase after the repurchase.

21. B is correct.

$$\text{Current earnings per share } = \frac{\$4{,}000{,}000}{2{,}000{,}000} = \$2.00$$
$$\text{Number of shares repurchased } = \frac{\$1{,}000{,}000}{\$25.00} = 40{,}000 \text{ shares}$$
$$\text{Adjusted net income } = \text{ Current net income } - [\text{debt} * \text{ after tax cost of debt}]$$
$$= \$4{,}000{,}000 - [\$1{,}000{,}000 \times 8\% \times (1 - 40\%)] = \$3{,}952{,}000$$
$$\text{New earnings per share } = \frac{\$3{,}952{,}000}{[2{,}000{,}000 - 40{,}000]} = \$2.02$$

22. C is correct. Convert P/E to earnings yield: $\frac{1}{8.7}$ = 11.5%
The EPS will decrease if the after-tax cost of funds is higher than the earnings yield i.e. above 11.5%.

23. B is correct. Total earnings = $4.76 * 80,000,000 = $380,800,000
$$\text{EPS after buyback } = \frac{\text{Total earnings} - \text{ After tax cost of funds}}{\text{Shares outstanding after buyback}}$$
$$= \frac{380{,}800{,}000 - (750{,}000 * 40 * 0.09)}{80{,}000{,}000 - 750{,}000}$$
= $4.77

24. C is correct. Share repurchase using borrowed funds will decrease EPS if the cost of debt is greater than the earnings yield.

25. C is correct. At the current market price, the company can repurchase 200,000 shares ($20 million/$100 = 200,000 shares). The company would have 1,800,000 shares outstanding after the repurchase (2 million shares − 200,000 shares = 1,800,000 shares).
EPS before the buyback is $2.00 ($4 million/2 million shares = $2.00). Total earnings after the buyback are the same because the company uses idle (nonearning) cash to purchase the shares, but the number of shares outstanding is reduced to 1800,000. EPS increases to $2.22 ($4 million /1.8 million shares).

26. C is correct.
Total earnings before buyback: $\$5.50 * 4{,}700{,}000$ shares = $25,850,000
Total amount of borrowing: $\$65 * 200{,}000\ shares$ = $13,000,000
After-tax cost of borrowing the amount of funds needed: $\$13{,}000{,}000 * 0.06$ = $780,000
Number of shares outstanding after buyback: 4,700,000 – 200,000 = 4,500,000
EPS after buyback: $\frac{\$25{,}850{,}000 - \$780{,}000}{4{,}500{,}000\ shares}$ = $5.57

27. A is correct. In a repurchase, if the after tax cost of debt is greater than the earnings yield, EPS decreases.

28. C is correct. The pre-buyback book value per share (BVPS) is $\frac{\$11}{0.80}$ = $13.75

Because the market price per share is less than BVPS, its BVPS should increase after the share buyback.
Pre-buyback book value of equity 20 $million * $13.75 = $275 million
Post-buyback book value of equity $275 million – $(2$ million $*$ $11)$ = $253 million
Post-buyback shares outstanding: 18 million shares outstanding (10% less)
Post-buyback BVPS = $\frac{\$253 \text{ million}}{18 \text{ million shares}}$ = $14.05
As per the calculation, the post-buyback BVPS is $14.05.

29. C is correct.
Share buyback for both companies = $\frac{\$5 \text{ million}}{\$53 \text{ per share}}$ = 94,340 shares.
Remaining shares for both companies = 12 million $-$ 94,340 = 11.906 million.
Current BVPS of Techo Ltd. = $\frac{\$475 \text{ million}}{12 \text{ million}}$ = $39.583.
The market price per share of $53 is greater than the BVPS of $39.593.
Book value after repurchase: $475 million - $5million = $470 million
BVPS = $\frac{\$470\ million}{11.906\ million}$ = $39.476
Change in BVPS = Decreased by $0.107
This is expected. When the market price is greater than BVPS, a share repurchase will reduce the BVPS.

Windows Inc's current BVPS = $\frac{\$950\ million}{12\ million}$ = $79.16.
The market price per share of $53 is less than the BVPS of $79.16.
Book value after repurchase: $950 million - $ 5 million = $945 million
BVPS = $\frac{\$945\ million}{11.906\ million}$ = $79.37
As expected the BVPS increases.

30. A is correct.

| | | |
|---|---|---|
| No. of shares purchased | $\frac{\$20\ million}{\$5\ per\ share}$ | 4 million shares |
| Remaining no of shares after share buyback | 100 million – 4 million | 96 million shares |
| Book value of the company after buyback | Total assets less cash used minus total liabilities: ($1300 - $20 – 900) millions | $380 million |
| BVPS after buyback | $\frac{\$380 \text{ million}}{96 \text{ million}}$ | $3.96 per share |

31. C is correct. The total wealth of the shareholder would remain the same with either method.

32. B is correct. For the two options to be equivalent with respect to shareholders' wealth, the amount of cash distributed and the taxation must be the same for both options.

33. C is correct. When there are no taxes, there are no tax differences between dividends and capital gains. All other things being equal, the effect on shareholder wealth of a dividend and a share repurchase should be the same.

34. C is correct. All else equal, a cash dividend and a share repurchase of the same amount are equivalent in terms of the effect on shareholders’ wealth.

**LO.a: Describe primary and secondary sources of liquidity and factors that influence a company's liquidity position.**

1. Which action is *least likely* considered a secondary source of liquidity?
   A. Filing for bankruptcy protection.
   B. Increasing the efficiency of cash flow management.
   C. Renegotiating current debt contracts to lower interest payments.

2. Which of the following is *least likely* a secondary source of liquidity?
   A. Negotiating debt contracts.
   B. Filing for bankruptcy protection and reorganization.
   C. Cash flow management

3. Which of the following is *least likely* considered a primary source of liquidity?
   A. Centralized cash management system.
   B. Debt contract.
   C. Trade credit.

4. Which of the following is *most likely* considered a 'drag' on liquidity?
   A. Obsolete inventory.
   B. Reduced credit limits.
   C. Making early payments.

**LO.b: Compare a company's liquidity measures with those of peer companies.**

***The following information relates to Questions 5-7***

Ahmed Rashid is evaluating companies in the agricultural pesticides industry and has compiled the following information:

| Company | 2012 | | 2013 | |
|---|---|---|---|---|
| | Credit Sales | Average Receivables Balance ($) | Credit Sales | Average Receivables Balance ($) |
| Bayer Corp. | $6.0 million | 2.0 million | 7.0 million | 2.2 million |
| Excel Corp. | $4.0 million | 2.2 million | 5.0 million | 2.5 million |
| Insecticides. | $3.5 million | 1.8 million | 4.0 million | 2.0 million |
| Phyto Corp. | $1.5 million | 1.1 million | 1.6 million | 1.2 million |
| Industry | 26.0 million | 6.0 million | 29.0 million | 6.4 million |

5. Which of the following companies had the highest numbest of days of receivables for the year 2012?
   A. Bayer Corp.
   B. Insecticides.
   C. Phyto Corp.

6. Which of the companies has the lowest accounts receivables turnover in the year 2013?
   A. Insecticides.

B. Excel Corp.
C. Phyto Corp.

7. The industry average receivables collection period:
    A. Increased from 2012 to 2013.
    B. Decreased from 2012 to 2013.
    C. Did not change from 2012 to 2013.

**LO.c: Evaluate working capital effectiveness of a company based on its operating and cash conversion cycles, and compare the company's effectiveness with that of peer companies.**

8. The following information is available for a company and the industry in which it operates:

| | **Company** | **Industry** |
|---|---|---|
| Accounts receivable turnover | 4.7 times | 5.4 times |
| Inventory turnover | 3.3 times | 3.2 times |
| Number of days of payables | 21 days | 29 days |

Relative to the industry, the company's operating cycle:
    A. and cash conversion cycle are both longer.
    B. is longer, but its cash conversion cycle is shorter.
    C. is shorter, but its cash conversion cycle is longer.

9. The following information is available for a company:

| | In Millions (€) |
|---|---|
| Credit sales | 20,000 |
| Cost of goods sold | 15,000 |
| Accounts receivable | 2,000 |
| Inventory | 1,800 |
| Accounts payable | 2,600 |
| Purchases | 15,300 |

The net operating cycle of this company is *closest* to:
    A. 18.3 days.
    B. 22.4 days.
    C. 9.8 days.

10. Given the following financial statement data, calculate the operating cycle for Alpha Corporation.

| **Account** | **In Millions($)** |
|---|---|
| Credit sales | 60,000 |
| Cost of goods sold | 48,000 |
| Account receivable | 6,000 |
| Inventory | 5,500 |
| Account payable | 4,000 |

The operating cycle for this company is *closest* to:

A. 45.20 days.
B. 49.75 days.
C. 78.32 days.

11. Given the following financial statement data, calculate the net operating cycle for Beta Electronics Ltd.

| **Account** | **In Millions($)** |
|---|---|
| Credit sales | 100,000 |
| Cost of goods sold | 75,000 |
| Account receivable | 7,500 |
| Inventory – Ending balance | 5,000 |
| Days of payables | 49.50 |

The net operating cycle for this company is *closest* to:
A. 2.2 days.
B. 25.0 days.
C. 51.7 days.

12. A company's largest supplier has decided to tighten credit terms. Earlier the company could make payments within 20 days of purchase. Now the company is being asked to pay within 10 days of purchase. The *most likely* effect of this change is a (an):
A. decrease in the company's operating cycle.
B. increase in the company's net operating cycle.
C. increase in the company's operating cycle.

**LO.d: Describe how different types of cash flows affect a company's net daily cash position.**

13. Paragon, a shoe manufacturer, wants to maintain an adequate net daily cash position. Which of the following actions will the company *least likely* take?
A. Monitor access to borrowing facilitates.
B. Predict the business cycles and seasonal effects.
C. Forecast depreciation and accruals.

14. A company manages its treasury function to exactly maintain its minimum daily balance requirement. The following events occurred for the company on the same day:

| | **$ millions** |
|---|---|
| Funds transfer to subsidiaries | 100 |
| Maturing investments | 75 |
| Issues a stock dividend | 15 |
| Debt repayments | 50 |
| | |
| Minimum daily cash balance | 25 |

The Treasurer would *most likely* need to increase borrowing for the day by:
A. $50 million.

B. $75 million.
C. $100 million.

**LO.e: Calculate and interpret comparable yields on various securities, compare portfolio returns against a standard benchmark, and evaluate a company's short-term investment policy guidelines.**

15. For a 90-day U.S. Treasury bill selling at a discount, which of the following methods *most likely* results in the highest yield?
    A. Bond equivalent yield.
    B. Discount-basis yield.
    C. Money market yield.

16. For a 90-day U.S. Treasury bill selling at a discount, which of the following *most likely* results in the lowest yield?
    A. Bond equivalent yield.
    B. Discount-basis yield.
    C. Money market yield.

17. A 30-day $1,000 U.S. Treasury bill sells for $984.10. The discount-basis yield (%) is *closest* to:
    A. 12.57%.
    B. 16.45%.
    C. 19.08%.

18. The bond equivalent yield for a 180-day U.S. Treasury Bill that has a price of 9,875 per $10,000 face value is *closest* to:
    A. 2.57%.
    B. 2.77%.
    C. 2.34%.

19. For a 91-day $100,000 T-bill which is being sold at a discounted rate of 6.79%, the money market yield is *closest* to:
    A. 6.79%.
    B. 6.88%.
    C. 6.91%.

20. The Money market yield for a 182-days U.S treasury bill that has a price $8,500 per $10,000 face value is closest to:
    A. 34.91%.
    B. 35.55%.
    C. 45.50%.

21. A 270-day $1,000,000 security is currently selling for $987,025. The discount basis yield of the security is *closest* to:
    A. 1.73%.

B. 1.75%.
C. 1.77%.

**LO.f: Evaluate a company's management of accounts receivable, inventory, and accounts payable over time and compared to peer companies.**

22. Assume a 365-day year and the following information for a company:

| | **Current year** | **Previous year** |
|---|---|---|
| Sales | $18,000 | $20,000 |
| Cost of goods sold | $9,000 | $9,500 |
| Inventory | $1,500 | $1,600 |
| Accounts payable | $700 | $700 |

The firm's days in payables for the current year is *closest to*:
A. 28.08.
B. 28.71.
C. 29.21.

23. A company uses trade credit terms of 3/10 net 40. If the account is paid on the 30th day, the cost of trade credit is closest to:
A. 27.9.
B. 44.6.
C. 74.3.

24. Elixir Ltd. has a current ratio of 5 times and quick ratio of 3 times. If the company's current liabilities are $50 million, the amount of inventories is *closest* to:
A. $100 million.
B. $200 million.
C. $150 million.

25. Galaxy Chemicals Ltd. is increasing its credit terms for customers from 1/12, net 20 to 1/12, net 50. The company will *most likely* experience:
A. an increase in cash on hand.
B. an increase in the average collection period.
C. a higher level of uncollectible accounts.

26. Suppose Casio Electronics uses trade credit with terms of 1/10, net 60. If the company pays its account on the $60^{th}$ day, the effective borrowing cost of skipping the discount on day 10 is *closest* to:
A. 15.5%.
B. 7.61%.
C. 21.3%.

27. A company uses trade credit terms of 1/10 net 30. If the account is paid on the 30th day, the effective borrowing cost of failing to take the discount is *closest* to:
A. 22%.
B. 20%.

C. 24%.

**LO.g: Evaluate the choices of short-term funding available to a company and recommend a financing method.**

28. Which of the following is *most likely* the best offer for borrowing $1,000,000 for one month?
    A. Drawing down on a line of credit at 6% with a ½ % commitment fee on the full amount with no compensating balances.
    B. A banker's acceptance at 6.25%, an all-inclusive rate.
    C. Commercial paper at 5.65% with a dealer's commission of 1/4% and a backup line cost of 1/3%, both of which would be assessed on the $1 million of commercial paper issued.

29. The cost of borrowing $3,000,000 for one month through a banker's acceptance at a rate of 6.5%, an all-inclusive rate is *closest* to:
    A. 5.65%.
    B. 6.34%.
    C. 6.54%.

30. The effective annualized cost (%) of a banker's acceptance that has an all-inclusive annual rate of 10.5% for a one-month loan of $4,000,000 is *closest* to:
    A. 10.59.
    B. 10.76.
    C. 11.08.

31. A treasury manager in a company has to borrow $8,000,000 for a month to meet an unforeseen short-term expense. Which of the following borrowing alternatives available to him will have the *lowest* effective annual cost?
    A. Line of credit at 6.8% with a 0.5% annual commitment fee.
    B. A banker's acceptance at 7.25%, an all-inclusive rate.
    C. Commercial paper at 7% with an annual dealer's commission of $2,500 and an annual backup line cost of $4,200.

**Solutions**

1. B is correct. Increasing the efficiency of cash flow management falls under primary sources of liquidity.

2. C is correct. Cash flow management is a primary source of liquidity.

3. B is correct. Debt contract system is a secondary source of liquidity.

4. A is correct. Drags on liquidity include uncollected receivables, obsolete inventory and tight credit.

5. C is correct.

   Number of days of receivables $= \frac{\text{Accounts receivable}}{\frac{\text{Credit sales}}{365}}$

   Bayer Corp: $\frac{\$2\text{ million}}{\frac{\$6\text{ million}}{365}}$ = 121.67 days

   Excel Corp: $\frac{\$2.2\text{ million}}{\frac{\$4\text{ million}}{365}}$ = 201 days

   Insectisides: $\frac{\$1.8\text{ million}}{\frac{\$3.5\text{ million}}{365}}$ = 188 days

   Phyto Corp: $\frac{\$1.1\text{ million}}{\frac{\$1.5\text{ million}}{365}}$ = 268 days

6. C is correct.
   Receivables turnover = $\frac{\text{Credit sales}}{\text{Average receivables}}$

   Bayer Corp: $\frac{\$7.0\text{ million}}{\$2.2\text{ million}}$ = 3.182

   Excel Corp: $\frac{\$5.0\text{ million}}{\$2.5\text{ million}}$ = 2.0

   Insectisides: $\frac{\$4.0\text{ million}}{\$2.0\text{ million}}$ = 2.0

   Phyto Corp: $\frac{\$1.6\text{ million}}{\$1.2\text{ million}}$ = 1.33

7. B is correct.
   Industry average in 2012: 84.23 days
   Industry average in 2013: 80.55 days

8. A is correct.
   $\text{Operating cycle} = \text{Number of days of inventory} + \text{Number of days of receivables.}$
   $\text{Cash conversion cycle} = \text{Operating cycle} - \text{Number of days of payables.}$

| | **Company** | **Industry** |
|---|---|---|
| Number of days receivables | 365/4.7 = 78 days | 365/5.4 = 68 days |
| Number of days inventory | 365/3.3 = 111 days | 365/3.2 = 114 days |

| | | |
|---|---|---|
| Operating cycles | 78 + 111 = 189 Longer | 68 + 114 = 182 |
| Cash conversion cycle | 189 - 21 = 168 Longer | 182 - 29 = 153 |

Therefore, the operating cycle and cash conversion cycle are both longer for the company.

9. A is correct. Number of days of inventory = $\frac{1{,}800}{15{,}000/365}$ = 43.80 days

   Number of days of receivables = $\frac{2{,}000}{20{,}000/365}$ = 36.50 days

   Purchases = €15,300

   Number of days of payables = $\frac{2{,}600}{15{,}300/365}$= 62.03 days

   Net operating cycle is 43.80 + 36.50 – 62.03 = 18.27 days

10. C is correct.

    Number of days of inventory = $\frac{5500}{48{,}000/365}$= 41.82 days

    Number of days of receivables = $\frac{6000}{60{,}000/365}$ = 36.50 days

    Operating cycle = Average days in inventory + Average days in receivables
    = 41.82 + 36.50 = 78.32 days

11. A is correct.

    Number of days of inventory = $\frac{5000}{75{,}000/365}$ = 24.33 days

    Number of days of receivables = $\frac{7500}{100{,}000/365}$ = 27.38 days

    Number of days of payables = 49.50
    Net operating cycle/ Cash conversion cycle = 24.33 + 27.38 - 49.50 = 2.21 days

12. B is correct. The operating cycle is equal to the number of days of inventory plus the number of days of receivables. Hence the operating cycle is not impacted by a change in the number of days of payables. The net operating cycle is equal to the operating cycle minus the number of days of payables. If the number of days of payables decreases the net operating cycle will increase.

13. C is correct. Accruals are paid at a later date, and depreciation is a noncash expense.

14. B is correct. The change in the net daily cash position (in millions) is calculated as below and would require additional borrowing of $75 million:

| | | |
|---|---|---|
| Opening cash balance | | $25 |
| Fund transfer to subsidiaries | (100) | |
| Maturing investments | 75 | |
| Debt repayments | (50) | |
| Change is cash for the day | (75) | |
| **Borrowing required** | 75 | |
| Closing cash balance | | $25 |

15. A is correct. Note that the face value is greater than the purchase price because the T-bill sells at a discount:

$$\text{DBY} = \frac{\text{Face value} - \text{Purchase price}}{\text{Face value}} * \left(\frac{360}{\text{Days to maturity}}\right)$$

$$\text{MMY} = \frac{\text{Face value} - \text{Purchase price}}{\text{Purchase price}} * \left(\frac{360}{\text{Days to maturity}}\right)$$

$$\text{BEY} = \frac{\text{Face value} - \text{Purchase price}}{\text{Purchase price}} * \left(\frac{365}{\text{Days to maturity}}\right)$$

$BEY > MMY > DBY$

16. B is correct. Note that the face value is greater than the purchase price because the T-bill sells at a discount:

$$\text{DBY} = \frac{\text{Face value} - \text{Purchase price}}{\text{Face value}} * \left(\frac{360}{\text{Days to maturity}}\right)$$

$$\text{MMY} = \frac{(\text{Face value} - \text{Purchase price})}{\text{Purchase price}} * \left(\frac{360}{\text{Days to maturity}}\right)$$

$$\text{BEY} = \frac{(\text{Face value} - \text{Purchase price})}{\text{Purchase price}} * \left(\frac{360}{\text{Days to maturity}}\right)$$

$BEY > MMY > DBY$

17. C is correct. The face value is greater than the purchase price because the T-bill sells at a discount.

$$\text{DBY} = \frac{\text{Face value} - \text{Purchase price}}{\text{Face value}} * \frac{360}{\text{Days to maturity}}$$

$$\text{DBY} = \left(\frac{1000 - 984.10}{1000}\right) * \frac{360}{30} = 19.08\%$$

18. A is correct.

$$\text{Bond} - \text{equivalent yield} = \frac{\text{Face value} - \text{Purchase price}}{\text{Purchase price}} * \left(\frac{365}{\text{Number of days to maturity}}\right)$$

$$= \frac{10000 - 9875}{9875} * \frac{365}{180} = 2.57\%$$

19. C is correct. Money- market yield $= \frac{\text{Face value} - \text{Purchase price}}{\text{Purchase price}} * \left(\frac{360}{\text{days to maturity}}\right)$

$$\text{Purchase price} = 100{,}000 - \left[0.0679 * \left(\frac{91}{360}\right) * 100{,}000\right] = \$98{,}283.639$$

Therefore,

$$\text{Money market yield} = \left[\frac{100{,}000 - 98{,}283.639}{98{,}283.639}\right] * \left(\frac{360}{91}\right) = 6.91\%$$

20. A is correct.
Money market yield = [($10,000 - $8,500)/$8,500] * (360/182) = 34.91%

21. A is correct.

$$\text{Discount basis yield} = \left[\frac{\text{Face value} - \text{Price}}{\text{Face value}}\right]\left[\frac{360}{\text{days}}\right]$$

$$\text{Discount basis yield} = \left[\frac{1{,}000{,}000 - 987{,}025}{1{,}000{,}000}\right]\left[\frac{360}{270}\right] = 1.73\%$$

22. B is correct. Days in payables $= \dfrac{\text{Accounts payable}}{\frac{\text{Purchases}}{365}}$

$= \dfrac{\text{Accounts payable}}{\left[\frac{(\text{Change in inventory}) + (\text{Cost of goods sold})}{365}\right]}$

$= \dfrac{700}{\left[\frac{1{,}500 - 1{,}600 + 9{,}000}{365}\right]}$

= 28.71

23. C is correct. Cost of trade credit=

$$\left(\left(1 + \frac{\text{Discount}}{1 - \text{Discount}}\right)^{\frac{365}{\text{Days beyond discount period}}}\right) - 1$$

$$= \left((1 + \left(\frac{0.03}{1 - 0.03}\right))^{\frac{365}{30-10}}\right) - 1 = 74.3\%$$

24. A is correct.

Current ratio $= \dfrac{\textit{Current assets}}{\textit{Current Liabilities}}$ = Current assets/\$50 = 5

Therefore, current assets = \$250 million

Quick ratio = (Current assets –Inventory)/ Current Liabilities = 3

Quick ratio = $\dfrac{\$250 - \textit{Inv}}{\$50}$ =3; therefore Inventory = \$100 million

25. B is correct. A higher level of uncollectible accounts may occur, but a longer average collection period will certainly occur.

26. B is correct. Cost = $(1+ 0.01/0.99)^{(365/50)} - 1 = 7.61\%$

27. B is correct.

Cost of trade credit =

$$=\left(\left(1 + \frac{\text{Discount}}{1 - \text{Discount}}\right)^{\frac{365}{\text{Days beyond discount period}}}\right) - 1$$

$$= \left(1 + \left(\frac{0.01}{1 - 0.01}\right)^{\frac{365}{30-10}}\right) - 1 = 20.13\%$$

28. C is correct. Evaluate the choices of short-term funding available to a company and recommend a financing method.

Line of credit cost = $\left[\dfrac{\text{Interest} + \text{Commitment fee}}{\text{Usable loan amount}}\right] * 12$

Line cost = $\left(\left(0.06 * \$1{,}000{,}000 * \frac{1}{12}\right) + \left(0.005 * \$1{,}000{,}000 * \frac{1}{12}\right)\right) * 12/1{,}000{,}000$

= 6.5%

Banker's acceptance cost = $\left(\frac{\text{Interest}}{\text{Net proceeds}}\right) * 12$

BA Cost = $\frac{\left(0.0625 * \$1{,}000{,}000 * \frac{1}{12}\right)}{\$1{,}000{,}000 - \left(0.0625 \text{ x } \$1{,}000{,}000 \text{ x} \frac{1}{12}\right)} * 12$

= 6.28%

Commercial paper cost = $[\frac{\text{Interest + dealer's commissions + backup costs}}{\text{Net proceeds}}] * 12$

CP Cost =

$$\frac{\left[\left(0.0565 * 1{,}000{,}000 * \frac{1}{12}\right) + \left(0.0025 * 1000{,}000 * \frac{1}{12}\right) + \left(0.0033 * 1{,}000{,}000 * \frac{1}{12}\right)\right]}{\$1{,}000{,}000 - \left(0.0565 * 1{,}000{,}000 * \frac{1}{12}\right)}$$

- 12 = 6.26%

29. C is correct.

BA cost = $\frac{3{,}000{,}000 * 0.065 * \frac{1}{12}}{3{,}000{,}000 - \left(3{,}000{,}000 * 0.065 * \frac{1}{12}\right)} * 12 = 6.535\%$

30. A is correct. Interest for the month = $4{,}000{,}000 * 0.105 * \frac{1}{12} = 35{,}000$

Effective annualized cost = $\left(\frac{\text{Interest}}{\text{Net Proceeds}}\right) * 12 = \frac{35{,}000}{4{,}000{,}000 - 35{,}000} * 12 = 0.1059 = 10.59\%$

31. C is correct. Line of credit cost = $[\frac{\text{Interest + Commitment fee}}{\text{Usable loan amount}}] * 12$

Interest = $\left(\frac{0.068}{12}\right) * 8{,}000{,}000 = 45{,}333.33$

Commitment fee = $\left(\frac{0.005}{12}\right) * 8{,}000{,}000 = 3{,}333.33$

Line of credit cost = $\left[\frac{45{,}333.33 + 3{,}333.33}{8{,}000{,}000}\right] * 12 = 7.30\%$

Banker's acceptance cost = $\left(\frac{\text{Interest}}{\text{Net proceeds}}\right) * 12$

Interest = $\left(\frac{0.0725}{12}\right) * 8{,}000{,}000 = 48{,}333.33$

Net proceeds = 8,000,000 – 48,333.33 = 7,951,666.67

Banker's acceptance cost = $\left(\frac{48{,}333.33}{7{,}951{,}666.67}\right) * 12 = 7.29\%$

Commercial paper cost = $[\frac{\text{Interest + dealer's commissions + backup costs}}{\text{Net proceeds}}] * 12$

Interest = $\left(\frac{0.07}{12}\right) * 8{,}000{,}000 = 46{,}666.67$

Dealer's commissions = $\frac{2500}{12} = 208.33$

Backup costs = $\frac{4200}{12} = 350$

Net proceeds = 8,000,000 – 46,666.67 = 7,953,333.33

Commercial paper cost = $[\frac{46{,}666.67 + 208.33 + 350}{7{,}953{,}333.33}] * 12 = 7.13\%$

Hence, commercial paper is the least expensive source of funding as it has the lowest effective annual cost amongst the three alternatives.

**LO.a: Describe the portfolio approach to investing.**

1. Modern portfolio theory stresses the correlation between:
   A. particular portfolio and a benchmark portfolio.
   B. individual securities within a portfolio.
   C. individual securities macroeconomic variables.

2. Ahmed Musa plans to invest in a number of assets to diversify his portfolio. This portfolio approach will *most likely* result in:
   A. Risk reduction.
   B. Downside protection.
   C. Risk elimination.

3. Three Level I candidates were discussing portfolio risk and returns and made the statements shown below. Which candidate is *most likely* correct?
   A. Candidate A: Portfolios impact returns more than risks.
   B. Candidate B: Portfolios impact risks more than returns.
   C. Candidate C: Portfolios impact both risk and return equally.

4. The diversification ratios of portfolios A, B and C are 0.5, 0.7 and 0.9 respectively. The portfolio that provides the *best* diversification benefit is:
   A. portfolio A.
   B. portfolio B.
   C. portfolio C.

5. If the average standard deviation of returns of n stocks is 30%, and the standard deviation of returns of an equally weighted portfolio of the n stocks is 20%, then the diversification ratio is *closest* to:
   A. 0.66.
   B. 1.5.
   C. 0.5.

**LO.b: Describe types of investors and distinctive characteristics and needs of each.**

6. Which of the following institutional investors is *most likely* to have a low risk tolerance and relatively high liquidity needs?
   A. Endowments.
   B. Defined benefit pension plans.
   C. Insurance companies.

7. An analyst gathers the following information for the asset allocations of three portfolios:

| Portfolio | Fixed Income (%) | Equity (%) | Alternative Assets (%) |
|---|---|---|---|
| 1 | 30 | 45 | 25 |
| 2 | 45 | 30 | 25 |
| 3 | 15 | 55 | 30 |

Which of the portfolios is *most likely* appropriate for a client who has a high degree of risk tolerance?

A. Portfolio 1.
B. Portfolio 2.
C. Portfolio 3.

8. Which of the following types of investors will *most likely* have the *lowest* need for income?
   A. Mature defined benefit pension plan.
   B. Insurance companies.
   C. Investment companies.

9. Shakeel Shah manages a defined benefit plan for Acme Co. Acme has a large number of retired employees. The fund is *most likely* to have a high need for:
   A. liquidity.
   B. income.
   C. liquidity and income.

10. Analyst 1: Endowments typically have a long time horizon, a high risk tolerance and low liquidity needs.
    Analyst 2: Banks typically have a short time horizon, low risk tolerance and high liquidity needs.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

**LO.c: Describe defined contribution and defined benefit pension plans.**

11. Which of the following is *least likely* a feature of a defined benefit pension plan?
    A. The employer accepts the investment risk.
    B. The employee accepts the investment risk.
    C. The employer provides a specified retirement benefit.

12. Which of the following is *least likely* a feature of a defined contribution plan?
    A. The employee accepts the investment risk.
    B. The amount contributed by the employer is treated as an operating cash outflow.
    C. The employer provides a specified retirement benefit.

**LO.d: Describe the steps in the portfolio management process.**

13. Sean McDonald, CFA, manages the portfolios of several clients. With respect to how frequently the investment policy statement must be updated for a client, which of the following is *most likely* true?
    A. On regular intervals such as every six months.
    B. Only if expectations about the market change.
    C. Only if there is a major change in a client's situation.

14. Which of the following regarding the portfolio management process is *most* accurate?

| | **Planning** | **Execution** | **Feedback** |
|---|---|---|---|
| A. | Asset allocation | Security analysis | Monitoring and rebalancing |
| B. | Understanding the clients' needs | Preparing an investment policy statement (IPS) | Portfolio construction |
| C. | Preparing an investment policy statement (IPS) | Portfolio construction | Performance measurement and reporting. |

15. Junaid Jamshed is planning a portfolio for his client. In accordance with the planning step of the portfolio management process, he is *least likely* to assess:
    A. the client's constraints.
    B. the expected returns of various securities.
    C. the client's degree of risk averseness.

16. For a top-down security analysis, the first step is to:
    A. examine macro-economic conditions.
    B. identify the most lucrative companies within each industry.
    C. analyze a firm's business projections and management quality.

17. With respect to portfolio management process, security selection decisions are made in the:
    A. planning step.
    B. execution step.
    C. feedback step.

18. Which of the following is *most likely* a part of the planning step in the portfolio management process?
    A. Asset allocation.
    B. Security selection.
    C. Development of the investment policy statement.

19. The planning step in the portfolio management process includes:
    A. deciding the asset allocation between equities, fixed income securities and cash.
    B. preparation of an investment policy statement.
    C. identifying attractive investments in particular market segments.

20. The feedback step of the portfolio management process does not include:
    A. performance management.
    B. asset allocation.
    C. performance reporting.

**LO.e: Describe mutual funds and compare them with other pooled investment products.**

21. The distinguishing factor between a wrap account and a mutual fund is that with wrap accounts:

A. investments cannot be tailored to the tax needs of a client.
B. there is a lower required minimum investment.
C. assets are owned directly by the investor.

22. Serene and Co. is characterized by a few large investments. Serene and Co. is *most likely* a:
    A. hedge fund.
    B. venture capital fund.
    C. buyout fund.

23. Buyout funds and venture capital funds are similar in that, they both:
    A. restructure companies to increase profitability.
    B. expect only a small percentage of investments to pay off.
    C. actively participate in the management of companies

24. A key difference between a venture capital fund and a buyout fund is that venture capital funds:
    A. make investments in established companies.
    B. make large investments.
    C. avoid the use of leverage.

25. Analyst 1: The minimum investment required to open a separately managed account (SMA) is lower than that of a mutual fund.
    Analyst 2: In a separately managed account (SMA) transactions can be tailored to the specific needs of the investor.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

26. Which of the following is *most likely* true about exchange traded funds? ETFs:
    A. can be sold short.
    B. generally do not trade close to NAV.
    C. can only trade on closing asset prices.

**Solutions**

1. B is correct. The main conclusion of MPT is that investors should not only hold portfolios, but should also focus on how individual securities in the portfolios are related to one another.

2. A is correct. Combining assets into a portfolio should reduce the portfolio's volatility. However, the portfolio approach does not necessarily provide downside protection or eliminate all risk.

3. B is correct. Portfolios reduce risk more than they increase returns.

4. A is correct. The lower the diversification ratio, the better the diversification.

5. A is correct.
   $$\text{Diversification ratio} = \frac{\text{risk of equally weighted portfolio of n securities}}{\text{risk of single security selected at random}}$$
   $= \frac{20}{30} = 0.67.$

6. C is correct. Insurance companies tend to have a low risk tolerance and a high need for liquidity given the necessity of paying claims when due. Endowments and defined benefit pension plans typically have long time horizons and relatively high risk tolerance.

7. C is correct. Portfolio 3 has the highest equity and alternative investment exposure. These asset classes have relatively high risk/return characteristics compared to fixed income.

8. B is correct. Income needs of individuals and investment companies vary depending on varying needs. Insurance companies (both life and non-life) have lowest income needs relatively.

9. B is correct. Shah must focus on income needs as income is necessary to meet the cash flow obligation to retirees. For defined benefit plans, the need for liquidity typically is quite low.

10. C is correct. Both statements are correct.

11. B is correct. In a defined benefit pension plan, the employer provides a specified retirement benefit and accepts the investment risk.

12. C is correct. In a defined benefit plan, a company makes promises of future benefits to be paid to the employees.

13. A is correct. An IPS should be updated at regular intervals. Options B and C are not correct because of the term 'only'.

14. C is correct. Planning stage requires identifying/ understanding the needs of the clients and preparing an investment policy statement (IPS), execution stage requires asset allocation,

security analysis plus portfolio construction and the feedback stage involves monitoring and rebalancing.

15. B is correct. Securities are analyzed in the execution step. In the planning step, a client's objectives and constraints are used to develop the investment policy statement.

16. A is correct. A top-down analysis begins with an analysis of macroeconomic trends. After a well-performing industry is selected, the most attractive companies comprising are then identified.

17. B is correct. Security selection decisions are made during the execution step of the portfolio management process.

18. C is correct. Security selection and asset allocation are a part of the execution step in the portfolio management process.

19. B is correct. The planning step in the portfolio management process includes understanding the client's needs and preparation of an investment policy statement. Asset allocation and security analysis are parts of the execution step in the process.

20. B is correct. Asset allocation is a part of the execution step of the portfolio management process.

21. C is correct. The key difference between a wrap account and a mutual fund is that in a wrap account the assets are owned directly by the individual.

22. C is correct. Buyout funds or private equity firms make only a few large investments in private companies with the intent of selling the restructured companies in three to five years. Hence, Serene and Co. is most likely a private equity firm.

23. C is correct. Both buyout funds and venture capital funds play an active role in the management of companies.

24. C is correct. Venture capital funds make several small investments in start-up companies and actively participate in the invested businesses providing advice. VC funds avoid the use of leverage. Buyout funds use leverage.

25. B is correct. The minimum investment required to open an SMA is usually much higher than that of a mutual fund. In an SMA, transactions can be tailored to the specific needs of the investor.

26. A is correct. ETFs can be sold short, purchased on margin, and traded at intraday prices, whereas open-end funds are typically sold and redeemed only daily, based on the share NAV calculated with closing asset prices.

**LO.a: Define risk management.**

1. Business and investing are about allocating resources and capital to chosen:
    A. risks.
    B. capital gains.
    C. return.

2. Which of the following may be controlled by an investor?
    A. Risk.
    B. Raw returns.
    C. Risk-adjusted returns.

3. Risk is all of the uncertain environmental variables that lead to:
    A. coherence.
    B. variability.
    C. predictability.

4. Analyst 1: Risk management is the process by which an organization or individual defines the level of risk to be taken, measures the level of risk being taken, and adjusts the latter toward the former, with the goal of maximizing the company's or portfolio's value or the individual's overall satisfaction, or utility.
   Analyst 2: Risk management is the process where a risk manager not only understands the effect of environmental circumstances on the business, but also knows that he cannot do anything about it.
   Which analyst's statement is *most likely* correct?
    A. Analyst A.
    B. Analyst B.
    C. Both.

5. The "Doctrine of No Surprises" states that:
    A. risk managers are expected to predict risks.
    B. the effect of the outcome of a predictable or an unpredictable event would not surprise the risk manager and the effect would have been quantified and considered in advance.
    C. the effect of the outcome of a predictable or an unpredictable event would not surprise the risk manager, but it would be difficult to quantify it in advance.

6. Bank XYZ has invested 80% of its portfolio in real estate in the beginning of 2012. In 2013, real estate prices fall considerably. Given the unpredictable nature of this event, which of the following statements is *least likely* accurate about the action taken by a good risk manager? A good risk manager:
    A. would not have predicted significant defaults on the bank's real estate securities.
    B. would actively help the bank decide on the exposure it should have in real estate securities and quantify the potential losses of such a crisis.
    C. is expected to prepare the organization for such a crisis through stress testing and scenario analysis.

7. The *least likely* goal of risk management is to:
   A. measure risk exposures.
   B. minimize exposure to risk.
   C. define the level of risk appetite.

8. Which of the following statements *best* describe risk management in the case of individuals? Risk management is:
   A. maximizing utility while bearing a tolerable level of risk.
   B. maximizing utility while avoiding exposure to risks.
   C. hedging risk exposures.

**LO.b: Describe features of a risk management framework.**

9. The process of risk management includes:
   A. minimizing risk.
   B. maximizing returns.
   C. defining and measuring risks being taken.

10. The element of a risk management framework that sets the overall context for risk management in an organization is:
    A. governance.
    B. risk infrastructure.
    C. policies and processes.

11. The element of risk management that *most likely* makes up the analytical component of the process is:
    A. communication.
    B. risk governance.
    C. risk identification and measurement.

12. The element of risk management which involves action when risk exposures are found to be out of line with risk tolerance is:
    A. risk governance.
    B. risk identification and measurement.
    C. risk monitoring, mitigation, and management.

13. The factors a risk management framework should address include all of the following *except*:
    A. communications.
    B. names of responsible individuals.
    C. policies and processes.

14. Which of the following is the correct sequence of events for risk governance and management that focuses on the entire enterprise? Establishing:
    A. risk tolerance, then risk budgeting, and then risk exposures.
    B. risk exposures, then risk tolerance, and then risk budgeting.
    C. risk budgeting, then risk exposures, and then risk tolerance.

**LO.c: Define risk governance and describe elements of effective risk governance.**

15. Which of the following approaches is the *most* consistent one with an enterprise view of risk governance?
    A. Trying to achieve the highest possible risk-adjusted return on a company's pension fund's assets.
    B. Create strategic planning processes at the business unit level for the enterprise.
    C. Considering an organization's risk tolerance when developing its asset allocation.

16. Which of the following statements about risk tolerance is *most* accurate?
    A. The organization's risk tolerance is a measure of the losses the organization is willing to experience.
    B. Risk tolerance is best discussed ex post, when awareness of risk is heightened.
    C. The risk tolerance discussion focuses on the actions the management will take to minimize losses.

17. Risk governance:
    A. defines the qualitative assessment and evaluation of potential sources of risk in an organization.
    B. aligns risk management activities with the goals of the overall enterprise.
    C. delegates responsibility for risk management to all levels of the organization's hierarchy.

18. Which of the following is *not* consistent with a risk-budgeting approach to portfolio management?
    A. Allocating investments by their amount of underlying risk sources or factors.
    B. Limiting the amount of money available to be spent on hedging strategies by each portfolio manager.
    C. Limiting the beta of the portfolio to 0.75.

19. Who would be the *least* appropriate for controlling the risk management function in a large organization?
    A. Chief financial officer.
    B. Chief risk officer.
    C. Risk management committee.

**LO.d: Explain how risk tolerance affects risk management.**

20. The extent to which the entity is willing to experience losses or opportunity costs and to fail in meeting its objectives is known as:
    A. Risk averseness.
    B. Risk mitigation.
    C. Risk tolerance.

21. Two students make the following statements:
    Student 1: The risk tolerance decision begins with analysis of an "inside" view and an "outside" view. The first deals with the shortfalls in the internal environment of the

organization that could lead to failure. The later deals with outside uncertain forces that the organization is exposed to.
Student 2: The risk tolerance decision begins with analysis of a "Proactive" view and a "reactive" view. The first deals with outside uncertain forces that the organization is exposed to. The later deals with the shortfalls in the internal environment of the organization that could lead to failure.
Which student's statement is *most likely* correct?
  A. Student 1.
  B. Student 2.
  C. Both.

22. Which factor should *most* affect a company's ability to tolerate risk?
  A. The ability to respond dynamically to adverse events.
  B. The competitive landscape.
  C. The beliefs of the individual board members.

**LO.e: Describe risk budgeting and its role in risk governance.**

23. Which of the following statements best distinguishes risk tolerance from risk budgeting?
  A. Risk tolerance focuses on the appetite for risk and what is and is not acceptable, while risk budgeting has a more specific focus on how that risk is taken.
  B. Risk budgeting focuses on the appetite for risk and what is and is not acceptable, while risk tolerance has a more specific focus on how that risk is taken.
  C. Risk budgeting focuses on how much risk an organization can tolerate, while risk tolerance deals with actively distributing that risk.

24. Risk budgeting includes all of the following except:
  A. quantifying tolerable risk by specific metrics.
  B. determining the target return.
  C. allocating a portfolio by some risk characteristics of the investments.

**LO.f: Identify financial and non-financial sources of risk and describe how they may interact.**

25. Analyst 1: Market risk is the risk that arises from the movements in interest rates, stock prices, exchange rates, and commodity prices. Credit risk is the risk of loss if one party fails to pay an amount owed on an obligation, and liquidity risk is the risk of a significant downward valuation adjustment when selling a financial asset.
Analyst 2: Credit risk is the risk that arises from the movements in interest rates stock prices, exchange rates, and commodity prices. Liquidity risk is the risk of loss if one party fails to pay an amount owed on an obligation, and market risk is the risk of a significant downward valuation adjustment when selling a financial asset.
Analyst 3: Liquidity risk is the risk that arises from the movements in interest rates, stock prices, exchange rates, and commodity prices. Credit risk is the risk of loss if one party fails to pay an amount owed on an obligation, and market risk is the risk of a significant downward valuation adjustment when selling a financial asset.
Which analyst's statement is *most likely* correct?

A. Analyst 1.
B. Analyst 2.
C. Analyst 3.

26. Statement 1: Financial risk originates from activity in the financial markets. Non-financial risk originates from outside the financial markets.

    Statement 2: Financial risk originates from the financial markets. Non-financial risk is the risk that is hard to quantify and includes the risks related to the environment at large.

    Statement 3: Financial and non-financial risks both originate from financial markets.
    Which statement(s) is/are correct?
    A. Statements 2 and 3.
    B. Statement 1 and 2.
    C. Statement 1 only.

27. An example of a non-financial risk is:
    A. market risk.
    B. credit risk.
    C. settlement risk.

28. Which of the following is a financial risk?
    A. Legal risk.
    B. Market risk.
    C. Operational risk.

29. Which of the following *best* describes an example of interactions among risks?
    A. Political events cause a decline in economic conditions and an increase in credit spreads.
    B. A stock in United States declines at the same time as a stock in Germany declines.
    C. A market decline makes a derivative counterparty less creditworthy, while causing it to owe more money on that derivative contract.

30. Which of the following best describes a financial risk?
    A. The risk that regulations will make a transaction illegal.
    B. The risk that interest rates will increase.
    C. The risk of an individual trading without limits or controls.

31. Which of the following is not an example of model risk?
    A. Using the one-year risk-free rate to discount the face value of a one-year government bond.
    B. Assuming the tails of a returns distribution are thin when they are, in fact, fat.
    C. Using standard deviation to measure risk when the returns distribution is asymmetric.

32. Which of the following is the risk that arises when it becomes difficult to sell a security in a highly stressed market?
    A. Liquidity risk.

B. Credit risk.
C. Systemic risk.

33. The risks that individuals face based on mortality create which of the following problems?
    A. Covariance risk associated with their human capital and their investment portfolios.
    B. The risk of loss of income to their families.
    C. The interacting effects of solvency risk and the risk of being taken advantage of by an unscrupulous financial adviser.

**LO.g: Describe methods for measuring and modifying risk exposures and factors to consider in choosing among the methods.**

34. Which of the following is *most likely* a risk driver from the perspective of an organization?
    A. The probabilities of adverse events.
    B. The statistical methods that measure risk.
    C. Factors that influence macroeconomies and industries.

35. The concept that directly measures the risk of derivatives is:
    A. Beta and standard deviation.
    B. Probability.
    C. Delta and gamma.

36. The best definition of value at risk is:
    A. the expected loss if a counterparty defaults.
    B. the maximum loss an organization would expect to incur over a holding period.
    C. the minimum loss expected over a holding period a certain percentage of the time.

37. The methods commonly used to supplement VaR to measure the risk of extreme events is:
    A. standard deviation.
    B. loss given default.
    C. scenario analysis and stress testing.

38. Which of the following statements is most likely accurate about insurable risks?
    A. Insurable risks are less costly.
    B. Insurable risks have smaller loss limits.
    C. Insurable risks are typically diversifiable by the insurer.

39. If a company has a one-day 10% Value at Risk of $1 million, this means:
    A. 10% of the time the firm is expected to lose at least $1 million in one day.
    B. 90% of the time the firm is expected to lose at least $1 million in one day.
    C. 10% of the time the firm is expected to lose no more than $1 million in one day.

40. Which of the following is the best option for an entity choosing to accept a risk exposure?
    A. Establish a reserve fund to cover losses.
    B. Buy insurance.
    C. Enter into a derivative contract.

41. The choice of risk-modification method is based on:
    A. maximizing returns at the lowest cost.
    B. how costs versus benefits weigh against the entity's risk tolerance.
    C. minimizing risk at the lowest cost.

**Solutions**

1. A is correct. Business and investing are about allocating resources and capital to the chosen risks.

2. A is correct. Many decision makers focus on return, which is not something that is easily controlled, as opposed to risk, or exposure to risk, which may actually be managed or controlled.

3. B is correct. Risk is related to variability.

4. A is correct. Analyst A is correct because risk management covers understanding the level of bearable risk, measure the risk taken, adjust the bearable risk with the level of risk taken, while keeping in view the value maximization and utility of the company portfolio.

5. B is correct. The "Doctrine of No Surprises" states that the effect of the outcome of a predictable or an unpredictable event would not surprise the risk manager and the effect would have been quantified and considered in advance.

6. A is correct. The other two statements are what a good risk manager would do. Even though the real estate crisis was unpredictable, a good risk manager is expected to prepare for such crises. A good risk manager is also expected to continuously report in advance on the potential impact of this sizable risk exposure.

7. B is correct. The definition of risk management includes both defining the level of risk desired and measuring the level of risk taken. Risk management means taking risks actively and in the best, most value-added way possible and is not about minimizing risks.

8. A is correct. For individuals, risk management concerns maximizing utility while taking risk consistent with individual's level of risk tolerance.

9. C is correct. Risks need to be defined and measured so as to be consistent with the entity's chosen level of risk tolerance and target for returns or other outcomes.

10. A is correct. Governance is the element of the risk management framework that is the top-level foundation for risk management. Although policies, procedures, and infrastructure are necessary to implement a risk management framework, it is governance that provides the overall context for an organization's risk management.

11. C is correct. Risk identification and measurement is the quantitative part of the process. It involves identifying the risks and summarizing their potential quantitative impact. Communication and risk governance are largely qualitative.

12. C is correct. Risk monitoring, mitigation, and management require recognizing and taking action when these (risk exposure and risk tolerance) are not in line. Risk governance involves setting the risk tolerance. Risk identification and measurement involves identifying and measuring the risk exposures.

13. B is correct. While risk infrastructure, which a risk management framework must address, refers to the people and systems required to track risk exposures, there is no requirement to actually name the responsible individuals.

14. A is correct. In establishing a risk management system, determining risk tolerance must happen before specific risks can be accepted or reduced. Risk tolerance defines the appetite for risk. Risk budgeting determine how or where the risk is taken and quantifies the tolerable risk by specific metrics. Risk exposures can then be measured and compared against the acceptable risk.

15. C is correct. The enterprise view of risk management considers the organization as a whole—its goals, value, and risk tolerance. It is not about strategies or risks at the individual business line level.

16. A is correct. Risk tolerance identifies the extent to which the organization is willing to experience losses or opportunity costs and fail in meeting its objectives. It is best discussed before a crisis (ex ante) and is primarily a risk governance or oversight issue at the board level, not a management or tactical one.

17. B is correct. Risk governance is the top-down process that defines risk tolerance, provides risk oversight and guidance to align risk with enterprise goals.

18. B is correct. Risk budgeting is any means of allocating a portfolio by some risk characteristics of the investments. This approach could be a strict limit on beta or some other risk measure or an approach that uses risk classes or factors to allocate investments. Risk budgeting does not require nor prohibit hedging, although hedging is available as an implementation tool to support risk budgeting and overall risk governance.

19. A is correct. A chief risk officer or a risk management committee is an individual or group that focuses primarily on risk management. A chief financial officer, may supervise a CRO, and would likely have some involvement in a risk management committee, but a CFO has broader responsibilities, cannot provide the specialization and exclusive attention to risk management that is necessary in a large organization.

20. C. is correct. The extent to which the entity is willing to experience losses or opportunity costs and to fail in meeting its objectives is known as risk tolerance.

21. A is correct.

22. A is correct. A company's ability to adapt quickly to adverse events may allow for a higher risk tolerance. There are other factors, such as beliefs of board members and a stable market environment, which may but should not affect risk tolerance.

23. A is correct. Risk tolerance and risk budgeting are different form each other because risk tolerance focuses on the appetite for risk and what is and is not acceptable, risk budgeting has a more specific focus on how that risk is taken.

24. B is correct. Risk budgeting does not include determining the target return. Risk budgeting quantifies and allocates the tolerable risk by specific metrics.

25. A is correct. Market risk is the risk that arises from the movements in interest rates stock prices, exchange rates, and commodity prices. Credit risk is the risk of loss if one party fails to pay an amount owed on an obligation, and liquidity risk is the risk of a significant downward valuation adjustment when selling a financial asset.

26. B is correct. Financial risk originates form the financial markets. Non-financial risk is the risk that is hard to quantify and includes the risks related actions within an entity, or from external origins, such as the environment, the community, regulators, politicians, suppliers, and customers.

27. C is correct. Settlement risk is related to default risk, but deals with the timing of payments rather than the risk of default.

28. B is correct. Examples of non-financial risks include legal risk, settlement risk, operational risk, regulatory risk, tax risk, model risk. Credit risk, market risk, and liquidity risk are financial risks. Operational risk is the only risk listed that is considered non-financial, even though it may have financial consequences.

29. C is correct. The conditions mentioned in A are directly linked and hence do not represent an interaction of risks. B indicates a global decline in equity values which is also not an interaction of risk. C represents an interaction between market risk and credit risk.

30. B is correct because this risk arises from the financial markets.

31. A is correct. The risk-free rate is generally the appropriate rate to use in discounting government bonds. Although government bonds are generally default free, their returns are certainly risky. Assuming a returns distribution has thin tails when it does not and assuming symmetry in an asymmetric distribution are both forms of model risk.

32. A is correct. Securities vary highly in how liquid they are. Those with low liquidity are those for which either the number of agents willing to invest or the amount of capital these agents are willing to invest is limited. When markets are stressed, these limited number of investors or small amount of capital dry up, leading to the inability to sell the security at any price the seller feels is reasonable. Systemic risk is the risk of failure of the entire financial system and a much broader risk than liquidity risk. Credit risk is the risk of loss caused by a counterparty's or debtor's failure to make a promised payment.

33. B is correct. The uncertainty about death creates two risks: mortality risk and longevity risk. The mortality risk (risk of dying relatively young) is manifested by a termination of the income stream generated by the person. In contrast, longevity risk is the risk of outliving one's financial resources.

34. C is correct. Risks (and risk drivers) arise from fundamental factors in macroeconomies and industries.

35. C is correct. Delta and gamma are measures of the movement in an option price, given a movement in the underlying. The other answers can reflect some elements of derivatives risk, but they are not direct measures of the risk.

36. C is correct. VaR measures a minimum loss expected over a holding period a certain percentage of the time. It is not an expected loss nor does it reflect the maximum possible loss, which is the entire equity of the organization.

37. C is correct. Scenario analysis and stress testing both examine the performance of a portfolio subject to extreme events. The other two answers are metrics used in portfolio analysis but are not typically associated with extreme events.

38. C is correct. Insurance works by pooling risks. It is not necessarily less costly than derivatives nor does it have lower loss limits.

39. A is correct. The VaR measure indicates the probability of a loss of at least a certain level in a time period.

40. A is correct. Risk acceptance is similar to self-insurance. An entity choosing to self-insure may set up a reserve fund to cover losses. Buying insurance is a form of risk transfer and using derivatives is a form of risk-shifting, not risk acceptance.

41. B is correct. Among the risk-modification methods of risk avoidance, risk acceptance, risk transfer, and risk shifting none has a clear advantage. One must weigh benefits and costs in light of the firm’s risk tolerance when choosing the method to use.

**LO.a: Calculate and interpret major return measures and describe their appropriate uses.**

1. Siraj intends to evaluate the annualized returns of his buy-and-hold strategy after making his annual deposits to an account for each of the past three years. Which of the following methods should be used, *most* appropriately?
   A. Geometric mean return.
   B. Money-weighted return.
   C. Arithmetic mean return.

2. An investor's transactions in a mutual fund and the fund's return over a three year period are given below:

| | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| New investment at the beginning of the year | $2,000 | $2,200 | $3,000 |
| Investment return for the year | -10% | 25% | 40% |
| Withdrawal by investor at the end of the year | $0 | $1,000 | $0 |

   Based on the data, the money weighted return for the investor is *closest* to:
   A. 51.8%.
   B. 24.7%.
   C. 74.9%.

3. An analyst observes that the historic geometric returns are 10% for fixed income securities, 5% for treasury bills and 2% for inflation. The real rate of return for fixed income securities is *closest* to:
   A. 4.7%.
   B. 7.2%.
   C. 7.8%.

4. An analyst obtains the following annual rates of return for a mutual fund:

| **Year** | **2011** | **2012** | **2013** |
|---|---|---|---|
| Return (%) | 23 | -14 | -1.5 |

   The fund's holding period return over the three-year period is *closest* to:
   A. 4.19%.
   B. 4.75%.
   C. 5.29%.

5. Ahmed invested in a fund which offered the following returns over the last three years:

| **Year** | **Assets under management at start of year** | **Net Return (%)** |
|---|---|---|
| 1. | 15 million | 15 |
| 2. | 20 million | -5 |
| 3. | 5 million | 10 |

   The money-weighted annual return is *closest* to:
   A. 4.5%.
   B. 5.0%.
   C. 12.1%.

6. You are evaluating the performance of two investment managers in your team:
   - Soomro**:** In the last 200 days, he has earned a holding period return of 9.2 percent.
   - Seemi**:** Over the past 5 months, her holding period return is 6.0%.

   Which manager performed better?
   A. Soomro.
   B. Seemi.
   C. Both did equally well.

7. Saman purchases two shares of Sun Co, one for $32 at time t = 0 and the other for $45 at t = 1. At t = 2, he sells them both for $53 each. The stock paid a dividend of $0.75 per share at t = 1 and at t = 2. The periodic money weighted rate of return on the investment is *closest* to:
   A. 23.82%.
   B. 25.76%.
   C. 26.75%.

8. Liquidity *least likely* impacts which of the following with respect to trading costs?
   A. stock price.
   B. brokerage commissions.
   C. bid–ask spread.

9. Fred David invested in the stock of a hypothetical company called Stars Ltd. He purchased three shares worth $100 each at the beginning of the first year. He invested in another share worth $115 before the beginning of the second year. He sold the four shares at the end of the second year for a price of $120 per share. At the end of each period, the stock paid a dividend of $2 per share. Which of the following is *most likely* to be the money-weighted rate of return?
   A. 8.76%.
   B. 9.62%.
   C. 10.66%.

**LO.b: Describe characteristics of the major asset classes that investors consider in forming portfolios.**

10. Which of the following asset classes have historically had the highest returns and standard deviation?
    A. Long-term corporate bonds.
    B. Large-cap stocks.
    C. Small-cap stocks.

11. Which of the following asset classes have historically had the lowest returns and standard deviation?
    A. Long term treasury bonds.
    B. Treasury bills.
    C. Large cap stocks.

**LO.c: Calculate and interpret the mean, variance, and covariance (or correlation) of asset returns based on historical data.**

12. The following table presents historical information for two stocks, ABC and XYZ:

| | |
|---|---|
| Variance of returns for ABC | 0.0308 |
| Variance of returns for XYZ | 0.0705 |
| Correlation coefficient between ABC and XYZ | 0.6500 |

The covariance between ABC and XYZ is *closest* to:
    A. 0.0014.
    B. 0.0717.
    C. 0.0303.

13. A measure of how the returns of two risky assets move in relation to each other is the:
    A. portfolio return.
    B. covariance.
    C. standard deviation.

14. Ahmed's portfolio consists of two stocks: Ivne. Ltd and Iris. Co. The standard deviation of returns is 0.25 for Ivne. Ltd and 0.14 for Iris. Co. The covariance between the returns of the two stocks is 0.0045. The correlation of returns between them is:
    A. 0.008.
    B. 0.129.
    C. 7.778.

15. Which of the following statements is least accurate?
    A. If you add a stock to a portfolio where the risk of the stock is equal to the risk of the portfolio and the correlation is 0.6, the overall risk of the new portfolio will be lower.
    B. The correlation coefficient and potential benefits from diversification are inversely related.
    C. A zero variance portfolio can be constructed by combining two securities with a correlation coefficient of 0.

16. You are a U.S investor with 78% invested in the S&P 500 and 22% invested in the Dow Jones 30 index. The risk and expected return data is given below:

| | **Risk (%)** | **Expected Return (%)** | **Covariance (% squared)** |
|---|---|---|---|
| S&P 500 | 16.32% | 9.82 | 0.43 |
| Dow Jones 30 | 32.86% | 14.97 | |

The portfolio's expected return and risk are *closest* to:
    A. 10.95% and 15.14%.
    B. 10.90% and 15.10%.
    C. 11.58% and 15.10%.

17. The correlation between the historical returns of Stock A and Stock B is 0.75. If the variance of Stock A is 0.25 and the variance of Stock B is 0.36, the covariance of the returns of Stock A and Stock B is *closest* to:
    A. 0.225.

B. 0.30.
C. 0.36.

**LO.d: Explain risk aversion and its implications for portfolio selection.**

18. An investment has a 50% probability of returning 10% and a 50% probability of returning 4%. An investor prefers this uncertain investment over a guaranteed return of 8%. This preference *most likely* indicates that the investor is risk:
    A. seeking.
    B. neutral.
    C. averse.

19. The risk-return relationship for a risk averse investor is *most likely* to be:
    A. positive.
    B. negative.
    C. neutral.

20. You are advising three clients of whom Eliyahu Goldratt is the most risk-averse. According to the utility theory, the indifference curve for Goldratt will *most likely* be the one with the:
    A. greatest slope coefficient.
    B. smallest intercept value.
    C. least convexity.

21. Which of the following statements about risk-averse investors is *least* accurate? A risk-averse investor:
    A. will take additional investment risk if sufficiently compensated for this risk.
    B. seeks out the investment with minimum risk, given a certain level of return.
    C. avoids participating in global equity markets.

**LO.e: Calculate and interpret portfolio standard deviation.**

22. Selected information about shares of two companies is provided below:

| | ABC Corporation | XYZ Corporation |
|---|---|---|
| Standard deviation | 25% | 30% |
| Correlation of returns | 0.24 | |
| Portfolio weights | 40% | 60% |

The standard deviation of returns of the portfolio formed with these two stocks is *closest* to:
    A. 0.0043.
    B. 0.2259.
    C. 0.0756.

23. An analyst studies an investment portfolio with stocks of Company ABC and Company JKL. He wishes to compute the correlation of returns between the stocks. However, the only bits of information available include the following data.

| **Stock** | **Standard Deviation** | **Portfolio Weights** |
|---|---|---|
| ABC | 36% | 40% |

| | | |
|---|---|---|
| JKL | 27% | 60% |

The standard deviation of the returns for the portfolio is 30%. The correlation coefficient for the returns is *closest* to:

A. 0.92.
B. 1.02.
C. 1.84.

24. The following data is available:

| Expected Return | Standard Deviation | Risk aversion coefficient |
|---|---|---|
| 15% | 27% | 4 |

The utility of this investment is *closest* to:

A. 0.0040.
B. 0.0041.
C. 0.0042.

25. If the correlation between Stock A and Stock B in a two-asset portfolio increases during a market decline, with a constant weightage of the assets and expected standard deviations of each, the portfolio's volatility will:

A. increase.
B. stay constant.
C. decrease.

26. Arman is considering investing in a small-cap stock fund and a general bond fund. The correlation between the two fund returns is 0.12. Expected annual return equaled 16% and 6% respectively with standard deviation of 30% for small-cap stock and 11.5% for general bond fund. If Arman requires a portfolio return of 10 percent, the proportions in each fund respectively should be *closest* to:

A. 30% and 70%.
B. 36.4% and 63.4%.
C. 40% and 60%.

27. Information about a portfolio that consist of two assets is provided below:

| Asset | Portfolio Weight | Standard deviation |
|---|---|---|
| ABC | 30% | 10% |
| JKL | 70% | 8% |

If the correlation coefficient between the two assets is 0.8, the standard deviation of the portfolio is *closest* to:

A. 8.2%.
B. 9.8%.
C. 9.1%.

**LO.f: Describe the effect on a portfolio's risk of investing in assets that are less than perfectly correlated.**

28. Assume that two securities that are present in equal proportions in an investor's portfolio have the same expected returns and volatility. For which of the following correlations between the two securities would the investor *most likely* be able to achieve the greatest diversification benefit?
    A. +0.86.
    B. -0.86.
    C. 0.00.

29. A correlation matrix of the returns for securities A, B, and C is reported below:

| **Security** | A | B | C |
|---|---|---|---|
| A | 1.0 | | |
| B | -1.0 | 1.0 | |
| C | 0.5 | -0.5 | 1.0 |

Assuming that the expected return and the standard deviation of each security are the same, a portfolio consisting of an equal allocation of which two securities will be *most effective* for portfolio diversification? Securities:
    A. A and B.
    B. A and C.
    C. B and C.

30. A portfolio contains equal weights of two securities that have the same standard deviation. If the correlation between the returns of the two securities was to increase, the portfolio risk would *most likely*:
    A. increase.
    B. remain the same.
    C. decrease.

**LO.g: Describe and interpret the minimum-variance and efficient frontiers of risky assets and the global minimum-variance portfolio.**

31. The set of risky portfolio that give the highest return at each level of risk will *most likely* lie on the:
    A. capital allocation line.
    B. efficient frontier.
    C. security market line.

32. The capital allocation line (CAL) dominates the efficient frontier because of the ability of the investor to:
    A. invest in the risk-free asset.
    B. invest in market portfolio.
    C. invest in a zero-beta asset.

33. Which of the following in combination with the risk-free asset forms the dominant capital allocation line?
    A. global minimum-variance portfolio.

B. optimal risky portfolio.
C. levered portfolio of risky assets.

34. Which of the following portfolios will *most likely* lie at the point of tangency between the capital allocation line and the efficient frontier of risky assets?
    A. Optimal investor portfolio.
    B. Global minimum variance portfolio.
    C. Optimal risky portfolio.

**LO.h: Discuss the selection of an optimal portfolio, given an investor's utility (or risk aversion) and the capital allocation line.**

35. Relative to an investor with steep upward sloping indifference curves, an investor with a less steep indifference curve *most likely* has:
    A. a higher level of risk aversion.
    B. a lower level of risk aversion.
    C. the same level of risk aversion.

36. Investor X has a higher risk aversion than investor Y. On the capital allocation line, will investor Y's optimal portfolio have a higher expected return?
    A. Yes.
    B. No, since investor Y has low risk tolerance.
    C. No, since investor Y has high risk tolerance.

37. The optimal portfolio, as suggested by the mean–variance theory, is determined by every individual investor's:
    A. borrowing rate.
    B. risk-free rate.
    C. risk preference.

**Solutions**

1. A is correct. The geometric mean return compounds the returns instead of the amount invested.

2. B is correct.

| | Year 1 | Year 2 | Year 3 |
|---|---|---|---|
| Starting balance ($) | 0 | 1,800 | 4,000 |
| New investment at the beginning of the year ($) | 2,000 | 2,200 | 3,000 |
| Net balance at the beginning of the year ($) | 2,000 | 4,000 | 7,000 |
| Investment return for the year | -10% | 25% | 40% |
| Investment gain/loss ($) | -200 | 1,000 | 2,800 |
| Withdrawal by investor at the end of the year ($) | 0 | 1,000 | 0 |
| Balance at the end of the year ($) | 1,800 | 4,000 | 9,800 |

$CF_0$ = -2,000
$CF_1$ = -2,200 (new investment at the beginning of year 2)
$CF_2$ = -2,000 (withdrawal of 1,000 at the end of year 2, -3,000 new investment at the beginning of year 3)
$CF_3$ = 9,800 (balance at the end of year 3)
The money weighted return can be calculated as:
CF0 = -2,000, CF1 = -2,200, CF2 = -2,000, CF3 = 9,800, CPT IRR.
IRR = 24.74%.

3. C is correct. Real rate of return = $\frac{1 + 0.1}{1 + 0.02}$ - 1 = 7.8%

4. A is correct. [(1 + 0.23) (1 − 0.14) (1 − 0.015)] – 1 = 0.0419 = 4.19%.

5. A is correct. All amounts are in million dollars. The table below shows the computation for cashflows at the start of every year:

| **Year** | **1** | **2** | **3** |
|---|---|---|---|
| Balance from previous year | 0 | 17.25 | 19 |
| New investment at the start of the year (inflow) | 15 | 2.75 | 0 |
| Withdrawal at the start of the year (outflow) | 0 | 0 | 14 |
| Net balance at the beginning of year (given in the question) | 15 | 20 | 5 |
| Investment return for the year (given in the question) | 15% | -5% | 10% |
| Investment gain (loss) | 2.25 | -1 | 0.5 |
| Balance at the end of year | 17.25 | 19 | 5.5 |

In order to calculate the money-weighted return (IRR) we assume the final amount (5.5) is withdrawn. The money-weighted return is the IRR, which can be calculated using a financial calculator as follows:

CF0 = -15, CF1 = -2.75, CF2 = 14, CF3 = 5.5, CPT IRR.
IRR = 4.52%.

6. A is correct.
   Annualized return for Soomro = $[(1\ +\ 0.092)^{)\wedge(365/200)}] - 1\ =\ 0.174\ =\ 17.4\ \%$
   Annualized return for Seemi = $[(1\ +\ 0.06)^{365/150}] - 1\ = 0.152)\ =\ \ 15.2\ \%$

7. C is correct. The money-weighted return (IRR) can be computed using a financial calculator:

   CF0 = -32; CF1 = -44.25; CF2 = 107.5; CPT IRR. IRR = 26.75%.

8. B is correct. Brokerage commissions are negotiated with the brokerage firm. A security's liquidity impacts the operational efficiency of trading costs.

9. C is correct.
   **Step 1:**
   Calculate the cash inflows and outflows at t = 0, 1 and 2.
   At t = 0, Fred purchased 3 shares worth \$100 each resulting in an outflow of \$300
   At t = 1, Fred purchased 1 share worth \$ 115 and thus an outflow of \$115.
   Fred also received dividends worth \$6 on the shares purchased earlier and thus an inflow of \$6.
   Net cash outflow of \$109
   At t = 3, Fred sold 4 shares for worth \$120 each therefore an inflow of \$480.
   Fred also received dividends worth \$8 resulting in a net cash inflow of \$488.
   **Step 2:**
   Given the following Net Cash flows, calculate the IRR which is equivalent to the money-weighted return.
   CF0 = -300, CF1 = -109 and CF2 = 488.
   IRR or money weighted rate of return = 10.66%.

10. C is correct. Small-cap stocks have had the highest annual return and standard deviation of return over time. Large-cap stocks and bonds have historically had lower risk and return than small-cap stocks.

11. B is correct. Treasury bills have had the lowest annual return and standard deviation of return over time.

12. C is correct. $\mathrm{Cov}_{ij}\ =\ \sigma_i\sigma_j\ r_{ij} = \sqrt{0.0308 * 0.0705} *\ 0.6500 = 0.0303$

13. B is correct. The covariance is defined as the co-movement of the returns of two assets or how well the returns of two risky assets move together. Range and standard deviation are measures of dispersion and measure risk, not how assets move together.

14. B is correct. $\frac{0.0045}{0.25 * 0.14} = 0.129$.

15. C is correct. A zero-variance portfolio can only be constructed if the correlation coefficient between assets is -1.

16. A is correct.
Portfolio return = (0.78 * 0.0982) + (0.22 * 0.1497) = 0.1095 = 10.95%.
Portfolio risk = $[w_1^2\sigma_1^2 + w_2^2\sigma_2^2 + 2w_1w_2\text{Cov}(R_1, R_2)]^{½}$
= $[(0.78^2 * 0.1632^2) + (0.22^2 * 0.3286^2) + (2 * 0.78 * 0.22 * 0.0043)]^{½} = (0.02291)^{½}$
= 15.14%.

17. A is correct. $\text{Cov}_{ij} = \sigma_i\sigma_j r_{ij} = \sqrt{0.25 * 0.36} * 0.75 = 0.225$

18. A is correct. A risk seeking investor prefers more risk to less risk. In the above example, he prefers the investment with an expected return of (0.5)10 + (0.5)4 = 7% over a guaranteed return of 8%.

19. A is correct. Historical data over long periods of time indicate that there exists a positive risk–return relationship, which is a reflection of an investor's risk aversion.

20. A is correct. The most risk-averse investor has the indifference curve with the greatest slope.

21. C is correct. Risk-averse investors are generally willing to invest in risky investments, if the return on the investment is sufficient to reward the investor for taking on this risk. Participants in securities markets are generally assumed to be risk-averse investors.

22. B is correct. Portfolio standard deviation =
$\sqrt{(0.25^2 * 0.4^2 + 0.3^2 * 0.6^2 + 2 * 0.24 * 0.4 * 0.6 * 0.25 * 0.3)} = 0.2259.$

23. A is correct**.** The standard deviation of the returns for a portfolio is given by:
$\sigma_{portfolio} = \sqrt{(\sigma_1^2 w_1^2 + \sigma_2^2 w_2^2 + 2\,\sigma_1 w_1 \sigma_2 w_2 \rho_{12})}$
$0.3 = \sqrt{(0.36^2 * 0.4^2 + 0.27^2 * 0.6^2 + 2 * 0.36 * 0.4 * 0.27 * 0.6 * \rho)}$
Solve the equation to deduce the unknown i.e. $\rho = 0.92$.

24. C is correct.
$U = E(r) - 0.5A\sigma^2$

$U = 0.15 - 0.5 * 4 * 0.27^2 = 0.0042.$

25. A is correct. Higher correlations will result in a lower diversification benefit and higher volatility.

26. C is correct.
$10\% = w_1 * 16\% + (1 - w_1) * 6\%;$
$w_1 = 40\%, (1 - w_1) = 60\%.$

Thus, 40 percent should be invested in the small-cap fund and 60 percent should be invested in the bond fund.

27. A is correct. Portfolio standard deviation =
$\sqrt{(0.3)^2(0.1)^2 + (0.7)^2(0.08)^2 + 2\,(0.8)(0.3)(0.7)(0.1)(0.08)} = 0.082 = 8.2\%.$

28. B is correct. Diversification benefit is greatest when a portfolio consists of securities that do not move together and thus the investor should invest in securities with the lowest correlation i.e. – 0.86.

29. A is correct. The negative correlation of –1.0 between investment instruments A and B is lowest and therefore is most effective for portfolio diversification.

30. A is correct. The standard deviation of the portfolio is directly proportional to the correlation of assets within the portfolio.

31. B is correct. The efficient frontier is the part of the minimum variance frontier which represents the set of portfolios that will give the highest return at each risk level.

32. A is correct. With the efficient frontier we are only allowed to invest in risky assets. With the CAL this constraint is relaxed and we are also allowed to invest in the risk-free asset.

33. B is correct. The use of leverage and the combination of a risk-free asset and the optimal risky asset will dominate the efficient frontier of risky assets (the Markowitz efficient frontier).

34. C is correct. The optimal risky portfolio lies at the point of tangency between the capital allocation line and the efficient frontier of risky assets.

35. B is correct. An investor with less steep indifference curves has a lower level of risk aversion.

36. A is correct. Investor Y has a low risk aversion coefficient, therefore a high risk tolerance and a higher expected return on the capital allocation line.

37. C is correct. Each individual investor's optimal mix of the risk-free asset and the optimal risky asset is determined by the investor's risk preference.

**LO.a: Describe the implications of combining a risk-free asset with a portfolio of risky assets.**

1. Investor A invests only in risky assets. Investor B invests in risky assets and the risk free asset. Which of the following is *most* accurate?
    A. For a given level of risk, Investor A's maximum return is depicted by the CAL and Investor B's maximum return is depicted by the efficient frontier.
    B. For a given level of risk, Investor A's maximum return is depicted by the efficient frontier and Investor B's maximum return is depicted by the CAL.
    C. For a given level of risk, the maximum return for both investor is depicted by the efficient frontier.

2. A portfolio has a risk-free asset and two risky assets. Which of the following is *most likely* to be a depiction of the risk and return of this portfolio?
    A. Capital allocation line.
    B. Security characteristic line.
    C. Security market line.

3. Sam, an investor, would have an optimal portfolio with respect to the capital market theory, if the portfolio with a risk-free and a risky asset has the highest:
    A. capital allocation line slope.
    B. expected return.
    C. indifference curve.

4. Roger Phillips is a highly risk-averse investor. A majority of wealth is *most likely* to be invested in:
    A. an optimal risky portfolio.
    B. risk-free assets.
    C. risky assets.

5. A portfolio with equal parts invested in a risk-free asset and a risky portfolio will *most likely* lie on:
    A. the security market line.
    B. a capital allocation line.
    C. the efficient frontier.

6. An investment in only one asset type has a worse risk-return tradeoff than an investment in a portfolio of a risk-free asset and a risky asset. This is because the correlation between the risk-free asset and the risky asset is equal to:
    A. -1.
    B. 0.
    C. 1.

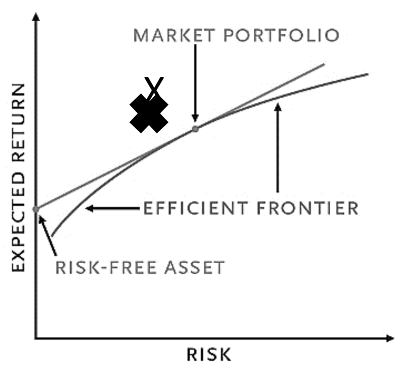
**LO.b: Explain the capital allocation line (CAL) and the capital market line (CML).**

7. If the borrowing rate is higher than the lending rate:

A. the slope of the lending part of CML will be equal to the slope of the borrowing part of the CML.
B. the slope of the lending part of CML will be greater than the slope of the borrowing part of the CML.
C. the slope of the lending part of CML will be less than the slope of the borrowing part of the CML.

8. Which of the following combinations is *most likely* to have its portfolio's risk and return presented in the form of the capital market line, CML?
   A. Risk-free asset and market portfolio.
   B. Risk-free asset and any risky portfolio.
   C. Risky asset and a leveraged portfolio.

9. Based on the following graph, X is *most likely* to be considered:




   A. inefficient.
   B. inferior.
   C. unachievable.

10. XYZ is a portfolio on the capital market line. The returns on the market portfolio are greater than the returns on the portfolio XYZ. XYZ is *most likely* to be:
    A. borrowing portfolio.
    B. lending portfolio.
    C. unachievable portfolio.

11. In defining the CML, we assume that all investors have the same expectations for securities. This results in:
    A. a single optimal risky portfolio called the market portfolio.
    B. a portfolio of assets with the same risk.
    C. a portfolio of assets with the same returns.

12. Which of the following assumptions of the capital market theory allows for optimal risky portfolio i.e. market portfolio to exist?
    A. All investors plan for the same holding period.
    B. All investors are price takers.
    C. All investors have homogeneous expectations.

13. In accordance with the capital market theory, the optimal risky portfolio is *most likely* to:
    A. have the lowest expected variance.
    B. have the highest expected returns.
    C. be the market portfolio.

14. As compared to a market portfolio, a borrowing portfolio on the capital market line is *most likely* to have:
    A. lesser returns.
    B. equal returns.
    C. greater returns.

**LO.c: Explain systematic and nonsystematic risk, including why an investor should not expect to receive additional return for bearing nonsystematic risk.**

15. Risk that can be attributed to factor(s) that impact the market is *least likely* described as:
    A. systematic risk.
    B. non-diversifiable risk.
    C. unsystematic risk.

16. Which of the following is *least likely* to be synonymous with systematic risk?
    A. Market Risk.
    B. Undiversifiable Risk.
    C. Firm-specific Risk.

17. Which of the following is *most likely* to be an example of a nonsystematic risk?
    A. Major oil discovery.
    B. Natural disaster.
    C. Political uncertainty.

18. In accordance to the capital market theory, which of the following risks is priced?
    A. Non-systematic risk.
    B. Systematic risk.
    C. Total risk.

19. Which of the following statements is *most likely* to be correct?
    A. The sum of an asset’s systematic variance and its nonsystematic variance of returns is equal to the asset’s total variance.
    B. The sum of an asset’s systematic standard deviation and its nonsystematic standard deviation of returns is equal to the asset’s total risk.
    C. The sum of an asset’s systematic returns and its nonsystematic returns is equal to the asset’s beta.

20. Andrew, a portfolio manager, aims to maximize risk-adjusted returns. He is *least likely* to invest in securities with a nonsystematic variance of:
    A. 0.2.
    B. 0.0.

C. 0.5.

21. Kate Beckett invested her wealth in a diversified portfolio. Which of the following is she *most likely* to avoid?
    A. Non-systematic risk.
    B. Systematic risk.
    C. Total risk.

**LO.d: Explain return generating models (including the market model) and their uses.**

22. Which of the following *best* describes a return generating model that provides an estimate of the expected return of a security based on factors such as earnings growth and cash flow generation?
    A. Macroeconomic factor model.
    B. Fundamental factor model.
    C. Market factor model.

23. Which of the following is *least likely* to be the reason for using return-generating models?
    A. To simplify the construction of an optimal portfolio.
    B. To decompose the total variance into systematic and nonsystematic risk.
    C. To estimate an asset's variance.

**LO.e: Calculate and interpret beta.**

24. Barry wishes to compute the beta of a stock that has a correlation of 0.64 with the market. The following data is available:
    Standard Deviation of Returns of Stock = 14.1%.
    Standard Deviation of Returns of Market = 9.44%.
    The beta is *closest* to:
    A. 0.43.
    B. 0.74.
    C. 0.96.

**The following information relates to Questions 25-27**

Three investors, Bill, Jill, and Mill, invest in individual securities. The table below shows the expected annual returns, expected standard deviation, and the correlation between their security and the market.

| **Investor** | **Expected annual return (%)** | **Expected standard deviation (%)** | **Correlation between security and the market.** |
|---|---|---|---|
| Bill | 15 | 21 | 0.85 |
| Jill | 12 | 21 | 0.75 |
| Mill | 12 | 28 | 0.65 |

The following information is available for the market:
Expected Annual Return: 11%
Expected Standard Deviation: 16%

25. Which investor is *most likely* to be exposed to the highest total risk?
    A. Bill.
    B. Jill.
    C. Mill.

26. Which investor has invested in a security with the highest beta?
    A. Bill.
    B. Jill.
    C. Mill.

27. Which investor is exposed to the *least* amount of market risk?
    A. Bill.
    B. Jill.
    C. Mill.

28. In a class discussion, Mary stated that the average beta for all assets in the market is less than 1. Amanda argued that it was equal to 1; whereas James insisted it exceeded 1. Which of the following students is *most likely* to be correct?
    A. Amanda.
    B. James.
    C. Mary.

29. A security characteristic line's slope is *most likely* to be the asset's:
    A. Excess return.
    B. Risk premium.
    C. Beta.

30. A stock has a correlation of 1 with the market and a standard deviation of returns of 20%. If the market has a standard deviation of returns of 15%, then the beta of the stock is *closest* to:
    A. 1.33.
    B. 0.75.
    C. 0.20.

31. Which of the following assets is *most likely* to have an expected return less than the risk-free rate?
    A. An asset with beta -0.25.
    B. An asset with beta 0.00.
    C. An asset with beta 0.25.

32. Information for stock Z and the market is given below:

| | |
|---|---|
| Standard deviation for stock Z's returns | 25% |
| Standard deviation of the market's returns | 10% |
| Correlation of stock Z with the market | 65% |

The beta of stock Z is *closet* to:

A. 0.26.
B. 0.016.
C. 1.625.

**LO.f: Explain the capital asset pricing model (CAPM), including its assumptions, and the security market line (SML).**

33. Which of the following is *least likely* an assumption of the Capital Asset Pricing Model (CAPM)?
    A. There are no costs or restrictions to short-selling.
    B. Investors plan for multiple holding periods.
    C. Investors can hold a fraction of any asset.

34. Which of the following statements about the Security Market Line is *least accurate*? The SML:
    A. does not allow us to identify mispriced securities.
    B. prices securities based only on non-diversifiable risk.
    C. slope equals the market risk premium.

35. The security market line's intercept on the y-axis is *most likely* to be:
    A. the risk free rate.
    B. beta.
    C. the market risk premium.

36. The security market line's slope is *most likely* to be:
    A. alpha.
    B. beta.
    C. the market risk premium.

37. Correctly priced individual securities are *most likely* to plot on which of the following lines?
    A. Capital allocation line.
    B. Capital market line.
    C. Security market line.

38. Under CAPM, the market portfolio should ideally consist of all:
    A. investable assets.
    B. risky assets.
    C. tradable assets.

39. Which of the following is *most likely* to be the primary determinant of expected return of an individual asset in the capital asset pricing model?
    A. Asset's beta.
    B. Asset's standard deviation.
    C. Market risk premium.

40. Which of the following statements is *most likely* to be correct for the capital asset pricing model?
    A. The market risk premium exceeds the excess market return.
    B. The market risk premium is equal to the excess market return.
    C. The market risk premium is less than the excess market return.

41. Richard wants to include a graphical representation of the capital asset pricing model in his presentation. Which of the following lines will he *most likely* consider?
    A. Capital allocation line.
    B. Capital market line.
    C. Security market line.

**LO.g: Calculate and interpret the expected return of an asset using the CAPM;**

42. A portfolio manager is analyzing three securities A, B, and C for an investment opportunity. He has the following data:

| **Stock** | **A** | **B** | **C** |
|---|---|---|---|
| Investor's Estimated Return | 11.96% | 10.88% | 16.39% |
| Beta | 1.6 | 1.2 | 0.96 |

If the risk free rate is 2.20% and market return is 9.65%, which of the three securities is *most likely* undervalued?
    A. Stock A.
    B. Stock B.
    C. Stock C.

43. The following table shows data for the stock of ABC and a market-index.

| | |
|---|---|
| Expected return of ABC | 10% |
| Expected return of the market-index | 9% |
| Risk free rate | 4% |
| Standard deviation of ABC returns | 15% |
| Standard deviation of market-index returns | 12% |
| Correlation of ABC and market-index returns | 0.5 |

Based on the capital asset pricing model (CAPM), ABC is *most likely*:
    A. undervalued.
    B. overvalued.
    C. fairly valued.

**The following information relates to Questions 44-47**

The table below shows information for securities held by three investors, Daniel, David, and Diana.

| **Investor** | **Expected Standard Deviation** | **Beta** |
|---|---|---|
| Daniel | 30 | 1.60 |
| David | 25 | 1.80 |
| Diana | 20 | 1.40 |

44. Given that the expected market risk return is 7% and the risk-free rate is 2.5%, what is the expected return for Daniel's security?
    A. 4.48%.
    B. 9.70%.
    C. 14.2%.

45. Given that the expected return for David's security is 14% and the risk-free rate is 2.5%, what is the expected return for the market?
    A. 6.39%.
    B. 8.89%.
    C. 15.30%.

46. Given that the expected market risk premium is 7.5%, which of the following investors has the *lowest* expected return?
    A. Daniel.
    B. David.
    C. Diana.

47. Given that the expected market return declines, which of the following investor's security will have the *greatest* impact on the expected return?
    A. Daniel.
    B. David.
    C. Diana.

48. Miranda, an analyst, makes use of the capital asset pricing model to come up with the expected return of Stock X. She then estimates the return for Stock X using cash flow projections. The estimated return is higher than the return predicted by CAPM. She should conclude that Stock X is:
    A. undervalued.
    B. properly valued.
    C. overvalued.

49. If the expected return on the market portfolio is 8% and the risk free rate is 4%, the expected return of a security with a beta of 1.25 is *closest* to:
    A. 8%.
    B. 9%.
    C. 10%.

**LO.h: Describe and demonstrate applications of the CAPM and the SML.**

50. Information about three stocks is provided below:

| Stock | Expected Return | Beta |
|---|---|---|
| ABC Corp. | 6% | 0.7 |
| KLM Corp. | 10% | 1.0 |
| XYZ Corp. | 16% | 1.5 |

If the expected market return is 10% and the average risk-free rate is 2%, according to the capital asset pricing model (CAPM) and the security market line (SML), which of the three stocks is *most likely* undervalued?

A. Stock ABC.
B. Stock KLM.
C. Stock XYZ.

51. Last year, a portfolio manager earned a return of 10%. The portfolio's beta was 0.5. For the same period, the market return was 7% and the average risk-free rate was 4%. Jensen's alpha for this portfolio is *closest* to:

A. 1.5%.
B. 4.5%.
C. -1.5%.

52. An investment manager has the following information regarding his portfolio's return and volatility as compared to the market:

| | **Return** | **Risk** |
|---|---|---|
| Market | 9.50% | 17.50% |
| Portfolio | 15.50% | 23.20% |

Given that the risk free rate is 3.50%, $M^2$ would be *closest* to:

A. 3.05%.
B. 9.91%.
C. – 1.47%.

53. Which of the following statements is *least likely* to be correct about Jensen's alpha?

A. It is the excess risk-adjusted return on a portfolio.
B. It is based on systematic risk.
C. It is the slope of the security market line.

54. George, a portfolio manager, aims to maximize risk-adjusted returns. He is *most likely* to invest in securities with a Jensen's alpha of:

A. -0.5.
B. 0.
C. 0.5.

55. Which of the following adjusts for total risk?

A. Jensen's alpha and M-squared.
B. Jensen's alpha and Sharpe ratio.
C. M-squared and Sharpe ratio.

56. Carlos wants to evaluate the performance of his portfolio manager. He wants to use a measure based on systematic risk and one which does not require a comparison to determine whether the performance is good or not. Which of the following measures is he *most likely* to use?

A. Jensen's alpha.
B. Treynor ratio.

C. $M^2$ measure.

57. Brad, an investor, has a portfolio which is not fully diversified. Which performance measure is *most* appropriate for Brad?
    A. Jensen’s alpha.
    B. M-squared.
    C. Treynor ratio.

**Solutions**

1. B is correct. Since Investor A only invests in risky assets, the highest return for a given level of risk is indicated by the efficient frontier. Investor B invests in the risk free asset as well. For him, the highest return for a given level of risk is indicated by the capital allocation line (CAL).

2. A is correct. The capital allocation line, CAL, is a combination of the risk-free asset and one or more risky assets.

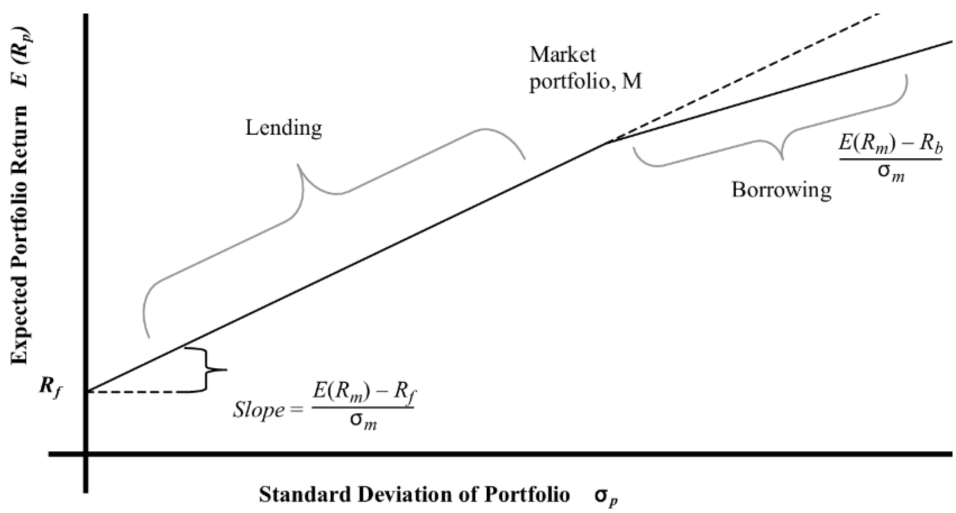
3. C is correct. The optimal portfolio for an investor like Sam is the one where the CAL is the tangent to the investor's highest possible indifference curve.

4. B is correct. Highly risk-averse investors invest majority of their wealth in risk-free assets.

5. B is correct. A capital allocation line shows possible combinations of a risky portfolio and the risk-free asset.

6. B is correct. An investment in only one asset type has a worse risk-return tradeoff than an investment in a portfolio of a risk-free asset and a risky asset because the correlation between the risk-free asset and the risky asset is equal to 0.

7. B is correct. The slope of the lending part of the CML (left of the market portfolio) is given by the Sharpe ratio. Since the borrowing rate is relatively high, the additional return for each additional unit of risk for the borrowing portfolio will be lower the additional return for each additional unit of risk for the lending portfolio. This is shown in the figure below:




8. A is correct. The capital market line, CML, is a special case of the capital allocation line, CAL, which includes possible combinations of a risk-free asset and the market portfolio.

9. C is correct. Any point above the CML is not achievable, whereas any point below the CML is inferior to any point on the CML.

10. B is correct. The combination of the risk-free asset and the market portfolio on the capital market line where returns are less than the returns on the market portfolio are called lending portfolios. Thus XYZ is a lending portfolio.

11. A is correct. The CML assumes that all investors have the same expectations for securities that result in an optimal risky portfolio i.e. the market portfolio.

12. C is correct. Investors with homogenous expectations are rational and use the same probability distributions, same inputs for cash flows, and thus arrive at same valuations. Thus they will generate same optimal risky portfolio, i.e. the market portfolio.

13. C is correct. The optimal risky portfolio is the market portfolio. The capital market theory assumes that investors have homogeneous expectations and are rational. As a result, same inputs are used for valuation purposes and hence the expected return and expected variance do not differ.

14. C is correct. A borrowing portfolio is towards the right of the point M on the capital market line, as increasing amounts of borrowed money is being invested. The further towards the right, the greater the returns.

15. C is correct. Risk that is due to company-specific or industry-specific factors is referred to as unsystematic risk.

16. C is correct**.** Firm-specific risk is known as unsystematic risk and can be diversified unlike the systematic or market risk.

17. A is correct. Nonsystematic risks are firm specific risks; natural disasters and political uncertainty are factors that affect the entire market and are thus systematic risks.

18. B is correct. Investors do not receive any return for accepting nonsystematic or diversifiable risk; thus only systematic risk is priced.

19. A is correct. The sum of an asset's systematic variance and its nonsystematic variance of returns is equal to the asset's total variance.

20. C is correct. Since Andrew aims to maximize risk-adjusted returns, securities with greater nonsystematic returns should have the least weight in the portfolio.

21. A is correct. Non-systematic risk can be avoided by investing in a portfolio of assets that are not highly correlated with one another. This reduces the overall total risk and exposes the portfolio to only systematic risk.

22. B is correct. A return-generating model based on such factors as earnings growth and cash flow generation is a fundamental factor model.

23. C is correct. Return-generating models are used to estimate an asset's expected returns, and not its variance.

24. C is correct.
$$\beta = \frac{\rho_{im}\,\sigma_i\,\sigma_m}{\sigma_m^2}$$
$$\beta = \frac{0.64 * 0.141 * 0.0944}{0.0944^2} = 0.96$$

25. C is correct.
The highest total risk is calculated based on the highest total variance.
Bill: $0.21^2 = 0.0441$
Jill: $0.21^2 = 0.0441$
Mill: $0.28^2 = 0.0784$
Thus Mill is exposed to the highest total risk.

26. C is correct.
$$\beta = \frac{\rho_{i,m}\sigma_i}{\sigma_m}$$
Bill: $\frac{[(0.85)(0.21)]}{0.16} = 1.116$
Jill: $\frac{[(0.75)(0.21)]}{0.16} = 0.984$
Mill: $\frac{[(0.65)(0.28)]}{0.16} = 1.138$
Thus Mill has the security with the highest beta.

27. B is correct.
The security with the lowest beta value is exposed to the least amount of market risk.
$$\beta = \frac{\rho_{i,m}\sigma_i}{\sigma_m}$$
Bill: $\frac{[(0.85)(0.21)]}{0.16} = 1.116$
Jill: $\frac{[(0.75)(0.21)]}{0.16} = 0.984$
Mill: $\frac{[(0.65)(0.28)]}{0.16} = 1.138$
Thus Jill has the security with the lowest beta.

28. A is correct.
By definition, the average beta of all assets in the market is equal to 1.

29. C is correct. The excess return of the security on the excess return of the market is plotted on a security characteristic line. The slope of this line is the beta, and the intercept is the Jensen's alpha.

30. A is correct. Beta = $\frac{1*0.2*0.15}{0.15^2} = 1.33$.

31. A is correct. An asset with a negative beta will have an expected return less than the risk free rate in CAPM.

32. C is correct. Beta = $\frac{0.65*0.25*0.1}{0.1^2} = 1.625$.

33. B is correct. CAPM is based on a single period instead of multiple periods because it is easy to calculate.

34. A is correct. The security market line allows us to identify mispriced securities. The other two statements are true.

35. A is correct. The SML's intercept on the y-axis is the risk free rate.

36. C is correct. The SML's slope is the market risk premium.

37. C is correct. Correctly priced securities will plot on the SML. Overpriced securities will plot below the SML.

38. B is correct. Theoretically, the market portfolio includes all risky assets. However, not all assets are tradable, and not all tradable assets are investable.

39. A is correct. The CAPM shows that the primary determinant of expected return for an individual's asset is its beta, or how well the asset correlates with the market.

40. B is correct. In the capital asset pricing model, the market risk premium is the difference between the return on the market and the risk free rate, which is equivalent to the return in excess of the market return.

41. C is correct. The security market line is a graphical representation of the capital asset pricing model, with beta risk on the x-axis and expected return on the y-axis.

42. C is correct. For a stock to be undervalued, its estimated return should be greater than the required return (from CAPM). This condition is true only for stock C. The required return is calculated using CAPM. Required return for C = $0.022 + 0.96 * (0.0965 - 0.022)$ = 9.35%. Since the estimated return of 16.39% higher than the required return of 9.35%, the stock is undervalued.

43. A is correct.

$$\beta_{ABC} = \rho_{ABC,M}\frac{\sigma_{ABC}}{\sigma_M} = 0.5 * \frac{0.15}{0.12} = 0.625$$

$$E(R_{ABC}) = RFR + \beta_{ABC} * (R_M - RFR) = 0.04 + 0.625 * (0.09 - 0.04) = 0.07$$

The required rate of return of JKU is 7% and the expected return of JKU is 10% therefore JKU is undervalued relative to the Security Market Line (SML). The risk-return relationship lies above the SML.

44. B is correct.
The expected return can be calculated using the following equation:
$E(R_i) = R_f + \beta(E(R_m) - R_f)$
$E(R_i) = 2.5\% + 1.60(7\% - 2.5\%) = 9.7\%$

45. B is correct.
The expected return for the market can be calculated using the following equation:
$E(R_i) = R_f + \beta(E(R_m) - R_f)$
$14\% = 2.5\% + 1.80(E(R_m) - 2.5\%)$
$E(R_m) = 8.88\%$

46. C is correct. Diana will have the lowest expected return because her investment has the lowest beta value. The value of the risk-free rate will not matter here.

47. B is correct. The security with the highest beta will be most sensitive to change in the expected market return.

48. A is correct. A security is undervalued if the estimated return is higher than the return calculated using CAPM.

49. B is correct. CAPM: $r_e = R_f + \beta[E(R_{mkt}) - R_f]$ = 4 + 1.25(8 – 4) = 9%

50. C is correct.

Calculate the required return for the three stocks and compare them with the expected return to see which one is undervalued.
XYZ Corp. is undervalued, because it lies above the SML. The expected return, 16%, is more than the required return, 14%.

51. B is correct. Jensen's alpha = 0.10 – [0.04 + 0.5(0.07 – 0.04)] = 0.045 or 4.5%.

52. A is correct. $M^2 = (R_p - R_f) * \left(\frac{\sigma_m}{\sigma_p}\right) - (R_m - R_f)$
$= (0.155 - 0.035) * \left(\frac{0.175}{0.232}\right) - (0.095 - 0.035)$
= 3.05%

53. C is correct. Jensen's alpha represents the excess risk-adjusted return of a portfolio and is based on systematic risk.

54. C is correct. Since George aims to maximize risk-adjusted returns, securities with a higher Jensen's alpha should have a greater weight in the portfolio.

55. C is correct. M-squared and Sharpe ratio adjust for total risk, whereas Jensen’s alpha adjusts for systematic risk.

56. A is correct. Jensen’s alpha is based on systematic risk and gives the risk adjusted return.

57. B is correct. M-squared is a performance measure that uses total risk or standard deviation for adjusting risk.

**LO.a: Describe the reasons for a written investment policy statement (IPS).**

1. Analyst 1: A written IPS is part of the best practices for a portfolio manager.
   Analyst 2: A written IPS ensures the client's risk and return objectives can be achieved.
   Which analyst's statement is most likely correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Both.

2. Which of the following is the *most* appropriate reason for a written investment policy statement? A written IPS:
   A. provides investment managers with a ready protection against client lawsuits.
   B. communicates a plan for trying to accomplish investment success.
   C. allows investment managers to educate clients about the correct use and purpose of investments.

**LO.b: Describe the major components of an IPS.**

3. The section of the investment policy statement (IPS) that describes the client is:
   A. Investment objectives.
   B. Introduction.
   C. Statement of purpose.

4. Saleem Sheikh, CFA, manages the portfolio of several clients. While preparing the IPS of these clients, he is *most likely* to begin with:
   A. the risk and return objectives of the investors.
   B. the needs and constraints of the investors.
   C. the external circumstances affecting the investors' portfolios.

5. Which of the following is the *most* difficult to quantify, while preparing an investment policy statement?
   A. Time horizon.
   B. Willingness to expect risk.
   C. Ability to take risk.

6. Mr. Amjad Mirza, director of Acme &Co. (a publicly listed company) cannot trade his company's stock at certain points of the year when disclosure of financial results are pending. What step regarding this restriction is *most appropriate* for Salahuddin Shaukat, who is managing Mirza's fund, in preparing a written investment policy statement (IPS)?
   A. The restriction should be included in the IPS.
   B. The restriction is irrelevant to the IPS.
   C. The restriction makes it illegal for the portfolio manager to work with this client.

7. Joseph Jackson, a fund manager at Hermes Global Equities, is preparing an IPS for his client. Which of the following will he *least* likely place in the appendices of this IPS?
   A. Procedures to update IPS.

   B. Rebalancing policy of the portfolio.
   C. Strategic asset allocation.

**LO.c: Describe risk and return objectives and how they may be developed for a client.**

8. An investment policy statement that includes a return objective of "No greater than a 6% probability of a loss of more than $34,500 over any 12-month period" is *best* characterized as having a(n):
   A. arbitrage-based return objective.
   B. absolute return objective.
   C. relative return objective.

9. An investment policy statement that includes a risk objective of "Return should be within 4% of the S&P 500 index return" is *best* characterized as having a(n):
   A. arbitrage-based risk objective.
   B. absolute risk objective.
   C. relative risk objective.

**LO.d: Distinguish between the willingness and the ability (capacity) to take risk in analyzing an investor's financial risk tolerance.**

10. Dean Jones is 43 years old and has a secure job with an annual salary of AUD 300,000. The income is sufficient to cover his and his family's expenses. He owns the house his family lives in and has savings of AUD 1,000,000. Jones is reluctant to invest in the stock market because he believes that stock market returns are based on luck. Furthermore, the thought of losing money causes him to have sleepless nights. Based on this information which of the following statements is *most accurate*?
    A. Jones has a low ability to take risk but a high willingness to take risk.
    B. Jones has a high ability to take risk and a high willingness to take risk.
    C. Jones has a high ability to take risk but a low willingness to take risk.

11. Emily Rose is willing to take risk when investing. She is young and has a secure, well-paying job. Her risk tolerance will *most likely* be characterized as:
    A. high.
    B. medium.
    C. low.

12. Which of the following factors is *most likely* to affect an investor's willingness to take risk?
    A. Wealth.
    B. Attitudes about investment.
    C. Job security.

13. Which of the following factors is *least likely* to impact the risk-taking ability of a client?
    A. Expected income.
    B. Personality type.
    C. Time horizon.

14. A financial advisor gathers the following information about a new client:
    - The client is a famous physics professor at one of the biggest universities in New York.
    - The client owns a penthouse and two cars with currently zero outstanding debt.
    - The client is currently working full-time and plans to continue this way for another five years after which he will work part time for 4 years before retirement.
    - The client has accumulated retirement savings of approximately $ 1.75 million through their employer's retirement plan and anticipates retirement spending needs of $80,000 per year.
    - Despite the concern regarding the current condition of the global economy, the client maintains to remain a long-term investor.
    - The client follows numerous financial publications closely and is aware of the evolving markets.

    Based on the above information, which of the following *best* describes this client?
    A. High ability to take risk and a high willingness to take risk.
    B. Low ability to take risk, but a high willingness to take risk.
    C. High ability to take risk, but a low willingness to take risk.

15. After interviewing a client in order to prepare a written investment policy statement (IPS), you have established the following:
    - The client has earnings that have exceeded $150,000 (pre-tax) each year for the past four years and has no dependents.
    - The client's basic needs are approximately $49,500 per year.
    - The client states that he feels particularly uncomfortable with his limited understanding of securities markets.
    - All of the client's current savings are invested in short-term securities guaranteed by an agency of her national government.
    - The client responded to a standard risk assessment questionnaire suggesting that he has low risk tolerance.

    The client is *best* described as having a:
    A. high ability to take risk and a high willingness to take risk.
    B. low ability to take risk, but a high willingness to take risk.
    C. high ability to take risk, but a low willingness to take risk.

16. Which of the following factors is *most likely* to impact an individual's willingness to take risk?
    A. Time horizon.
    B. Personality type.
    C. Wealth.

**LO.e: Describe the investment constraints of liquidity, time horizon, tax concerns, legal and regulatory factors, and unique circumstances and their implications for the choice of portfolio assets.**

17. Which of the following is *least likely* to be discussed in the constraints section of an investor's IPS?
    A. Liquidity.
    B. Time horizon.
    C. Level of risk aversion.

18. Which of the following is *least likely* an example of a portfolio constraint?
    A. Significant spending requirements in the long run.
    B. Higher tax rate on capital gains than on dividend income.
    C. Minimum total return requirement of 10%.

19. Which of the following types of institutions is *most likely* to have a higher level of risk tolerance and high income needs?
    A. Defined benefit pension plans.
    B. Banks.
    C. Life insurance companies.

20. In general, which of the following institutions will *most likely* have a high need for liquidity and a long time horizon?
    A. Life insurance companies.
    B. Endowments.
    C. Defined benefit pension plans.

21. Which of the following *best* describes the time horizon, liquidity needs and level of risk tolerance for an endowment?

| | **Time Horizon** | **Liquidity Needs** | **Level of Risk Tolerance** |
|---|---|---|---|
| A. | Short | Low | High |
| B. | Long | Low | High |
| C. | Long | High | Low |

**LO.f: Explain the specification of asset classes in relation to asset allocation.**

22. In a strategic asset allocation, assets within a specific asset class are *most likely* to have:
    A. high paired correlations.
    B. low paired correlations.
    C. high correlations with other asset classes.

23. Returns on asset classes are a function of:
    A. exposure to the failure of arbitrage.
    B. exposure to sets of systematic factors relevant to those asset classes.
    C. exposure to the idiosyncratic risks of those asset classes.

24. An investment manager in an asset management company is in the process of defining asset classes. Which of the following activities would be *most appropriate* considering the paired correlations of assets?

   A. Assets with low correlations placed in the same asset class.
   B. Assets with low correlations placed in different asset classes.
   C. Assets with high correlations placed in different asset classes.

**LO.g: Describe the principles of portfolio construction and the role of asset allocation in relation to the IPS.**

25. A portfolio manager decides to allot a certain percentage of portfolio, each to different asset classes in order to achieve the client' long term goals. This decision is *most likely* an example of:
    A. rebalancing.
    B. strategic asset allocation.
    C. tactical asset allocation.

26. Patrick Dempsey, a portfolio manager, decides to temporarily invest more of a portfolio in equities than stated in the investment policy statement because he believes that equities are currently underpriced. This decision is *most likely* an example of:
    A. rebalancing.
    B. strategic asset allocation.
    C. tactical asset allocation.

27. Tactical asset allocation is *best* described as:
    A. selecting asset classes with the desired exposures to sources of systematic risk in an investment portfolio.
    B. attempts to exploit arbitrage possibilities among specific securities.
    C. the decision to deliberately deviate from the policy portfolio.

28. Sirajuddin Sheikh invests the majority of his portfolio on a passive risk strategy while managing a minority of the assets aggressively in smaller portfolios. This approach is *best* described as:
    A. a top-down investment policy.
    B. the core–satellite approach.
    C. a delta-neutral hedge approach.

**Solutions**

1. A is correct. The mere fact that a written IPS is prepared for a client, does not ensure that risk and return objectives will in fact be achieved.

2. B is correct. A written IPS is best seen as a communication instrument allowing clients and portfolio managers to mutually establish investment objectives and constraints.

3. B is correct. The introduction describes the client and outlines what is covered in the document. Often, the purpose and scope of the IPS is included as part of introduction.

4. A is correct. A written investment policy statement will typically begin with the investor's risk and return objectives.

5. B is correct. Measuring willingness to take risk (risk tolerance, risk aversion) is an exercise in applied psychology. Instruments attempting to measure risk attitudes exist, but they are clearly less objective than measurements of the ability to take risk. Ability to take risk is based on relatively objective traits such as expected income, time horizon, and existing wealth relative to liabilities.

6. A is correct. When a client has a restriction on trading, such as this obligation to refrain from trading, the IPS "should note this constraint so that the portfolio manager does not inadvertently trade the stock on the client's behalf."

7. A is correct. Appendices contain information on strategic (baseline) asset allocation and permitted deviations from policy portfolio allocations, as well as how and when the portfolio allocations should be rebalanced. Procedures to update IPS are a major component of the IPS that is not a part of the appendices.

8. B is correct. Absolute return objectives can also be stated in terms of the probability of specific portfolio results, percentage losses or dollar losses, rather than strict limits on portfolio results.

9. C is correct. The risk objective is expressed relative to a benchmark.

10. C is correct. Give the high income and savings, his ability to take risk is high. However, his attitude towards the stock market and the possibility of losing money indicates that his willingness to take risk is low.

11. A is correct. Given that she is young and has a secure, well-paying job, her ability to take risk is high. We are told that she is also willing to take risk. Consequently, her risk tolerance will most likely be characterized as 'high'.

12. B is correct. It is important to distinguish between the willingness to take risk and the ability to do so. An investor's willingness to take risk is based primarily on the investor's beliefs

and attitudes towards the investment. The other two factors affect the person's ability to take the risk and not the willingness.

13. B is correct. An individual's ability to take risk is impacted by such factors as time horizon and expected income. Personality type is most likely to impact an individual's willingness to take risk.

14. A is correct. The client is in a strong financial situation (stable job, no debt), has a reasonably long time horizon before needing any liquidity (10 years), and reasonable retirement spending needs relative to total assets. These factors indicate a high ability to take risk. In addition, the client's knowledge of financial markets, experience, and focus on the long term also indicates a high willingness to take risk.

15. C is correct. On one hand, the client has a stable, high income and no dependents. On the other hand, he exhibits above average risk aversion. His ability to take risk is high, but his willingness to take risk is low.

16. B is correct. An individual's willingness to take risk is impacted by factors as personality type. Wealth and time horizon are most likely to impact an individual's ability to take risk.

17. C is correct. Remember the five constraints using: LLTTU. Liquidity, Legal and regulatory, Time horizon, Tax, Unique circumstances.

18. C is correct. Return objectives are part of a policy statement's objectives, not constraints.

19. A is correct. Defined benefit pension plans have high income needs and a high level of risk tolerance.

20. A is correct. Life insurance companies have a long investment time horizon but high liquidity needs.

21. B is correct. Endowments are meant to provide financial support for specific purposes on an ongoing basis. Thus they have a long time horizon, low liquidity needs and the level of risk tolerance is high.

22. A is correct. In a strategic asset allocation, assets within a specific asset class will have high paired correlations and low correlations with assets in other asset classes.

23. B is correct. Strategic asset allocation depends on several principles. As stated in the reading, "One principle is that a portfolio's systematic risk accounts for most of its change in value over the long run." A second principle is that, "the returns to groups of like assets predictably reflect exposures to certain sets of systematic factors." This latter principle establishes that returns on asset classes primarily reflect the systematic risks of the classes.

24. B is correct. When defining asset classes, paired correlations of assets should be relatively high within an asset class. However, paired correlations of assets between different asset classes should be low in order to provide diversification relative to other asset classes.

25. B is correct. After having determined the investor objectives and constraints, a strategic asset allocation is developed which specifies the percentage allocations to the included asset classes.

26. C is correct. Tactical asset allocation is the decision to deliberately deviate from the policy exposures to systematic risk factors with the intent to add value based on forecasts of the near-term returns of those asset classes.

27. C is correct. Tactical asset allocation allows actual asset allocation to deviate from that of the strategic asset allocation (policy portfolio) based on short-term market expectations.

28. B is correct. The core–satellite approach to constructing portfolios is defined as "investing the majority of the portfolio on a passive or low active risk basis while a minority of the assets is managed aggressively in smaller portfolios."

**LO.a: Explain the main functions of the financial system.**

1. Which of the following is *least likely* a function of the financial system?
   A. Allow entities to trade assets currently or in the future.
   B. Allocate capital to its most efficient use.
   C. Prevent entities to trade on information.

2. Which of the following is *least likely* a function of the financial system?
   A. To allow financial market participants to trade based on available information.
   B. To regulate arbitrageurs' profits (excess returns).
   C. To facilitate borrowing by businesses to fund current operations.

**LO.b: Describe classifications of assets and markets.**

3. Which of the following is *least likely* a real asset?
   A. Currencies.
   B. Commodities.
   C. Real estate.

4. Which of the following statements is *least* accurate?
   A. Private securities are often illiquid and not subject to regulation.
   B. In a secondary market, investors buy and sell securities among themselves.
   C. Money markets refer to markets for equity securities.

**LO.c: Describe the major types of securities, currencies, contracts, commodities, and real assets that trade in organized markets, including their distinguishing characteristics and major subtypes.**

5. Which of the following is *most likely* a drawback of the forward contract?
   A. Difficult to exit from contract once entered.
   B. Long party to deposit initial amount.
   C. Periodic payments made by the party during contract in case of adverse movements.

6. Which of the following is *least likely* to be included in a fixed-income securities fund?
   A. Commercial paper.
   B. Repurchase agreements.
   C. Warrants.

7. Peter decides whether to buy, hold, or sell the shares of an index fund based on a predictive macro - economic model that he has created. He hopes to achieve abnormal returns using this model. Which of the following labels *most appropriately* describe Peter?
   A. Arbitrageur.
   B. Information-motivated trader.
   C. Investor.

8. Robert is close to retirement and has savings of $200,000. Using these funds he creates a portfolio of large-cap, dividend-paying stocks and investment grade corporate bonds. Robert would *best* be characterized as a (n):
    A. hedger.
    B. investor.
    C. information-motivated trader.

9. Elena is the owner of a textile company in London. Her company has recently generated revenue by selling jeans to a customer in Pakistan and will be paid in Pakistani Rupees (PKR) in ninety days. Elena is concerned about the possibility of the PKR depreciating more than expected against the UK Pounds (GBP). Therefore, she is planning to sell three-month futures contracts on the PKR. The seller of such contracts generally gains when the PKR depreciates against the GBP. If Elena takes a short position in these future contracts, she would *most appropriately* be described as a(n):
    A. hedger.
    B. investor.
    C. arbitrageur.

10. Lisa primarily invests in stocks and bonds. If she adds private equity to her portfolio, that would *best* be characterized as a transaction in the:
    A. derivative investment market.
    B. traditional investment market.
    C. alternative investment market.

11. Edward invests in stocks and commercial bonds with maturities of 5 to 10 years. His holdings are *best* described as:
    A. capital market instruments.
    B. money market instruments.
    C. intermediate-term debt instruments.

12. A fund invests primarily in fixed announces that it is offering 10 million shares to the public at $55.75 each. This transaction is *most likely* a sale in the:
    A. futures market.
    B. primary market.
    C. secondary market.

13. A mutual fund invests primarily in fixed-income securities. Which of the following is *least likely* to be a part of this fund?
    A. Warrants.
    B. Treasury bills.
    C. Repurchase agreements.

14. After you completed your presentation on exchange traded funds, a student from the audience asked you to explain the differences between open-end and closed-end funds. Which of the following will *least likely* be included in your explanation?
    A. Shares in closed-end funds can be bought and sold any time during the trading day.

B. Open-end funds are more likely to trade at a discount to NAV while closed-end funds generally trade close to NAV.
C. When selling shares, investors in an open-end fund sell the shares back to the fund whereas investors in a closed-end fund sell the shares to others in the secondary market.

15. Which of the following is *most likely* a limitation of a forward contract?
    A. It is difficult to exit from a forward contract, once you have entered into an agreement.
    B. A forward contract requires the long party to deposit an initial amount with the short party.
    C. If the price of the underlying asset moves adversely from the perspective of the long party, periodic payments must be made to the short party.

16. Steve is planning to start trading in commodities. He has been reading about the use of futures contracts on commodities. Which of the following is Steve *least likely* to find associated with a futures contract?
    A. Existence of counterparty risk.
    B. Standardized contractual terms.
    C. Initial margin requirement.

17. Rossi Inc. is based in Italy and exports machinery parts to the United States. Rossi is expecting to receive $40 million in three months from a customer. The firm converts all its foreign currency receipts into euros. The chief financial officer wants to hedge the risk of an adverse FX movement. What hedging transaction will *most likely* achieve this objective?
    A. Selling dollars in the forward market.
    B. Selling euros in the forward market.
    C. Buy call options on dollars.

18. A textile owner requires substantial amount of cotton. The textile owner and a cotton producer have entered into an agreement for the textile owner to buy and the producer to supply a given quantity of cotton six months later at a price agreed upon today. This agreement is a (n):
    A. options contract.
    B. forward contract.
    C. swap.

19. Shares in GX Corp. are currently trading at $213. Regis has just bought call options on shares of GX for a premium of $3 per share. The call options expire in six months and have an exercise price of $220 per share. On the expiration date, Regis will exercise the call options, considering no transaction costs, if and only if the shares of GX are trading:
    A. below $220 per share.
    B. above $220 per share.
    C. above $223 per share.

20. Which of the following statements about exchange-traded funds is *least likely* correct?

A. Exchange-traded funds are not backed by any asset held by the fund.
B. The investment companies that create exchange-traded funds are financial intermediaries.
C. The transaction costs of trading shares of exchange-traded funds are generally lower than the combined costs of trading the underlying assets of the fund.

21. Clinton works for a hedge fund. He is a finance graduate and specializes in finding profit opportunities that are the result of inefficiencies in the market for convertible bonds—bonds that can be converted into a predetermined amount of a company's common stock. Clinton tries to find convertibles that are priced inefficiently relative to the underlying stock. The trading strategy involves the simultaneous purchase of the convertible bond and the short sale of the underlying common stock. The above process could *best* be described as:
    A. investing.
    B. arbitrage.
    C. securitization.

22. Which of the following is *least likely* a pooled investment vehicle?
    A. Asset-backed securities.
    B. Convertible debt.
    C. Hedge funds.

**LO.d: Describe types of financial intermediaries and services that they provide.**

23. Which of the following are *most likely* to provide liquidity service to their clients?
    A. Brokers.
    B. Dealers.
    C. Exchanges.

24. The guarantee of contract performance in futures market is *most likely* provided by:
    A. clearing house.
    B. futures exchange.
    C. Securities and Exchange Commission.

25. Which of the following statements is *least* accurate?
    A. Exchanges sometimes act as brokers by providing electronic exchange matching.
    B. Alternative trading system that reveal current client orders are known as dark pools.
    C. Dealers facilitate trading by buying for and selling from their own inventory.

**LO.e: Compare positions an investor can take in an asset.**

26. Rafael sold a call option on shares of the ABC Group. A few days ago he bought a put option on ABC shares on a friend's recommendation. The call and put options have the same exercise price, expiration date, and number of shares underlying. Considering both positions, Rafael's exposure to the stock of the ABC Group is:
    A. long.
    B. short.

C. neutral.

27. Margaret estimates the intrinsic value of a stock to be $37 which is currently selling at $46. Margaret will *most likely*:
    A. place a stop-order to buy.
    B. place a market-order to buy.
    C. place a short-sale order.

28. Which of the following statements is *least* accurate?
    A. An investor who has the right under a contract to purchase an asset is said to have a long position.
    B. Simultaneously borrowing and selling securities through a broker is referred to as covering the short position.
    C. In general investors who are long benefit from an increase in the price of an asset.

**LO.f: Calculate and interpret the leverage ratio, the rate of return on a margin transaction, and the security price at which the investor would receive a margin call.**

29. An investor buys stock on margin and holds the position for exactly one year:
    Shares purchased: 300
    Purchase price: $12/share
    Commission on purchase and sale of shares: 0
    Call money rate: 5%
    Dividend: $0.80/share
    Leverage ratio: 2
    Total return on equity investment: 30%
    Assuming that the interest on the loan and the dividend are both paid at the end of the year, the price at which the investor sold the stock is *closest* to:
    A. $13.3.
    B. $14.4.
    C. $14.9.

30. What is the leverage ratio associated with a margin requirement of 45%?
    A. 1.45.
    B. 0.45.
    C. 2.22.

31. Alex has purchased 100 shares of a non-dividend paying firm on margin at a price of $60 per share. The leverage ratio is 1.5. Six months later, he sells these shares at $70 per share. What was the return to Alex during the six-month period, considering no transaction cost or interest on borrowing?
    A. 16.67 percent.
    B. 66.67 percent.
    C. 25.00 percent.

32. Susan purchased 600 shares of a company XYZ at $22 per share. The stock was bought on 80 percent margin. One month later, Susan had to pay interest on the amount borrowed at a rate of 4 percent per month. At that time, Susan received a dividend of $0.60 per share. Immediately after that she sold the shares at $18 per share. She paid commissions of $5 on the purchase and $5 on the sale of the stock. What was the rate of return on this investment for the one-month period?
    A. -19.4 percent.
    B. -20.4 percent.
    C. -24.9 percent.

33. Rogers believes the price of ABC Corp. stock will go up in the near future. He has decided to buy 100 shares of ABC Corp. at the current market price of €50. The initial margin requirement is 45 percent. Which of the following is the *most appropriate* statement regarding the margin requirement that Rogers is subject to on this long position?
    A. He will need to contribute €2,250 as margin.
    B. He will need to contribute €2,750 as margin.
    C. He will only need to leave the proceeds from the long buy as deposit and does not need to contribute any additional funds.

34. The current price of a stock is $30 per share. You have $20,000 to invest. You borrow an additional $20,000 from your broker and invest $40,000 in the stock. If the maintenance margin is 40 percent, at what price will a margin call first occur?
    A. $12.00.
    B. $25.00.
    C. $29.71.

35. A trader buys 500 shares of a stock on margin at $25 a share using an initial leverage ratio of 1.50. The maintenance margin requirement for the position is 30 percent. The stock price at which the margin call will occur is *closest* to:
    A. $10.44.
    B. $11.79.
    C. $13.13.

36. An investor buys a stock on margin. Assume that the interest on the loan and the dividend are both paid at the end of the holding period. The data related to the transaction are as follows:
    Number of shares: 200
    Purchase price per share: $15
    Leverage ratio: 3
    Commission: $0.05 / share
    Position holding period: 6 months
    Sale price per share: $20
    Call money rate: 5% per year
    Dividend: $0.50 / share
    The investor's total return on this investment over the margin holding period is *closest* to:
    A. 55%.
    B. 78%.

C. 102%.

37. An investor is involved in margin purchasing of 1000 shares of a company that pay an annual dividend of $1.45 per share. Following details are available regarding his purchase and sale of stock:

| | |
|---|---|
| Purchase price | $120 |
| Sale price | $140 |
| Margin | 35% |
| Call money rate | 8% |
| Transaction commission/share | $0.2 |

The annual return made by the investor if he sells his shares exactly after one year is *closest* to:

A. 18%.
B. 27%.
C. 35%.

38. Sean has the following information about a stock.

| | |
|---|---|
| Price: | $48.00 |
| Leverage ratio: | 2.00 |
| Price for margin call: | $34.29 |

The maintenance margin is *most likely* to be:

A. 50%.
B. 25%.
C. 30%.

**LO.g: Compare execution, validity, and clearing instructions.**

39. Which of the following is *most likely* to be cancelled if it cannot be filled (in part or in whole) very quickly?
A. Good-till-cancelled order.
B. Fill-or-kill orders.
C. Good-on-close orders.

40. Derek has sold short 150 shares of Walmart at a price of $52 per share. He also simultaneously places a "good-till-cancelled, stop 60, limit 65 buy" order. If the stock price starts rising sharply what is the maximum possible realized loss assuming no transaction costs?
A. $1,200.
B. $1,950.
C. Unlimited.

41. You are a research analyst at XYZ brokerage house. Your client owns shares of ABC Corp which are currently trading at $20 per share. Your technical analysis of the shares indicates a support level of $17.50 which means that, the price of the share is most likely not to fall below this level. If the price does fall below this level, however, you believe that the price may continue to decline. You have no immediate intent to ask your client to sell the shares

but are concerned about the possibility of a huge loss if the share price declines below the support level as it would seriously hamper the image of your firm. Which of the following types of orders *most appropriately* addresses your concern?

A. Short sell order.
B. Good-till-cancelled stop sell order.
C. Good-till-cancelled stop buy order.

42. Sam has placed a buy market-on-open order—a market order that would automatically be submitted at the market's open tomorrow and would fill at the market price. This order is *most likely* an example of a(an):

A. execution instruction.
B. validity instruction.
C. clearing instruction.

43. Which of the following statements is *least* accurate?

A. The disadvantage of a limit order is that it might not be filled.
B. Day orders expire if they are unfilled by the end of the trading day.
C. Stop sell orders can limit losses on a short position.

**LO.h: Compare market orders with limit orders.**

44. A trader places a market order. The *most likely* reason for that could be that the trader wants to:

A. obtain the best available price immediately.
B. obtain the best available price immediately but with an upper limit.
C. stop losses on existing held securities.

45. Following are the limit orders of market, standing on its book for stock A. The bid and ask sizes are number of shares in hundreds.

| Bid Size | Limit Price ($) | Offer Size |
|---|---|---|
| 5 | 2.71 | |
| 12 | 2.82 | |
| 4 | 3.84 | |
| 6 | 3.94 | |
| | 5.02 | 5 |
| | 5.10 | 12 |
| | 5.14 | 8 |

What is the market?

A. 2.71 bid, offered at 5.14.
B. 2.82 bid, offered at 5.10.
C. 3.94 bid, offered at 5.02.

46. Consider the following limit order book for a stock X.

| Bid Size | Limit Price (CHF) | Offer Size |
|---|---|---|

| | | |
|---|---|---|
| 300 | 22.80 | |
| 800 | 23.00 | |
| 400 | 23.35 | |
| | 23.80 | 700 |
| | 24.10 | 600 |
| | 24.50 | 700 |

A new sell order is placed for 200 shares at CHF 23.35. This order is said to:
  A. take the market.
  B. make the market.
  C. make a new market.

47. Currently, the market in a stock is "$154.62 bid, offered at $154.71." Susan places a new buy limit order at $154.65. This limit order is said to:
  A. take the market.
  B. make the market.
  C. make a new market.

48. Consider an order-driven system that allows hidden orders. The following four sell orders on a particular stock Y are currently in the system's limit order book. Based on the commonly used order precedence hierarchy, which of these orders will have precedence over others?

| **Order** | **Time of arrival (HH:MM:SS)** | **Limit Price (EUR)** | **Special Instructions (if any)** |
|---|---|---|---|
| I | 7:12:01 | 10.29 | |
| II | 7:12:08 | 10.29 | Hidden order |
| III | 7:13:04 | 10.29 | |
| IV | 7:13:49 | 10.33 | |

  A. Order I.
  B. Order II.
  C. Order III.

49. Huang Lao has submitted an immediate-or-cancel buy order for 600 shares of a company at a limit price of CNY 84.75. There are two sell limit orders standing in that stock's order book at that time. One is for 400 shares at a limit price of CNY 84.80 and the other is for 500 shares at a limit price of CNY 84.85. How many shares in Lao's order would get cancelled?
  A. None (the order would remain open but unfilled).
  B. 300 (300 shares would get filled).
  C. 600 (there would be no fill).

50. For stock X, market has the following limit orders standing on its book:

| **Buyer** | **Bid size (# of shares)** | **Limit Price ($)** | **Offer size (# of shares)** | **Seller** |
|---|---|---|---|---|
| A | 900 | 9.70 | | |
| B | 100 | 9.84 | | |

| | | | | |
|---|---|---|---|---|
| C | 300 | 9.89 | | |
| D | 200 | 10.02 | | |
| | | 10.03 | 700 | X |
| | | 10.11 | 1000 | Y |
| | | 10.16 | 300 | Z |

Dave submits a day order to sell 900 shares, limit \$9.83. What would Dave's average trade price be, assuming that no more buy orders are submitted on that day after Dave's submission?

A. \$10.09.
B. \$9.93.
C. \$9.79.

51. A trader places a limit order to buy shares at a price of \$14.75 with the stock trading at a market bid price of \$14.54 and the bid-ask spread of 0.7%. The order will *most likely* be filled at:
    A. \$14.54.
    B. \$14.64.
    C. \$14.75.

52. The limit orders for a stock on market's book is provided below:

| Buyer | Bid Size (# of shares) | Limit Price (\$) | Seller | Offer Size (# of shares) | Limit Price (\$) |
|---|---|---|---|---|---|
| 1 | 400 | 18.30 | 1 | 300 | 20.00 |
| 2 | 300 | 18.45 | 2 | 200 | 20.15 |
| 3 | 100 | 18.95 | 3 | 200 | 20.35 |
| 4 | 200 | 19.50 | 4 | 100 | 20.95 |
| 5 | 300 | 19.80 | 5 | 200 | 21.10 |

If a trader submits an immediate-or-cancel limit buy order for 600 shares at a price of \$20.35, the *most likely* average price the trader would pay is:
    A. \$20.00.
    B. \$20.11.
    C. \$20.35.

**LO.i: Define primary and secondary markets and explain how secondary markets support primary markets.**

53. Purchases and sales of an investment that tracks the KSE 100 stock market index during an average trading day are *best* described as:
    A. primary market transactions in a pooled investment.
    B. secondary market transactions in a pooled investment.
    C. secondary market transactions in an actively managed investment.

54. GP Investment bank agrees to help IFT Corp. raise funds on a best effort basis. Who bears the risk when the entire issue is not sold to the public at the stipulated offering price?
    A. GP.

B. IFT.
C. Buyers of the part of the issue that is sold.

55. A German company listed on the Frankfurt Stock Exchange, announced the sale of 7,696,565 shares to a small group of qualified investors at EUR 0.075 per share. The sale can be *best* described as a(an):
    A. Shelf registration sale.
    B. Private placement sale.
    C. Initial public offering.

56. A publicly traded company in UK gave its existing shareholders the opportunity to subscribe to new shares in order to raise new capital for business expansion. The existing shareholders could purchase two new shares at a subscription price of GBP 3.59 per share for every 25 shares held. This is an example of a (n):
    A. rights offering.
    B. private placement.
    C. initial public offering.

57. An automobile manufacturing company announces that it plans to sell 10 million of its shares to the public. This transaction is *most likely* a sale in the:
    A. futures market.
    B. primary market.
    C. secondary market.

58. The cost of raising capital in primary markets:
    A. becomes low when secondary markets are liquid.
    B. becomes high when secondary markets are liquid.
    C. is independent of the liquidity of secondary markets.

**LO.j: Describe how securities, contracts, and currencies are traded in quote-driven, order-driven, and brokered markets.**

59. An investor trading in foreign currencies *most likely* trades in a(n):
    A. order-driven market.
    B. quote driven market.
    C. brokered market.

60. Which of the following markets is *most* suitable for securities that are unique or illiquid?
    A. Order-driven.
    B. Quote driven.
    C. Brokered.

61. Which of the following statements is *least* accurate?
    A. In call markets, trades occur at any time the market is open with prices set either by the auction process or by dealer bid-ask quotes.

B. Quote-driven markets are sometimes also called dealer markets, price-driven markets, or over-the- counter markets.
C. In order-driven markets, orders are executed using trading rules, which are necessary because traders are usually anonymous.

**LO.k: Describe characteristics of a well-functioning financial system.**

62. A financial system characterized by liquid markets, low commissions and order price impacts is said to be which of the following?
    A. Allocationally efficient.
    B. Informationally efficient.
    C. Operationally efficient.

63. Markets that have high costs of trading in terms of dealer's commissions, bid-ask spreads and order price impacts are *most likely* to be:
    A. Allocationally inefficient.
    B. Informationally inefficient.
    C. Operationally inefficient.

64. An economy that best utilizes its resources is *most likely* described as:
    A. Allocationally efficient.
    B. Informationally efficient.
    C. Operationally efficient.

**LO.l: Describe objectives of market regulation.**

65. Which of the following is *least* likely an objective of market regulation?
    A. Prevent fraud.
    B. Control Agency problems.
    C. Ensure that investors earn at least the risk free rate.

**Solutions**

1. C is correct. A financial system allows entities to trade on information.

2. B is correct. Regulation of arbitrageurs' profits is not a function of the financial system.

3. A is correct. Currencies are classified as financial assets.

4. C is correct. Money market refers to markets for debt securities with maturities of one year or less.

5. A is correct. Once you have entered into a forward contract, it is difficult to exit from it. There is no cash exchange at origination or any periodic payments during the contract term.

6. C is correct. Warrants are least likely to be part of this fund. Warrant holders have the right to buy the issuer's common stock and are classified as equity securities.

7. B is correct. Peter is as an information-motivated trader. Peter's intent is to earn profit from trading on the information that his model provides.

8. B is correct. Robert is best characterized as an investor. Considering the level of his own risk aversion, he is just in investing in low-risk assets. Since he is neither hedging any existing risk nor using information to identify and trade mispriced securities, he is not a hedger or an information-motivated trader.

9. A is correct. Elena is a hedger. The short position on the PKR futures contract offsets the PKR long position in ninety days. She is hedging the risk of the PKR depreciating against the GBP. If the PKR depreciates, she gains on the short future contract. This is how she hedges the risk of foreign currency depreciation.

10. C is correct. Private equity is considered an alternative investment.

11. A is correct. Stocks and 5-10 year bonds are capital market instruments.

12. B is correct. Selling shares publicly is called a sale in the primary market. In such a sale of shares from the issuer to the investor, funds flow to the issuer of the security from the purchaser.

13. A is correct. Warrants are least likely to be part of the fund since they are typically classified as equity and are least likely to be a part of a fixed- income mutual fund. Commercial paper and Treasury bills are short-term fixed-income securities.

14. B is correct. Open-end fund investors sell shares back to the fund based on end of day prices. The fund then sells the underlying investments. For this reason, the shares of open-end funds generally trade close to NAV.

15. A is correct. Once you have entered into a forward contract, it is difficult to exit from the contract. (There is a full reading on forward contracts in derivatives.)

16. A is correct. There is virtually no counter party risk with futures contracts.

17. A is correct. Selling dollars in the forward market locks in a conversion rate and hedges against the risk of the dollar depreciating against the euro.

18. B is correct. The agreement between the textile owner and the cotton supplier to respectively buy and supply cotton in the future at a price agreed upon today is a forward contract.

19. B is correct. Regis will exercise the call options if the price is above the exercise price of $220 per share. If the stock price is above $220 but less than $223, the option would be exercised even though the net result for Regis after considering the premium is a loss. For example, if the stock price is $221, the option buyer would exercise the option to make $1= $221- $220 per share, resulting in a loss of $2= $3 - $1 after considering the premium. It is better to exercise and have a loss of only $2, however, rather than not exercise and lose the entire $3 premium.

20. A is correct. ETFs are securities that represent ownership in the assets held by the fund. The investment companies that create exchange-traded funds (ETFs) are financial intermediaries. The transaction costs of trading shares of ETFs are generally lower than the combined costs of trading the underlying assets of the ETF.

21. B is correct. The process can best be described as arbitrage because it involves buying and selling instruments, whose values are closely related, at different prices in different markets.

22. B is correct. Convertible debt is a fixed income security.

23. B is correct. The service that dealers provide is liquidity. Liquidity is the ability to buy or sell with low transaction costs when you want to trade. By allowing their clients to trade when they want to trade, dealers provide liquidity to them.

24. A is correct. Clearing houses arrange for financial settlement of trades. In futures markets, they guarantee contract performance.

25. B is correct. ATS that do not reveal current client orders are known as dark pools.

26. B is correct. Rafael's exposure to the risk of the stock of the ABC Group is short. He will benefit if the stock price goes down.

27. C is correct. Since Margaret believes that the stock is overvalued, she should place a short-sale order that would be profitable if the stock moves in the direction of the estimated value.

28. B is correct. The repayment of borrowed security or other asset is referred to as covering the short position.

29. A is correct. The steps to calculate the selling price are outlined below:

    Total purchase value = Purchase price $*$ Shares purchased = \$12 * 300 = \$3,600
    Initial equity = $\frac{\text{Total purchase value}}{\text{Leverage ratio}} = \frac{\$3,600}{2}$ = \$1,800
    Amount borrowed = Total purchase value – Initial equity = \$3600 – \$1800 = \$1800
    Margin interest paid = Call money rate $*$ Amount borrowed = 5% * \$1800 = \$90
    Dividend income = Dividend per share $*$ Shares purchased = \$0.80 * 300 = \$240
    Total return on the initial investment = $30\% * \$1800$ = \$540
    Gain from price appreciation = Total return – Dividend + Margin interest = \$540 – \$240 + \$90 = \$390
    Price at which investor sold the stock = Gain from price appreciation per share + Purchase price
    = $\left(\frac{\$390}{300}\right) + \$12$ = \$13.3

30. C is correct. The maximum leverage ratio is 2.22 = $\frac{100}{45}$.

31. C is correct. The return is 25 percent. If the position had been unleveraged, the return would be 16.67% = (70 - 60)/60. Because of leverage, the return is 25% = 1.5 * 16.67%.

    Another way to look at this problem is that the equity contributed by the trader (the minimum margin requirement) is 66.67% = $100\%/1.5$. The trader contributed \$40 = 66.67% of \$60 per share. The gain is \$10 per share, resulting in a return of 25% =$\frac{10}{40}$.

32. B is correct.
    The return is -20.4percent.
    Total cost of the purchase = \$13,200 = $600 * \$22$
    Equity invested = \$10,560 = $0.80 * \$13,200$
    Amount borrowed = \$2,640 = $13,200 - 10,560$
    Interest paid at month end = \$105.6 = $0.04 * \$2,640$
    Dividend received at month end = \$360 = $600 * \$0.60$
    Proceeds on stock sale = \$10,800 = $600 * \$18$
    Total commissions paid = \$10 = \$5 + \$5
    Net gain/loss = -\$2,155.6 = $-13,200 - 105.6 + 360 + 10,800 - 10$
    Initial investment, including commission on purchase = \$10,565
    Return = -20.4% = $-\frac{\$2,155.6}{\$10,565}$

33. A is correct. He will need to contribute €2,250 = 45% of €5,000 as the initial margin.

34. B is correct. A margin call will first occur at a price of \$25. Because you have contributed half and borrowed the remaining half, your initial equity is 50 percent of the initial stock price, or \$15= 0.50 * \$30. If P is the subsequent price, your equity would change by an amount equal to the change in price. So, your equity at price P would be 15+ (P - 30). A

margin call will occur when the percentage margin drops to 40 percent. So, the price at which a margin call is calculated as follows:

(Equity/Share)(price / share) = $\frac{15 + P - 30}{P}$ = 40%

The solution is P = $25.00

35. B is correct.

Initial equity (%) in the margin transaction = $\frac{1}{\text{Leverage ratio}} = \frac{1}{1.5} = 0.67$

Initial equity per share at the time of purchase = $\$25 * 0.67$ = $16.75;

Price at which margin call occurs:

$\frac{\text{Equity per share}}{\text{Price per share}}$ = Maintenance margin %

= $\frac{\$16.75 + P - \$25}{P}$ = 0.30;

0.7P = $8.25;

P = $11.79.

36. C is correct.

| | | |
|---|---|---|
| Initial investment | $\left[(\$15 * 200) * \left(\frac{1}{3}\right)\right] + (\$0.05 * 200)$ | $1010 |
| Proceeds on sale | $20 * 200$ | 4000 |
| + Dividends received | $\$0.50 * 200$ | 100 |
| Less payoff on loan | $(\$15 * 200) * \left(\frac{2}{3}\right)$ | - 2000 |
| Less margin interest paid | (0.025 * 2000) | -50 |
| Less commission paid | $\$0.05 * 200$ | - 10 |
| Remaining equity | $2040 | |
| Return on investment | $\frac{\$2040 - \$1010}{\$1010}$ | 102% |

37. C is correct.

Initial investment = $(120 * 1000 * 0.35) + (0.2 * 1000)$ = 42,200

Proceeds on sale = $140 * 1000$ = 140,000

Less payoff loan = $120 * 1000 * (1 - 0.35)$ = 78,000

Less margin interest paid = $0.08 * 78{,}000$ = 6,240

Plus dividends received = $1.45 * 1000$ = 1,450

Less sales commission paid = $0.2 * 1000$ = 200

Remaining equity = 57,010

Therefore, return on investment = $\frac{57{,}010 - 42{,}200}{42{,}200}$ = 35%

38. C is correct.

The stock price is 48 and the leverage ratio is 2. This means that $\frac{48}{\text{Equity}}$ = 2. So equity (amount actually contributed by investor) is 24. Hence, the initial margin is $\frac{24}{48}$ = 0.5.

Margin call price = Initial price $* \frac{1 - \text{Initial Margin}}{1 - \text{Maintenance Margin}}$.

$34.29 = 48 \frac{1 - 0.5}{1 - \text{MM}}$.

Solving for MM, we get MM = 0.30.

39. B is correct. Fill-or-kill orders are also known as immediate-or-cancel orders. They are cancelled unless filled (in part or in whole) immediately.

40. B is correct. The maximum possible loss is $1,950. If the stock price crosses $60, the stop buy order will become valid and will get executed at a maximum limit price of $65. The maximum loss per share is $13 = $65 - $52, or $1,950 for 150 shares.

41. B is correct. The most appropriate order is a good-till-cancelled stop sell order. This order will be acted on if the stock price declines below a specified price (in this case, $17.50).

42. B is correct. A validity instruction tells when to fill an order.

43. C is correct. Stop buy orders can limit losses on a short position.

44. A is correct. A market order instructs the broker or exchange to obtain the best possible price immediately available.

45. C is correct. The market is 3.94 bid, offered at 5.02, which is the best bid and best offer.

46. A is correct. This order is said to take the market because an order is already in place where a trader is willing to buy for 23.35.

47. C is correct. This order is said to make a new market. The new buy order is better than the existing best buy offer of $154.62.

48. A is correct. Order I (time of arrival of 7:12:01) has precedence. In the order precedence hierarchy, the first rule is price priority. Based on this rule, sell orders I, II and III get precedence over order IV. The next rule is display precedence at a given price. Because order II is a hidden order, orders I and III get precedence. Finally, order I gets precedence over order III based on time priority at same price and same display status.

49. C is correct. The order for 600 shares would get cancelled; there would be no fill. Lao is willing to buy at CNY 84.75 or less, but the minimum offer price of the book is CNY 84.80, therefore, no part of the order would be filled. Because Lao's order is immediate-or-cancel, it would be cancelled.

50. B is correct. Dave's average trade price is:

$$\$9.92 = \frac{200 * \$10.02 + 300 * \$9.89 + 100 * \$9.84}{200 + 300 + 100}$$

Dave's sell order first fills with the most aggressively priced buy order, which is D's order for 200 shares at $10.02. Dave still has 800 shares for sale. The next most aggressively priced buy order is C's order for 300 shares at $9.89. This order is filled. Dave still has 500 shares for sale. The next most aggressively priced buy order is B's order for 100 shares at $9.84. A third trade takes place. Dave still has 400 shares for sale. The next buy order is A's order for 900 shares at $9.70. However, this price is below Dave's limit price of $9.83. Therefore, no more trade is possible.

51. B is correct. An order is filled at the best available price as long as this price is lower than the limit price. In this case, the best available price is the market ask price = $\$14.54 * (1 + 0.7\%)$= $14.64. Since this price is lower than the limit price of $14.75, the order will be filled at this price.

52. B is correct. The limit buy order will be filled first with the most aggressively priced limit sell order and will be followed by filling with the higher priced limit sell orders that are needed up to and including the limit buy price until the order is filled.
Average price = $\frac{[(300 * \$20.00) + (200 * \$20.15) + (100 * \$20.35)]}{600}$= $20.11

53. B is correct. Such investments trade in the secondary market and are a pooled investment vehicle.

54. B is correct. Since this a best-effort arrangement, the issuer (IFT) bears the risk that the issue may be undersubscribed.

55. B is correct. This sale is a private placement. As the company is already registered, the share sale is not an initial public offering. The sale cannot be called as shelf registration because the company is not selling shares to the public in fragments.

56. A is correct. This offering is a rights offering as the company is distributing rights to existing shareholders to buy stock at a fixed price in proportion to their current holdings.

57. B is correct. This transaction is most likely to be a part of primary market. This is a direct sale of issuer to investor and fund flows to the issuer directly from the purchaser of the security.

58. A is correct. The cost of raising capital becomes low in primary markets when securities trade in liquid secondary markets.

59. B is correct. Almost all currency trading takes place in quote driven markets where trading is done through dealers at the prices quoted by them. They are also called as over-the-counter markets.

60. C is correct. Brokered markets are most suitable for securities that are unique or illiquid.

61. A is correct. In call markets, orders are accumulated and securities trade only at specific times.

62. C is correct. Operationally efficient markets are liquid markets in which the costs of trading commissions, bid–ask spreads, and order price impacts are low.

63. C is correct. Cost of trading determines the operational efficiency of a financial market. If a market has high cost of trading, it is operationally inefficient. If filling orders is very costly, informed trading may not be possible.

64. A is correct. Economies that use resources in such a way that they are most valuable are allocationally efficient.

65. C is correct. Ensuring that investors earn at least the risk free rate is least likely to be an objective of market regulation.

**LO.a: Describe a security market index.**

1. Analyst 1: A security market index represents the level of risk in the market.
   Analyst 2: A security market index represents the security market, market segment or asset class.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Neither.

2. Which of the following is *least likely* true with regards to security market indices?
   A. Security market indices measure the value of different target markets.
   B. Index values are calculated using estimated or actual values of constituent securities.
   C. Once defined, the constituent securities are not changed.

**LO.b: Calculate and interpret the value, price return, and total return of an index.**

3. Index P is a price return index. Index T is a total return index. Both have a starting value of 1000. Both have the same underlying securities and weighting system. Six months after inception the two index values will *most likely* be equal if:
   A. the indices have not been rebalanced.
   B. the indices have not been reconstituted.
   C. the constituent securities do not pay dividends or interest.

4. An analyst gathers the following information for KSE3 index comprised of HBL, FFCL and EFOODS. This is a price-weighted index.

| Security | Beginning of period price (Rs.) | End of period price (Rs.) | Total Dividend (Rs.) |
|---|---|---|---|
| HBL | 148 | 153 | 8 |
| FFCL | 104 | 110 | 5 |
| EFOODS | 110 | 90 | 4 |

The price return of the index is *closest* to:
A. -2.5%.
B. -2.9%.
C. -10.9%.

5. A market-capitalization-weighted index consists of securities ABC, DEF and GHI:

| Security | Beginning of Period Price | End of Period Price | Dividends per share | Share Outstanding |
|---|---|---|---|---|
| ABC | 1,500 | 1,700 | 10 | 6,000 |
| DEF | 2,500 | 1,500 | 15 | 8,500 |
| GHI | 500 | 600 | 10 | 10,000 |

The price return of the index is *closest* to:
A. -10.33%.
B. -17.87%.

C. -13.90%.

6. Peter gathers the following information for a market-capitalization- weighted index comprised of securities ABC, DEF and GHI.

| Security | Beginning of period price | End of period price | Dividends per share | Shares outstanding |
|---|---|---|---|---|
| ABC | 1,500 | 1,700 | 10 | 6,000 |
| DEF | 2,500 | 1,500 | 15 | 8,500 |
| GHI | 500 | 600 | 10 | 10,000 |

The total return of the index is *closest* to:
A. 1.04%.
B. -17.06%.
C. -10.23%.

7. An analyst gathers the following data for a price-weighted index:

| | Beginning of period | | End of period | |
|---|---|---|---|---|
| **Security** | **Price $** | **Shares** | **Price $** | **Shares** |
| A | 10 | 100 | 15 | 100 |
| B | 40 | 150 | 38 | 150 |
| C | 16 | 200 | 20 | 200 |

The price return of the index over the period is *closest* to:
A. 10.61%.
B. 17.1%.
C. 21.4%.

8. John gathers the following data for a value-weighted index:

| | Beginning of period | | End of period | |
|---|---|---|---|---|
| **Security** | **Price $** | **Shares** | **Price $** | **Shares** |
| A | 10 | 100 | 15 | 100 |
| B | 40 | 150 | 38 | 150 |
| C | 16 | 200 | 20 | 200 |

The return on the value-weighted index over the period is *closest* to:
A. 7.1%.
B. 9.8%.
C. 11.4%.

9. John gathers the following data for an equally-weighted index:

| | Beginning of period | | End of period | |
|---|---|---|---|---|
| **Security** | **Price $** | **Shares** | **Price $** | **Shares** |
| A | 10 | 100 | 15 | 100 |
| B | 40 | 150 | 38 | 150 |
| C | 16 | 200 | 20 | 200 |

The return on the index over the period is *closest* to:

A. 25.2%.
B. 16.8%.
C. 23.3%.

10. Alex gathers the following information for an equal-weighted index comprised of assets A, B, and C:

| Security | Beginning of period price $ | End of period price $ | Total Dividends $ |
|---|---|---|---|
| A | 20 | 15 | 2 |
| B | 40 | 48 | 4 |
| C | 60 | 60 | 9 |

What is the price return of the index?

A. 10.0%.
B. -1.7%.
C. -2.5%.

11. Alex gathers the following information for an equal-weighted index comprised of assets A, B, and C:

| Security | Beginning of period price $ | End of period price $ | Total Dividend $ |
|---|---|---|---|
| A | 20 | 15 | 2 |
| B | 40 | 48 | 4 |
| C | 60 | 60 | 9 |

The total return of the index is *closest* to:

A. 5.0%.
B. 7.5%.
C. 10.0%.

**LO.c: Describe the choices and issues in index construction and management.**

12. The second major question to address when constructing an index is *most likely*:

A. What is the target market?
B. When should the index be rebalanced?
C. Which securities should be selected from the target market?

13. Analyst 1: Objective or mechanical rules are used to determine the constituent securities of most indices.
Analyst 2: Some indices use a selection committee and subjective decision making rules to determine constituent securities.
Which analyst's statement is *most likely* correct?

A. Analyst 1.
B. Analyst 2.
C. Both.

**LO.d: Compare the different weighting methods used in index construction.**

14. The index weighting method that requires adjustment to the divisor after a stock split is:
    A. price weighting.
    B. equal weighting.
    C. float adjusted market-capitalization weighting.

15. Which of the index weighting methods leads to indices that have a value tilt?
    A. Market-capitalization weighting.
    B. Fundamental weighting.
    C. Float-adjusted market-capitalization weighting.

16. The index weighting that has a momentum effect is *most likely* to be:
    A. equal weighted.
    B. fundamental weighted.
    C. market-capitalization weighted.

17. Jim is looking for a method that is *least likely* to require rebalancing. Which one of the following methods would Jim select?
    A. price weighting.
    B. equal weighting.
    C. fundamental weighting.

18. Which of the following is *least likely* a characteristic of fundamental weighting of an index?
    A. Index will have a contrarian effect.
    B. Index will use multiple measures to weigh constituent securities.
    C. Index will include all shares.

19. Which of the following type of market index *most likely* requires frequent rebalancing?
    A. Equal weighted.
    B. Market-capitalization weighted.
    C. Price weighted.

20. Contrarian “effect” is *most likely* a characteristic of which of the following types of index weighting methods?
    A. Market capitalization weighting.
    B. Price weighting.
    C. Fundamental weighting.

21. High transaction costs reduce portfolio returns due to rebalancing. Which of the following indices is *most likely* to experience this?
    A. Equal weighted.
    B. Price weighted.
    C. Value weighted.

**LO.e: Calculate and analyze the value and return of an index given its weighting method.**

22. The following information is available for an index:
Value of the index as of December 31, 2012: 1,000
Interest income over the year 2012: 45.50
Dividend income over the year 2012: 12.00
Total return of the index over the year 2012: -3.50%
The value of the index as of January 1, 2012 is *closest* to:
    A. 1,073.
    B. 1,084.
    C. 1,096.

23. The index weighting method that *most likely* requires an adjustment to the divisor after a stock split is:
    A. fundamental weighting.
    B. market-capitalization weighting.
    C. price weighting.

24. The data for four stocks in a price-return index are as follows:

| Stock | Shares Outstanding | % Shares in Market Float | Beginning of Period Price ($) | End of Period Price ($) | Dividends Per Share ($) |
|---|---|---|---|---|---|
| 1 | 2000 | 80 | 25 | 28 | 1.5 |
| 2 | 5000 | 90 | 13 | 11 | 2.0 |
| 3 | 4000 | 60 | 44 | 42 | 2.5 |
| 4 | 6000 | 50 | 38 | 45 | 1.5 |

Assuming the beginning value of the float-adjusted market-capitalization-weighted equity index is 100, the ending value is *closest* to:
    A. 103.8.
    B. 105.8.
    C. 110.7.

**LO.f: Describe rebalancing and reconstitution of an index.**

25. Rebalancing is *most likely* to involve:
    A. adding or removing securities to maintain consistency with the target market.
    B. adjusting securities’ weight to keep the turnover stable.
    C. adjusting securities’ weights to maintain consistency with the index’s weighting method.

26. What does reconstitution of a security market index help reduce?
    A. Portfolio turnover.
    B. Market-capitalization weighting of the index.
    C. The likelihood that the index includes securities that are not representative of the target market.

**LO.g: Describe uses of security market indices.**

27. Which of the following is *least likely* true about security market indices?
    A. Indices allow us to gauge market sentiment.
    B. Indices serve as investment vehicles.
    C. Indices serve as a basis for investment products.

28. Analyst 1: Security market indices serve as market proxies when measuring risk-adjusted performance.
    Analyst 2: Security market indices are often used as benchmarks to evaluate the performance of active portfolio managers.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

**LO.h: Describe types of equity indices.**

29. An index that contains securities with more than 90% of the market's total value is *most likely* a:
    A. broad market index.
    B. sector index.
    C. multi-market index.

30. An example of a style index is an:
    A. index based on geographic regions.
    B. index based on economic sector.
    C. index based on value stocks.

**LO.i: Describe types of fixed-income indices.**

31. On the basis of market, fixed income indices can be *least likely* classified as:
    A. global.
    B. currency zone.
    C. investment grade**.**

**LO.j: Describe indices representing alternative investments.**

32. Which of the following is *least likely* true with regards to hedge fund indices?
    A. Returns are generally overstated.
    B. Hedge funds can decide whether to report their performance to index creators.
    C. Returns are generally understated.

33. What is *most likely* a feature of hedge fund indices? They:
    A. are frequently equal weighted.
    B. are determined by the constituents of index.

C. reflect the value of private rather than public investments.

34. Which of the following statements regarding commodity indices is *least likely* correct?
    A. Most commodity indices use the same weighting methods.
    B. Commodity indices containing the same underlying commodities might have different returns.
    C. Most commodity indices are based on commodity futures contracts.

35. Which of the following is *least likely* to be an issue pertaining to a commodity index?
    A. Commodity indexes are based on future prices, rather than spot prices.
    B. Commodity indexes may vary due to the use of different methodologies of determining weights.
    C. Commodity indexes may show an upward bias due to the reflected performance of only surviving commodities.

**LO.k: Compare types of security market indices.**

36. An index based on market capitalization *most likely*:
    A. requires frequent rebalancing.
    B. has a value tilt.
    C. is influenced by overpriced securities.

37. An example of a style index is an index based on:
    A. geographic regions.
    B. economic sector.
    C. value stocks.

38. Which of the following is *least likely* a real estate index category?
    A. Repeat sales index.
    B. Initial sales index.
    C. Appraisal index.

39. Tim is working on his assignment to compare equity indices with fixed-income indices. From his class lecture, he recalls that 1) fixed income securities are harder to replicate 2) constituent securities of fixed-income indices are more liquid, and 3) constituent securities of fixed income indices are drawn from a larger pool as compared to securities of equity indices. Out of the three facts he recalls, which of the following is *least likely* correct?
    A. Fixed income securities are harder to replicate.
    B. Constituent securities of fixed-income indices are more liquid.
    C. Constituent securities of fixed income indices drawn from a larger pool.

**Solutions**

1. B is correct. A security market index represents the security market, market segment or asset class.

2. C is correct. Most major indices are reconstituted periodically.

3. C is correct. Income generated over time by underlying securities in terms of dividend or interest creates a difference between a price return index and a total return index consisting of identical securities and weights. If the securities in the index do not generate income, both indices will be identical in value.

4. A is correct. The price return of the price-weighted index is the percentage change in price of the index: $\frac{353 - 362}{362}$ = - 2.49%.

| Security | Beginning of period price | End of period price |
|---|---|---|
| HBL | 148 | 153 |
| FFCL | 104 | 110 |
| EFOODS | 110 | 90 |
| TOTAL | 362 | 353 |

5. B is correct. The price return of the index is $\frac{28,950,000 - 35,250,000}{35,250,000}$ = -17.87%.

6. B is correct. The total return of the market-capitalization-weighted index is calculated below:

| Security | Beginning of Period Value | End of Period Value | Total Dividend | Total Return % |
|---|---|---|---|---|
| ABC | 9,000,000 | 10,200,000 | 60,000 | 14 |
| DEF | 21,250,000 | 12,750,000 | 127,500 | -39.4 |
| GHI | 5,000,000 | 6,000,000 | 100,000 | 22 |
| Total | 35,250,000 | 28,950,000 | 287,500 | -17.06 |

7. A is correct. The sum of prices at the beginning of the period is 66; the sum at the end of the period is 73. Regardless of the divisor, the price return is $\frac{73}{66} - 1$ = 0.1061 or 10.61percent.

8. B is correct. It is the percentage change in the market value over the period:
Market value at beginning of period: $(10 * 100) + (40 * 150) + (16 * 200)$ = 10,200
Market value at end of period: $(15 * 100) + (38 * 150) + (20 * 200)$ = 11,200
Percentage change is $\frac{11,200}{10,200} - 1$ = 0.09804 or 9.8 percent with rounding.

9. C is correct. With an equal-weighted index, the same amount is invested in each security. Assuming \$500 is invested in each of the three stocks, the index value is \$1,500 at the beginning of the period and the following number of shares is purchased for each stock:
   Security A: 50 shares.
   Security B: 12.5 shares.
   Security C: 31.25 shares.
   Using the prices at the beginning of the period for each security, the index value at the end of the period is \$1,850: $(\$15 * 50) + (\$38 * 12.5) + (\$20 * 31.25)$. The price return is $\frac{\$1,850}{\$1,500} - 1$ = 23.3%.

10. B is correct.
    The price return of the index equals the weighted average of price returns of the individual securities.
    Return of A: -25percent = $\frac{15-20}{20}$
    Return of B: 20 percent = $\left[\frac{48-40}{40}\right]$;
    Return of C: 0 percent = $\left[\frac{60-60}{60}\right]$.
    The price return index assigns equal weights to each asset; therefore, the price return is $\frac{1}{3} * [-25\% + (20\%) + 0\%]$ = -1.7%.

11. C is correct.
    The total return of an index is the price appreciation, or change in the value of the price return index, plus income (dividends and/or interest) over the period, expressed as a percentage of the beginning value of the price return index.
    Return of A: $\frac{15-20+2}{20}$ = -15%
    Return of B: $\frac{48-40+4}{40}$ = 30%
    Return of C: $\frac{60-60+9}{60}$ = 15%
    An equal-weighted index applies equal weight to each security's return; therefore, the total return = $\frac{1}{3} * (-15\% + 30\% + 15\%)$ = 10%.

12. C is correct. The first major question to address is what is the target market? The second major question is what securities to select from the target market?

13. C is correct. Both statements are correct.

14. A is correct. The index weighting method that requires an adjustment to the divisor after a stock split is the price weighing method.

15. B is correct. Fundamental weighting leads to indices that have a value tilt.

16. C is correct. Market capitalization weighted indices generally will have a momentum "effect".

17. A is correct. Equal weighing and fundamental weighting methods require rebalancing. Price weighting does not require rebalancing.

18. B is correct. Fundamental indices use a single measure, such as total dividends, to weight the constituent securities. Fundamentally weighted indices generally will have a contrarian "effect" in that the portfolio weights will shift away from securities that have increased in relative value and toward securities that have fallen in relative value whenever the portfolio is rebalanced. All shares are included in a fundamental weighted index.

19. A is correct. This is because after an equal weighted index is constructed and the prices of constituent securities change, the index is no longer equally weighted. Therefore, maintaining equal weights requires frequent adjustments (rebalancing) to the index.

20. C is correct. Fundamental weighting leads to indices that have a relative value tilt i.e. the contrarian 'effect', where portfolio weights will shift away from securities that have increased in relative value and towards securities that have fallen in relative value whenever the portfolio is rebalanced.

21. A is correct. Price and value-weighted are adjusted to their correct values by changes in prices. Therefore, rebalancing is only carried out for equal weighted indexes and these experience high transaction costs.

22. C is correct. The total return of an index is the price appreciation, or change in the value of the price return index, plus income (dividends and/or interest) over the period, expressed as a percentage of the beginning value of the price return index.

$TR_I = \frac{V_{PRI1} - V_{PRI0} + Inc_I}{V}$

where

$TR_I$ = the total return of the index portfolio (as a decimal number)

$V_{PRI1}$= the value of the price return index at the end of the period

$V_{PRI0}$ = the value of the price return index at the beginning of the period

$Inc_1$ = the total income (dividends and/or interest) from all securities in the index held over the period

$-3.5\% = \frac{1000 - V_{PRI0} + 45.5 + 12}{V_{PRI0}}$;

$V_{PRI0} = \frac{1000 + 45.5 + 12.0}{1 - 3.5\%} = 1{,}096.$

23. C is correct. In the price weighting method, the divisor must be adjusted so the index value immediately after the split is the same as the value immediately prior to split

24. A is correct. This is a price return index (not a total return index). Hence we only consider changes in prices and ignore the dividends. In float-adjusted market-capitalization weighting,

the weight on each constituent security is determined by adjusting its market capitalization for its market float.

| Stock | Shares Outstanding | % Shares in Market Float | Shares in Index | Beginning of Period Price ($) | Beg. Float Adj. MarketCap ($) | End of Period Price ($) | Ending Float Adj. Market Cap ($) |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (1) * (2) = (3) | (4) | (3) * (4) = (5) | (6) | (3) * (6) |
| 1 | 2000 | 80 | 1600 | 25 | 40000 | 28 | 44800 |
| 2 | 5000 | 90 | 4500 | 13 | 58500 | 11 | 49500 |
| 3 | 4000 | 60 | 2400 | 44 | 105600 | 42 | 100800 |
| 4 | 6000 | 50 | 3000 | 38 | 114000 | 45 | 135000 |
| Total | | | | | 318100 | | 330100 |
| Index Value | | | | | 100.0 | | **103.8** |

As per the computations shown above, the ending value of the index equals 103.8 = $\frac{330,100}{318,100}$

25. C is correct. To maintain the weight of each security consistent with the index's weighing method, the index provider rebalances the index by adjusting the weights of the constituent securities on a regularly scheduled basis.

26. C is correct. Reconstitution is the process of changing the constituent securities in an index. Constituent securities that no longer meet the criteria are replaced with securities that do meet the criteria. Thus, reconstitution reduces the likelihood that the index includes securities that are not representative of the target market.

27. B is correct. Security market indices serve as model portfolios for investment products. We cannot invest directly in an index.

28. C is correct. Both statements about the uses of security market indices are correct.

29. A is correct. A broad market index tries to represent the entire market and usually contains more than 90% of the market's total value.

30. C is correct. Style indices represent groups of securities classified according to market capitalization, value, growth, or a combination of these characteristics

31. C is correct. On the basis of market, fixed income indices are classified as global, regional and country or currency zone.

32. C is correct. Performance reporting is voluntary. Hedge funds with poorer performance may be less likely to report their performance to the database, which make the returns biased upwards.

33. B is correct. Since hedge funds are not required to report their performance to any party except for the investor, therefore constituents determine the hedge fund index rather than the index providers determining the constituents.

34. A is correct. There is no standardization with regards to commodity indices. Different indices will probably use different weighting methods. The other two statements are true.

35. C is correct. Upward bias exists only in the case of *hedge funds* and not in the case of *commodities.* The other two options are definitely issues pertaining to a commodity index.

36. C is correct. Equal-weighted indices require frequent rebalancing. Fundamentals-weighted indices have a value tilt. Market capitalization weighted indices are influenced by overpriced securities.

37. C is correct. Style indices represent groups of securities classified according to market capitalization, value, growth, or a combination of these characteristics.

38. B is correct. Real estate index can be categorized as appraisal index, repeat sales index and real estate investment trust index. Initial sales index is not a real estate index category.

39. B is correct. Constituent securities of fixed-income indices are generally less liquid compared to equity securities.

**LO.a: Describe market efficiency and related concepts, including their importance to investment practitioners.**

1. The type of efficiency that exists when any new information about a given firm is known with certainty, and is immediately priced into that company's stock, is *best* known as:
   A. informational efficiency.
   B. operational efficiency.
   C. allocational efficiency.

2. Which of the following is *most likely* the cause of change in a company’s share price?
   A. Number of trades executed in the past few days.
   B. Current information in the market.
   C. New information coming into the market.

3. For the efficient market hypothesis to hold:
   A. only the market needs to be rational.
   B. individuals participating in the market need to be rational.
   C. markets need to be irrational.

4. Analyst 1: In an efficient market, security market prices fully reflect their fundamental values.
   Analyst 2: In an efficient market, active strategies will lead to excess risk adjusted portfolio returns.
   Which analyst’s statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Both.

**LO.b: Distinguish between market value and intrinsic value.**

5. Active investors seek to profit by selling assets when the market price is:
   A. greater than the intrinsic value.
   B. equal to the intrinsic value.
   C. less than the intrinsic value.

6. According to the value effect, high value stocks that outperform growth stocks have higher:
   A. dividend yields.
   B. price-to-earnings ratios.
   C. market-to-book ratios.

7. The fundamental value of an overvalued asset is:
   A. greater than the price at which it can be bought or sold.
   B. less than the price at which it can be bought or sold.
   C. it is the value at which it can currently be bought or sold.

8. An asset’s intrinsic value:

A. can be calculated precisely.
B. is determined using financial models like dividend discount model.
C. is equal to its market value.

**LO.c: Explain factors that affect a market's efficiency.**

9. Which of the following will *most likely* impede market efficiency?
   A. Putting restriction on short selling.
   B. Encouraging arbitrage transactions.
   C. Increasing transparency in market prices.

10. Consider a regulation that restricts some investors from participating in a market. What is the *most likely* of this regulation on market efficiency? It:
    A. hinders efficiency.
    B. has no effect on efficiency.
    C. increases efficiency.

11. According to efficient market theory, what affect does a restriction on short selling have on market efficiency?
    A. Increase market efficiency.
    B. Decrease market efficiency.
    C. No affect market efficiency.

12. Market efficiency will *most likely* increase by:
    A. selling riskier securities.
    B. restricting arbitrage.
    C. increasing the number of financial market participants.

**LO.d: Contrast weak-form, semi-strong-form, and strong-form market efficiency.**

13. The weak form market efficiency *most likely* assumes that current security prices:
    A. fully reflect all information from public and private sources.
    B. adjust rapidly to the release of all public information.
    C. fully reflect all price and trading volume information.

14. Security markets are not strong-form efficient because:
    A. change in price cannot be linked to current or new information in the market.
    B. price adjusts quickly to new information.
    C. regulations try to prevent insider trading.

15. Tim observed that company XYZ's share price reacts gradually to the public release of its annual report. With respect to efficient markets, which of the following *most likely* indicates the market where company XYZ trades?
    A. The market is weak-form efficient.
    B. The market is strong-form efficient.
    C. The market is waiting for new information to be released.

16. If the market price of a security reflects past prices and both public and private information, then market is:
    A. weak-form efficient.
    B. semi-strong-form efficient.
    C. strong-form efficient.

17. Which of the following *best* describe weak-form market efficient?
    A. Technical analysis can be used to make abnormal profits.
    B. Security prices reflect all publicly known and available information.
    C. There is no serial correlation in security returns.

18. If markets are weak-form efficient, the abnormal trading profits of technical analysis will *most likely* be:
    A. negative.
    B. zero.
    C. positive.

19. If investors are able to earn abnormal returns by trading on non-public information, markets are *least likely* to be:
    A. weak-form efficient but not semi-strong-form efficient.
    B. semi-strong-form efficient but not strong-form efficient.
    C. strong-form efficient.

20. An observation that the stocks with above average price-to-book ratio have consistently underperformed those with below average price-to-book ratio *least likely* contradicts:
    A. weak form market efficiency.
    B. semi-strong form market efficiency.
    C. strong form market efficiency.

21. After the public announcement of higher than expected earnings, an investor makes abnormal returns by going long on the firm. This *most likely* violates which form of market efficiency?
    A. Semi-strong form only.
    B. Semi-strong and strong forms.
    C. Weak and semi-strong forms.

**LO.e: Explain the implications of each form of market efficiency for fundamental analysis, technical analysis, and the choice between active and passive portfolio management.**

22. Which of the following is *most likely* to be a characteristic of an efficient security market?
    A. Arbitrageurs would have more chances to earn profits.
    B. Active investment strategies would be preferred over passive strategies.
    C. Security prices would react only to the "unexpected" elements of information.

23. Dean Jones is using trading rules to generate abnormal profits. He is *most likely* acting on the assumption that the market is:

A. weak form inefficient.
B. semi-strong form efficient.
C. strong form efficient.

24. Considering markets are inefficient, which one of the following is *most likely* correct about passive portfolio management strategies?
    A. They underperform active trading strategies.
    B. They outperform active trading strategies.
    C. They consistently achieve superior abnormal returns.

25. If a market is weak-form efficient, then the return of a passively managed portfolio is likely to be:
    A. higher than the return on an actively managed portfolio.
    B. lower than the return on an actively managed portfolio.
    C. the same as the return on an actively managed portfolio.

26. Taylor observes that stock X's price is on an upward trend. He expects this upward trend to continue and decides to buy the stock. Taylor assumes that the market is:
    A. weak-form efficient.
    B. strong-form inefficient.
    C. weak-form inefficient.

27. Jacob is interested in buying shares of GSK. He, therefore, does a thorough research on pharma sector and studies GSK in depth. His analysis involves the estimation of an asset's value using earnings and sales forecasts, and risk estimates as well as economic growth, inflation and interest rates prevailing. In such a scenario, Jacob's analysis for investment in GSK assumes markets are:
    A. strong-form inefficient.
    B. strong-form efficient.
    C. semi-strong-form inefficient.

28. In an inefficient market, investors will *most likely* benefit from a(n):
    A. passive investment strategy.
    B. active investment strategy.
    C. active or passive investment strategy.

**LO.f: Describe selected market anomalies.**

29. Which of the following is the *least accurate* characterization of momentum anomalies? Momentum anomalies:
    A. relate to short-term price patterns.
    B. are caused by investor overreaction.
    C. are consistent with weak-form market efficiency.

30. The stock of company XYZ is trading at $120 prior to the announcement. After the announcement, the stock price should fall to $115; instead it decreases to $113. This anomaly

is known as:

A. overreaction effect.
B. earnings surprise.
C. predictability of return based on prior information.

31. Which of the following is *least likely* to explain the January effect anomaly?
    A. Tax selling.
    B. Most companies perform poorly in January.
    C. Window dressing of portfolio holdings.

32. A market anomaly which is inconsistent with weak-form market efficiency is:
    A. distressed securities effect.
    B. momentum pattern.
    C. value line enigma.

33. Some observed anomalies that are not violations of market efficiency could rather be:
    A. result of statistical methodology that could be corrected.
    B. a technique to produce future abnormal returns.
    C. drivers of economic growth.

**LO.g: Describe behavioral finance and its potential relevance to understanding market anomalies.**

34. The tendency of people to dislike losses more than they like comparable gains is *most likely* referred to as:
    A. loss aversion.
    B. risk aversion.
    C. the disposition effect.

35. According to behavioral finance, the investor bias in which investors assess new information and probabilities of outcomes based on similarity to the current state is *best* described as:
    A. representativeness.
    B. conservatism.
    C. narrow framing.

36. Lin Xiu, a well-respected financial analyst, buys a stock after utilizing her analytical experience and up-to-date information. Her friends imitate Lin's actions and also buy the same stock. Which of the following statements is *most accurate*?
    A. The behavior of Lin's friends improves market efficiency.
    B. The behavior of Lin's friends is irrational.
    C. The behavior of Lin's friends reflects a representativeness bias.

37. You are well respected financial and a charterholder. You continuously use your skills and analytical expertise along with up-to-date information to make investment decisions. Your close friends imitate your decision and buy or sell in accordance with your investment

decisions. Which of the following statements is *least likely* accurate with regards to the behavioral exhibited by your close friends?

A. The behavior improves market efficiency.
B. The behavior is an example of an information cascade.
C. The behavior is irrational.

38. The behavioral finance theory which explains how investors can be slow to react to new information and continue to maintain their prior views or forecasts is *most accurately* described as:

A. narrow framing.
B. conservatism.
C. representativeness.

**Solutions**

1. A is correct. The theory of informationally efficient markets states that new information about any given firm is known with certainty, and is immediately priced into that company's stock.

2. C is correct. In an efficient market, a change in the company's share price is most likely the result of new information coming into the market. Investors will react to new, independent information as it is made public.

3. A is correct. Market efficiency and asset-pricing models do not require that each individual is rational- rather, only that the market is rational.

4. A is correct. In an efficient market price fully reflect their fundamental values and active strategies cannot generate excess risk-adjusted returns.

5. A is correct. When a security's market value is greater than its intrinsic value, active investors seek to profit by selling the asset.

6. A is correct. The value effect suggests that high value stocks (i.e. with relatively low P/E, P/B ratios, or high dividend yield) outperform growth stocks.

7. B is correct. The intrinsic value (or fundamental value) of an overvalued asset is less than the market value of the asset, where the market value is the transaction price at which an asset can be currently bought or sold.

8. B is correct. An asset's intrinsic value is calculated using financial models such as the dividend discount model (DDM). The intrinsic value can be different from market value, especially if the market is not efficient.

9. A is correct. Putting restrictions on short selling will reduce arbitrage trading which will impede market efficiency. Arbitrage results in higher market efficiency as price differences quickly disappear. Increasing transparency in the market also helps enhance market efficiency.

10. A is correct. Market efficiency can be impeded by reduction in number of market participants which also leads to market imperfections.

11. B is correct. Restrictions on short selling in some markets impede efficiency. Reducing the restrictions on short selling will allow for more arbitrage trading. Arbitrage results in higher efficiency as price differences quickly disappear.

12. C is correct. If the number of financial market participants increase, markets become more efficient.

13. C is correct. In the weak form efficient market hypothesis, security prices fully reflect all price and trading volume information.

14. C is correct. Securities markets are not strong-form market efficient as regulations try to prevent insider trading.

15. C is correct. Based on the convention used in the curriculum, the term ‘with respect to efficient markets’ implies that the markets are efficient. If the market is efficient, the most likely reason for the stock price to ‘react gradually’ is that the market is waiting for additional information.

16. C is correct. The strong-form efficient market hypothesis is defined as a market where security prices fully reflect all market data, which refers to all past price and both public and private information available.

17. C is correct. In weak-form efficient markets, historical market information (price and volume data) is already reflected in security prices hence there is no serial correlation in security returns.

18. B is correct. If markets are weak-form efficient, then technical analysts cannot make abnormal returns on a consistent basis.

19. C is correct. In both weak-form and semi-strong-form efficient markets, investors are able to earn abnormal returns by trading on private information.

20. A is correct. This observation contradicts semi-strong and strong form market efficiency. Semi-strong-form efficient markets reflect all publically available information which includes financial statement data (including book value of a company) and financial market data (market price of a security). A strong-form efficient market is, by definition, also semi-strong and weak form efficient. This observation is not a contradiction to weak-form market efficiency as financial statement data is not reflected in a security’s price in such markets.

21. B is correct. In semi-strong efficient market, prices adjust quickly and accurately to new information and investors cannot earn abnormal profits on public announcements. Thus, the market is not semi-strong efficient. A market that is not semi-strong efficient is also not strong form efficient. However, the market could still be weak form efficient because past prices are not being used to make abnormal profits.

22. C is correct. In an efficient market, prices should be expected to react only to the “unexpected” or “surprise” element of information releases. Investors process the unexpected information and revise expectations accordingly.

23. A is correct. Trading rules that consistently generate abnormal risk-adjusted returns after trading costs contradict the weak form of market efficiency. Under weak form of market efficiency, securities fully reflect all past market data. This refers to all historical price and trading volume information forming the basis of technical analysis. Hence, past trading data

is already reflected in current prices and returns cannot be generated by extrapolating price trends to forecast future price movements.

24. A is correct. In an inefficient market, an active investment strategy outperforms passive investment strategy as several opportunities may exist to earn superior returns.

25. B is correct. In a weak-form efficient market, active portfolio strategies based on fundamental analysis can be used to outperform passive portfolio strategies.

26. C is correct. Taylor is acting as a technical analyst. He is using past prices and volume to predict future prices, which contradicts weak-form market efficiency.

27. C is correct. Jacob is acting as a fundamental analyst by using publicly available information to estimate a security's intrinsic value to determine if the security is mispriced, which contradicts semi-strong form of market efficiency.

28. B is correct. In an inefficient market, investors might be able to earn superior risk adjusted returns since opportunities for it exist in the market e.g. due to mispricing. However, in an efficient market a passive investment strategy would be preferred to an active strategy for its lower costs and because opportunities for earning superior risk adjusted returns in an efficient market are negligible.

29. C is correct. The first two statements are correct as momentum anomalies relate to short-term price patterns, typically resulting from investor overreaction in response to the release of unexpected public information.

30. A is correct. This anomaly is known as overreaction effect.

31. B is correct. Tax-selling and window dressing are two reasons generally given for the January effect.

32. B is correct. A contradiction to weak-form efficiency occurs when securities that have experienced high returns in the short term tend to continue to generate higher returns in subsequent periods. If investors can trade on the basis of momentum and earn abnormal profits, then this anomaly contradicts the weak form of the efficient market hypothesis because it represents a pattern in prices that can be exploited by simply using historical price information.

33. A is correct. Some observed anomalies are not violations of market efficiency, but rather are the result of statistical methodologies used to detect the anomalies. As a result, if the methodologies are corrected, most of these anomalies disappear.

34. A is correct. According to the loss aversion arguments, investors dislike losses more than they like comparable gains.

35. A is correct. Representativeness is where investors assess new information and probabilities of outcomes based on similarity to the current state or to a familiar classification.

36. A is correct. This behavioral bias is an example of an information cascade wherein the transmission of information is from those participants who act first and whose decisions influence the decisions of others. The behavior of informed traders acting first and uninformed traders imitating the informed traders is consistent with rationality. The imitation trading by the uninformed traders helps the market incorporate relevant information and improves market efficiency.

37. C is correct. This behavioral bias is an example of an information cascade wherein the transmission of information is from those participants who act first (i.e. you) and whose decisions influence the decisions of others (your friends). The behavior of informed traders acting first and uninformed traders imitating the informed traders is consistent with rationality. The imitation trading by the uninformed traders helps the market incorporate relevant information and improves market efficiency.

38. B is correct. Conservatism is the behavioral finance theory in which investors tend to be slow to react to new information and continue to maintain their prior views and forecasts. Narrow framing involves investors focusing on issues in isolation while representativeness involves investors assessing probabilities of outcomes depending on how similar they are to the current state.

**LO.a: Describe characteristics of types of equity securities.**

1. Which of the following statements about the key characteristics of different types of preference shares is *least accurate*?
   A. Preference shares have characteristics of both debt and equity securities.
   B. Preference shareholders rank below subordinated bondholders with respect to claims on the company's net assets upon liquidation.
   C. The price of convertible preference shares tends to be more volatile than their underlying common shares.

2. Which of the following statements is *least accurate*?
   A. Investors prefer to invest in putable common shares rather than callable common shares.
   B. The issuing company is obligated to buy callable common shares at a predetermined price.
   C. Putable common shares facilitate raising capital because of their appeal to investors over callable common shares.

3. Which of the following statements about participating preference shares is *least accurate*?
   A. They entitle shareholders to participate in additional dividends if the company's profits exceed a predetermined level.
   B. They entitle shareholders to participate in corporate decisions through voting rights.
   C. They entitle shareholders to participate in additional distribution of the company's assets upon liquidation.

**LO.b: Describe differences in voting rights and other ownership characteristics among different equity classes.**

4. Which of the following decisions is *least likely* to be the one which common stock holders can vote on?
   A. Auditor selection.
   B. Dividend payments.
   C. Merger decisions.

5. Common shares do not entitle investors:
   A. to a share of the company's operating performance.
   B. to participate in decision making in the form of voting rights.
   C. to fixed dividend payments.

6. In what way are preference shares similar to debt securities?
   A. Preference shareholders generally receive predictable cash flows.
   B. The dividends are usually variable like interest payments on debt securities.
   C. Preference share dividends are tax deductible.

7. The right to receive the standard preferred dividend plus an additional dividend based on some condition like if the company's profits exceed a certain level, is *best* known as what type of dividend?
   A. Cumulative.
   B. Participating.
   C. Non-participating.

8. The type of equity voting right that works in favor of minority shareholders where each shareholder gets to cast one vote per share times the number of positions to be filled is referred to as:
   A. statutory voting.
   B. proxy voting.
   C. cumulative voting.

**LO.c: Distinguish between public and private equity securities.**

9. Which of the following is *most likely* true for a leveraged buyout (LBO)?
   A. A company uses debt to buy back its shares.
   B. The management of a firm uses its own equity to purchase the common shares of a public company.
   C. A group of investors uses a large amount of debt to buy all outstanding common shares of public company.

10. All of the following are correct about private equity securities except:
   A. they cannot be traded on public exchanges.
   B. they trade in secondary equity markets.
   C. they are issued primarily to institutional investors.

11. Leveraged buyout investments:
   A. provide financing to start-ups and early-stage companies.
   B. require a long term commitment of funds.
   C. are publically traded.

12. Which of the following differences between private and public equity firm is incorrect?
   A. Exiting out of a private equity investment in comparison of public equity is easy as they do not trade on secondary markets.
   B. Private equity investment score low in terms of corporate governance relative to their public counterparts.
   C. Private equity firms incur lesser cost compared to public firms in regulatory and stock exchange filing requirements.

13. As compared to public equity markets, operating in the private market:
   A. offers management to better adopt a long-term focus.
   B. offers stronger incentives to improve corporate governance.
   C. allows more opportunities to raise capital.

14. The *most likely* candidates for a management buyout (MBO) are firms with:
    A. low levels of cash flow.
    B. high dividend payout ratios.
    C. large amounts of undervalued assets.

**LO.d: Describe methods for investing in non-domestic equity securities.**

15. A U.S. investor is looking for exposure to international stocks which trade like common shares on the New York Stock Exchange. Such instruments are called:
    A. global registered shares.
    B. global depository receipts.
    C. American depository receipts.

16. Many countries impose restrictions on foreign individual and institutional investors from investing in domestic companies. Which of the following is *least likely* a reason for this restriction?
    A. Restrictions help limit the amount of control foreign companies can exert on domestic companies.
    B. Restrictions make it easier for local companies to raise capital.
    C. Restrictions lead to higher stability of capital markets.

17. Which of the following is *most accurate* with respect to Level II listed ADR?
    A. They allow raising capital in U.S. markets through public offerings.
    B. They have no size and earning requirements.
    C. They have high listing fees.

18. The voting rights to the shares in the trust of an unsponsored depository receipt belong to:
    A. underlying foreign company whose shares are being issued.
    B. the depository bank issuing the shares.
    C. investor who purchases the shares.

19. A basket of listed depository receipts:
    A. tracks an index.
    B. cannot be shorted.
    C. cannot be purchased on margin.

20. Which of the following factors *least likely* impact the returns from a depository receipt?
    A. Company fundamentals.
    B. Market conditions.
    C. The ratio of depository receipts to underlying shares.

21. Martha comes across the following two statements while checking her students' examination papers.
    **Statement I**: The only disadvantage of a global depository receipt is that it is subject to capital flow restrictions.

**Statement II**: Sponsored depository receipts provide the investors with voting rights while unsponsored depository receipts do not.
Which of the following statements is *most accurate*?
A. Both Statements I and II are incorrect.
B. Statement I is incorrect, but statement II is correct.
C. Statement I is correct, but statement II is incorrect.

22. Which of the following statements about depository receipts (DRs) is *least* accurate?
A. Investors in unsponsored DRs have the same voting rights as the direct owners of common shares.
B. Investing in DRs could offer arbitrage opportunities and involve currency risk.
C. Sponsored DRs are subject to greater reporting requirements than unsponsored DRs.

**LO.e: Compare the risk and return characteristics of different types of equity securities.**

23. Which of the following types of securities of a same company would *most likely* offer the lowest expected return to the investor?
A. Common shares with no dividend policy.
B. Non-cumulative putable preference shares.
C. Non-cumulative callable preference shares.

24. If a Europe based investor purchases a US-dollar denominated ETF and the dollar subsequently appreciates in value relative to euro, the investor will have a total return that is:
A. greater than ETF's total return.
B. lesser than ETF's total return.
C. same as ETF's total return.

25. Which of the following is incorrect about risk characteristics of preference shares?
A. Dividend on preference shares is fixed and known.
B. Paid before common shares.
C. Amount to be received on liquidation is not fixed.

26. Which of the following equity securities is least risky from an investor's point of view?
A. Cumulative preference shares.
B. Putable preference shares.
C. Non-callable preference shares.

27. Which of the following is *most likely* to be an advantage of a convertible preference share?
A. Additional dividends received during profitable years.
B. Fixed preference dividends that are contractual obligations of the company.
C. Less price volatility than the underlying common shares.

28. Which of the following statements is *least accurate*?
A. All else equal, investors prefer putable over callable shares.
B. Putable shares are more difficult to sell than callable shares.
C. The call option which is part of a callable share is a benefit to the issuer.

**LO.f: Explain the role of equity securities in the financing of a company's assets.**

29. Which of the following is *least likely* a main reason for a company to raise capital by issuing equity securities?
    A. To provide stock option-based incentives to employees.
    B. To satisfy working capital requirements.
    C. To finance the purchase of long-lived assets.

30. A company issues equity on a primary market:
    A. To raise capital.
    B. To increase return on capital.
    C. To increase return on equity.

31. Which of the following is a primary goal for a company to raise equity capital?
    A. To make acquisitions.
    B. To fulfil debt requirements.
    C. To finance revenue generating activities.

**LO.g: Distinguish between the market value and book value of equity securities.**

32. Which of the following is *least* accurate in describing company's book value?
    A. Book value increases when a company pays little or no dividend.
    B. Book value is based on what investors expect will happen in future.
    C. Market value and book value are rarely equal.

33. Which of the following statements *most likely* describes a company's book value and market value?
    A. Management can directly influence the book value and market value of the company.
    B. Decrease in book value will automatically cause a company's market value to decrease.
    C. A change in investors' expectations can impact a company's market value.

34. Given the following information-
    Number of shares outstanding = 200,000
    Price per share = $ 102
    Total assets = $ 24,000,000
    Total liabilities = $ 10,500,000
    Net Income = $ 6,000,000
    The book value of the company is *closest* to:
    A. $ 13,500,000.
    B. $ 19,500,000.
    C. $ 20,400,000.

**LO.h: Compare a company's cost of equity, its (accounting) return on equity, and investors' required rates of return.**

35. A company's ROE will *most likely* decrease, holding all other factors constant, if:
    A. net income decreases at a slower rate than the shareholders' equity.
    B. net income increases at a slower rate than the shareholders' equity.
    C. company issues debt to repurchase outstanding shares of equity.

36. What would the total return on a share of equity be if:
    Purchase price = $ 100
    Sale price = $62
    Dividend paid during holding period = $5
    A. - 53%.
    B. - 33%.
    C. - 43%.

37. Calculate the 2011 return on equity of a stable company using the following data:
    Total Sales = $ 15,000,000
    Net Income = $ 10,000,000
    Beginning of year total assets = $ 150,000,000
    Beginning of year total liabilities = $ 130,000,000
    A. 50%.
    B. 12.5%.
    C. 6.67%.

38. Which of the following situations will *least likely* lead to an increase in a company's ROE?
    A. Net income increasing at a faster rate than equity.
    B. If a company borrows to purchase its outstanding shares from the market.
    C. Market price of a company's shares increases.

39. Which of the following measures is relatively simple to calculate?
    A. Cost of debt.
    B. Cost of equity.
    C. Investor's required rate of return.

40. Azure LLC has sold off 10% of its total assets, which were unproductive since the past three years, and used the proceeds to buy back its common shares. Holding other factors constant, the *most likely* effect will be a:
    A. higher ROE.
    B. higher profit margin.
    C. lower growth rate.

41. A mutual fund manager is looking to invest in a company's stock with the following characteristics:

| | |
|---|---|
| Risk-free rate | 2.50% |
| Market risk premium | 4.30% |
| Stock's beta | 1.9 |
| Manager's expected rate of return | 9.55% |

| | |
|---|---|
| Company’s weighted average cost of capital | 9.25% |

Based on this information, which of the following would be *most appropriate* investment decision for the fund manager?

A. Do not invest in stock as WACC is greater than required rate of return.
B. Do not invest in the stock because the required return is greater than the manger’s expected rate of return.
C. Invest in stock.

**Solutions**

1. C is correct. The price of convertible preference shares tends to be less volatile than their underlying common shares because they do not allow investors to share in profits of the company and the dividends on preference shares are fixed.

2. B is correct. The issuing company has the option and is not obligated to buy callable common shares at a predetermined price.

3. B is correct. Participating preference shares do not entitle the shareholders to participate in corporate decisions through voting rights. Options A and C are correct.

4. B is correct. Common stock holders are least likely to have a say in determining the dividend payments. They receive dividends after preferred stock holders have been paid. Common stock holders can vote on issues like selection of auditors and merger decisions.

5. C is correct. The dividend payments are not fixed in common shares.

6. A is correct. Dividends are generally predictable as with coupon payments on fixed income securities.

7. B is correct.

8. C is correct. The type of equity voting right that works in favor of minority shareholders where each shareholder gets to cast one vote per share times the number of positions to be filled is referred to as cumulative voting.

9. C is correct. This is the correct definition of a leveraged buyout (LBO), which is covered in more detail in Alternative Investments.

10. B is correct. They do not trade in secondary markets.

11. B is correct. Leveraged buyout investments provide financing to established companies. These are private investments and require a long-term commitment.

12. A is correct. Exiting out of a private equity investment in comparison of public equity is tricky as they do not trade on secondary markets.

13. A is correct. Public firms are under pressure from shareholders to meet shorter-term demands. Compared to this, private firms are better able to focus on longer-term value creation opportunities.

14. C is correct. Firms with (1) large amounts of undervalued assets which can be sold to reduce debt; and (2) that generate high levels of cash flows which can be used to make interest and

principal payments on the debt are most likely candidates for management buyout transactions.

15. C is correct. American depository receipts (ADRs) meet the investor's preferences.

16. B is correct. Options A and C are reasons for investing in domestic companies. Option B is not a reason because restrictions on capital flows makes it harder (not easier) for local companies to raise capital.

17. C is correct.

18. B is correct. The bank purchases the shares, places them into a trust and then sells shares in the trust in other markets.

19. A is correct. A basket of listed depository receipts tracks an index but trades like an individual share on an exchange.

20. C is correct. The price of each depository receipt (and returns) will be affected by factors that affect the price of the underlying shares, such as company fundamentals, market conditions, analysts' recommendations, and exchange rate movements. The ratio of depository receipts to underlying shares does not impact return.

21. B is correct. Global depository receipts are *not* subject to capital flow restrictions. Therefore statement I is incorrect. Statement II is correct.

22. A is correct. Investors of unsponsored DRs do not have voting rights, the depository bank retains the voting rights.

23. B is correct. Putable preference shares are less risky than their callable counterparts. They give the investor the option to put the shares back to the company. Because of the lower risk they will provide a lower expected rate of return. Common shares are the most risky, whether or not they are dividend paying, and are likely to offer the highest expected return.

24. A is correct. Currency appreciation will add additional gain which will make investor's total return greater than ETF's total return.

25. C is correct. Amount to be received on liquidation is fixed, equal to par value of the shares.

26. B is correct. Putable preference shares are least risky as they give the investor an option to sell the shares back to the issuer at a pre-determined price. This pre-determined price creates a floor for the share's price that reduces the uncertainty of future cash flow of investors.

27. C is correct. Convertible preference shares tend to exhibit less price volatility than the underlying common shares because the dividend payments are known and more stable.

28. B is correct. Options A and C are correct. Option B is not true. Just because a share is putable or callable does not make it any easier to sell.

29. B is correct. A and C represent reasons for why a company might raise capital by issuing equity. It is unlikely that a company will finance working capital requirements by issuing equity.

30. A is correct. A company issues equity on a primary market to raise capital and increase liquidity.

31. C is correct. To finance revenue generating activities (organic growth).The capital is used to purchase long-term assets, invest in profit-generating projects, expand to new territories, or invest in research and development.

32. B is correct. Book value is based on current value of assets and liabilities.

33. C is correct.

34. A is correct. Book value = Total assets – Total liabilities = $\$ 24{,}000{,}000 - \$ 10{,}500{,}000$ = $ 13,500,000.

35. B is correct. An increase in net income at a slower rate than shareholders' equity will cause the ROE to decrease as denominator increases faster than the numerator.

36. B is correct. Total return= $\frac{P_t - P_{t-1} + D_t}{P_{t-1}} = \frac{62 - 100 + 5}{100}$ = - 33%.

37. A is correct. ROE = $\frac{\$10{,}000{,}000}{\$20{,}000{,}000}$ = 50%

38. C is correct. Increase in the market price of a company's shares has no effect on ROE.

39. A is correct. It is relatively simple to calculate the cost of debt – the interest or coupon the company is obligated to pay its bondholders is the cost it incurs.

40. A is correct. Selling unproductive assets and using the proceeds from the sale to buy back shares reduces the total assets. Holding sales constant the decrease in assets would improve the asset turnover. Buying back shares increases the firm's financial leverage. Both the increase in asset turnover and financial leverage will lead to a higher return on equity.

41. B is correct.

Stock's required return according to CAPM = $\text{risk free rate} + \text{beta} * \text{market risk premium}$ = $0.025 + 1.9 * 0.043$ = 10.67%. Since the stock's required return (10.67%) is greater than the expected rate of return (9.55%), the correct decision is to not invest.

**LO.a: Explain uses of industry analysis and the relation of industry analysis to company analysis.**

1. Industry analysis is *most* useful to those who are engaged in:
   A. indexing approach.
   B. passive investment strategy.
   C. portfolio performance attribution.

2. Which of the following is *least likely* a use of industry analysis?
   A. Understanding a company's business environment.
   B. Identifying passive investment opportunities.
   C. Portfolio performance attribution.

**LO.b: Compare methods by which companies can be grouped, current industry classification systems, and classify a company, given a description of its activities and the classification system.**

3. Which of the following companies would be *best* classified as a consumer discretionary company?
   A. Health care equipment manufacturer.
   B. Beverage manufacturer.
   C. Apparel manufacturer.

4. Which of the following companies is the *most appropriate* member of the utilities sector?
   A. A semiconductor company.
   B. A provider of wireless broadband services.
   C. A regulated provider of water services.

5. Which of the following *best* describes how a company can be classified based on Global Industry Classification Standard (GICS)?
   A. Company →industry →sub-industry→industry group→sector.
   B. Company→sub-industry→industry group→ industry→sector.
   C. Company→sub-industry→industry→ industry group→sector.

6. The aircraft manufacturing industry can *most likely* be characterized as:
   A. Concentrated.
   B. Fragmented.
   C. Segmented.

7. All the statements below are correct about Russell Global Sectors, except:
   A. Classification is based on products or services.
   B. It contains ten sectors.
   C. It is based on a three-tier layer classification system.

8. Which of the following statements *most accurately* describes the difference among the three commercial classification systems?

A. ICB uses a three-tier structure classification system while RGS uses a four-tier structure.
B. RGS classifies based on where a company gets its revenue whereas ICB classifies based on products or services.
C. GICS and ICB use a four-tier structure while RGS uses a three-tier structure.

9. Which of the following is *least likely* a limitation of classifying companies based on statistical similarities?
   A. Difficulty in identifying securities with returns that are correlated.
   B. Falsely excluding a significant relationship.
   C. Falsely indicating a relationship where none exists.

10. Which of the following statements about commercial and government industry classification systems is *least accurate*?
    A. Commercial classification system is reviewed more frequently as compared to government classification system.
    B. Government classification system generally distinguishes between large and small businesses while commercial system does not.
    C. A limitation of both the systems is that a company's narrowest classification unit cannot be assumed to be its peer group.

**LO.c: Explain the factors that affect the sensitivity of a company to the business cycle and the uses and limitations of industry and company descriptors such as "growth," "defensive," and "cyclical".**

11. Analyst 1: During recessions, consumers are more likely to defer purchases of products of defensive companies than of cyclical companies.
    Analyst 2: During recessions, non-cyclical companies tend to outperform cyclical companies.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

12. For a pharmaceutical company like GlaxoSmithKline, a company that sells medical devices can be categorized as:
    A. part of a sector.
    B. principal business activity.
    C. a company offering similar product/ services.

13. Earnings of which of the following companies is *most* dependent on the stage of the business cycle?
    A. Growth.
    B. Defensive.
    C. Cyclical.

14. Which of the following is *most likely* a limitation of classifying companies based on business cycle sensitivity?
    A. Cyclical companies generally do not have a growth component.
    B. Different regions of the world might be at different stages of the business cycle.
    C. Cyclical/non-cyclical business cycle is a discrete spectrum.

**LO.d: Explain how a company's industry classification can be used to identify a potential "peer group" for equity valuation**

15. A peer group is constructed through a process:
    A. that identifies a group of companies whose valuation is influenced by diverse factors.
    B. that starts with an existing commercially classified system that is then narrowed.
    C. that groups companies by a relationship that occurs by chance.

16. Which of the following statement about constructing a peer group is *least* accurate?
    A. Constructing a peer group is a straightforward and objective process.
    B. A peer group consist of companies engaged in similar business activities.
    C. A company could belong to more than one peer group.

**LO.e: Describe the elements that need to be covered in a thorough industry analysis.**

17. Analyst 1: In industry analysis, we classify industries by life-cycle stage and identify whether it is embryonic, growth, shakeout, mature, or declining.
    Analyst 2: In industry analysis, we consider external factors that affect industries, which include demographic, macroeconomic, governmental, social, and technological influences.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

**LO.f: Describe the principles of strategic analysis of an industry.**

18. Which of the following is *not* one of Porter's five forces?
    A. Bargaining power of customers.
    B. Product/service substitution threats.
    C. Technological influences.

19. Industry competition is less intense and firm profitability is greater when there is:
    A. more rivalry among existing industry firms.
    B. less bargaining power of customers.
    C. more bargaining power of suppliers.

20. As an equity analyst, you are presented with the following statements about two industries:
    i. Industry 1 has a few companies producing relatively homogenous products; high income elasticity of demand; high capital costs and investments in physical plants; rapid shifts in market shares of competing firms; and minimum regulatory influence.

ii. Industry 2 has a few companies with proprietary technologies, differentiated products with unique features, high switching costs, and minimum regulatory influence.

Based on the information provided in these two statements, it is *most* reasonable to conclude that compared to firms in Industry 1, those in Industry 2 would potentially have:

A. larger economic profits.
B. over-capacity problems.
C. high bargaining power of customers.

**LO.g: Explain the effects of barriers to entry, industry concentration, industry capacity, and market share stability on pricing power and price competition.**

21. Which of the following characteristics is *most likely* to be exhibited by the industry that is experiencing intense competitive rivalry among incumbent companies?
    A. Customers basing purchase decisions largely on price.
    B. Small number of suppliers with high bargaining power.
    C. Substitute products available with low exit barriers.

22. Which of the following *most accurately* results in increased competition within an industry?

| | **Barriers to Entry** | **Capacity** | **Concentration** |
|---|---|---|---|
| **A.** | Low | Unused | Low |
| **B.** | High | Unused | Low |
| **C.** | High | Near full capacity | High |

23. With respect to competitive strategy, a company with a successful cost leadership strategy is *least likely*:
    A. to have efficient production systems.
    B. to have a high cost of capital.
    C. to have tight cost controls.

24. Which of the following industries is *most likely* to be characterized as fragmented with strong pricing power?
    A. Semiconductor equipment.
    B. Private Banking.
    C. Commercial printing.

25. Which of the following companies *least likely* has the greatest ability to quickly increase its capacity?
    A. Brokerage house.
    B. Investment advisor.
    C. Grocery store.

26. An industry with fierce competition and little or no differentiation in products is *most likely* categorized as:
    A. fragmented with weak pricing power.

B. concentrated with strong pricing power.
C. fragmented with strong pricing power.

27. Tight or limited capacity of an industry leads to:
    A. high pricing power.
    B. price cuts.
    C. no effect on prices.

28. An industry that *most likely* has high barriers to entry and high barriers to exit is the:
    A. sugar industry.
    B. clothing industry.
    C. education industry.

29. Under which of the following scenarios are we *mostly likely* to observe high pricing power?
    A. High barriers to entry and high barriers to exit.
    B. High barriers to entry and low barriers to exit.
    C. Low barriers to entry and low barriers to exit.

30. Which of the following statements is *least accurate* about market share stability?
    A. Stable market shares indicate low level of price competition.
    B. Pace of innovation in an industry impacts market share stability.
    C. High switching cost leads to volatile market shares.

**LO.h: Describe product and industry life cycle models, classify an industry as to life cycle phase (embryonic, growth, shakeout, maturity, and decline), and describe limitations of the life-cycle concept in forecasting industry performance.**

31. According to the industry life-cycle model, an industry experiencing industry consolidation, high barriers to entry and little or no growth is *most likely* in its:
    A. decline stage.
    B. maturity stage.
    C. shakeout stage.

32. Which of the following is *most likely* a characteristic of embryonic stage of an industry?
    A. Medium growth.
    B. Low prices.
    C. Insufficient volumes.

33. According to the industry life-cycle model, the growth phase is *most likely* characterized by:
    A. industry consolidation.
    B. falling prices.
    C. intense competition.

34. Which of the following industries can *most likely* be classified as cyclical?
    A. Non-discretionary consumer goods industry.
    B. Pharmaceutical industry.

C. Auto Industry.

35. Which of the following life-cycle phases is *most likely* categorized by intense competition?
    A. Shakeout.
    B. Mature.
    C. Growth.

36. In which of the following life-cycle phases are prices most likely to be high?
    A. Mature.
    B. Growth.
    C. Embryonic.

37. Which of the following is *least likely* a characteristic of mature stage?
    A. Industry consolidation.
    B. Little or no growth.
    C. Low barriers to entry.

38. An industry characterized by rapidly increasing demand, improving profitability, and falling prices is *most likely* in its:
    A. embryonic stage.
    B. maturity stage.
    C. growth stage.

**LO.i: Compare characteristics of representative industries from the various economic sectors.**

39. In the event of expected economic slowdown and diminishing growth rates with respect to revenues and profits, an equity fund manager will *most likely* make changes to the portfolio by:
    A. overweighting technology stocks.
    B. overweighting consumer staples.
    C. underweighting utilities.

40. An analyst is reviewing the restaurant industry. Which of the following characteristics about the industry is the analyst *least likely* to observe?
    A. Fierce competition.
    B. Fragmented structure.
    C. High barriers to entry.

41. Which of the following industries is *most likely* considered to have high price competition?
    A. Oil service industry.
    B. Branded pharmaceutical industry.
    C. Confectionary industry.

**LO.j: Describe macroeconomic, technological, demographic, governmental, and social influences on industry growth, profitability, and risk.**

42. Which of the following can be *least likely* categorized as an external factor that influences an industry?
    A. Social influences.
    B. Rivalry among existing competitors.
    C. Government.

43. Which of the following industries is *most likely* to be considered to have major influence due to changes in demographics?
    A. Branded pharmaceuticals.
    B. Oil service.
    C. Confectionary industry.

44. A country's population that is rapidly getting rich, would *most likely* cause the growth rate of the automobile industry to:
    A. decrease.
    B. increase.
    C. remain same.

45. When women entered the work force in the US, the restaurant, child care, and women's clothing industries were dramatically affected. This example can be best classified as a:
    A. demographic factor.
    B. technological factor.
    C. social influence.

**LO.k: Describe the elements that should be covered in a thorough company analysis.**

46. A company is presented with two capital investment projects:
    i. To replace existing machinery with productivity-improving capital equipment.
    ii. To establish strong market research teams to match customer needs with product development.

    Both projects require the same initial outlay. If the company chooses the first project it *most likely* pursues a competitive strategy of:
    A. differentiation.
    B. cost leadership.
    C. focus.

47. Which of the following statements about company analysis is *least accurate*?
    A. The complexity of the spreadsheet model may make it appear that the conclusions or stock price forecasts are right, when in fact it may be not.
    B. The corporate profile would include a description of the company's business, investment activities and governance only.
    C. Analysis of demand for products/services include sources of demand, differentiation, long term outlook.

48. Which of the following statements most accurately depict a company pursuing the differentiation strategy?
    A. Strong market research teams to match customer needs with product development.
    B. Tight cost controls with highly efficient operating and reporting systems.
    C. Investment in productivity improving capital equipment.

49. Which of the following is *least likely* to be included in a comprehensive company analysis report?
    A. Pricing environment.
    B. Demand of the product in the market.
    C. Major financial investments made by board members.

**Solutions**

1. C is correct. Indexing and passive investing strategies would not engage in over- or underweighting of industries, industry rotation, or timing investments in industries. Therefore, industry analysis is not useful to such investors or portfolio managers. Performance attribution, which addresses sources of a portfolio's returns, utilizes industry analysis and classification.

2. B is correct. Industry analysis is used in identifying active investment opportunities.

3. C is correct. Consumer discretionary companies derive a majority of revenue from the sale of consumer-related products or services for which demand tends to exhibit a relatively high degree of economic sensitivity. An apparel business would be an example of a business activity that falls into this category.

4. C is correct.

5. C is correct. E.g. Exxon Mobil – integrated oil & gas (sub industry) – oil gas & consumable fuels (industry) –energy (sector)

6. A is correct. Since there are only two major companies (Boeing and Airbus), this industry can be classified as concentrated.

7. B is correct. RGS contains nine sectors whereas GICS contains 10 sectors because telecommunication service is included as part of utilities sector.

8. C is correct. GICS and ICB use a four-tier structure while RGS uses a three-tier structure. B is incorrect because RGS classifies based on the products and services a company produces.

9. A is correct. This classification actually makes it relatively easy to identify securities which are correlated. Options B and C represent limitations.

10. B is correct. Government classification system does no distinguish between large and small businesses, for-profit and non-profit, or private and public companies.

11. B is correct. During recession, non-cyclical companies tend to outperform cyclical companies. Consumers are more likely to defer purchases of products of cyclical companies than of defensive companies.

12. A is correct.

13. C is correct. The performance of companies with cyclical demand for their products is highly variable and depends on economic conditions.

14. B is correct. Different regions of the world might be at different stages of the business cycle.

15. B is correct. The process consists of initially starting with commercial classification systems and then filtering it to the companies operating in the chosen industry.

16. A is correct. Constructing a peer group is a subjective process.

17. C is correct. Both statements are correct.

18. C is correct. This is not one of the five internal forces though it is part of external forces.

19. B is correct. Industry competition is less intense and firm profitability is greater when there is (1) less rivalry among existing industry firms (2) less bargaining power of customers (3) less bargaining power of suppliers.

20. A is correct. The economic profit (which is computed as the spread between return on capital and the cost of capital) tends to be larger in industries with differentiated products, greater pricing power, and high switching costs to consumers. Firms in Industry 2 have these features, whereas firms in Industry 1 have the exact opposite conditions.

21. A is correct. The factor that most influences customer purchase decisions is likely to also be the focus of competitive rivalry in the industry. In general, industries where price is a large factor in customer purchase decisions tend to be more competitive than industries in which customers value other attributes more highly.

22. A is correct. Low barriers to entry increase competition as they allow new entrants. Unused capacity results in intense price competition. Low concentration refers to a fragmented market which increases competition.

23. B is correct. For a successful cost leadership strategy, a company should have efficient production systems and tight cost controls. The cost of capital should be low.

24. B is correct. Private banking is relationship-based. Hence pricing power can be high.

25. C is correct. The other two require no investment to expand their business whereas for a grocery store, investment on shelves and other things would be required.

26. A is correct.

27. A is correct. Tight or limited capacity results in high pricing power as demand exceeds supply.

28. A is correct. Sugar industry requires heavy investment therefore has high barriers to entry and exit.

29. B is correct. Option A is not correct as illustrated by the auto industry

30. C is correct. High switching cost leads to stable market shares.

31. B is correct. An industry experiencing industry consolidation, high barriers to entry and little or no growth is in maturity stage.

32. C is correct. An embryonic industry is one that is just beginning to develop and is characterized by slow growth, high prices, and volumes not yet sufficient to achieve meaningful economies of scale, developing distribution channels, and low brand loyalty as there is low customer awareness of the industry's product.

33. B is correct. A growth industry is characterized by rapidly increasing demand, falling prices, improving profitability, and relatively low competition among companies operating in the industry. Prices fall in the growth stage because economies of scale are achieved and the distribution channels develop.
    Industry consolidation is a feature of the maturity phase while intense competition characterizes the shakeout stage.

34. C is correct. Of the three industries listed the revenue/profits of the auto industry are most likely to rise/fall with overall economy.

35. A is correct.

36. C is correct.

37. C is correct. Mature stage has high barriers to entry and there is little or no growth. It is also likely that industry consolidation takes place.

38. C is correct. A growth industry tends to be characterized by rapidly increasing demand, improving profitability, falling prices, and relativity low competition among companies in the industry.

39. B is correct. Non-cyclical companies produce goods or services for which demand remains relatively stable throughout the business cycle. The consumer staples sector exhibits relatively less economic sensitivity and thus tends to be over-weighted during economic slowdowns and when revenues and profits are expected to be under pressure.

40. C is correct. Restaurants industry is characterized by low barriers to entry because anyone with a modest amount of capital and some culinary skill can open a restaurant. The industry, however, is fragmented which can lead to fierce competition and weak pricing power.

41. A is correct. The oil service industry is most likely to have high price competition.

42. B is correct. Rivalry among existing competitors is an internal factor of Porter's five forces.

43. A is correct. The demand for drugs increases as the population increases.

44. B is correct. More spending will be made on purchasing automobiles.

45. C is correct. The given example can be best classified as a social influence.

46. B is correct. Cost leadership entails minimizing costs and transferring the benefits of these reduced costs to consumers. In this manner, the company maintains slim margins, but generates its profitability through high volume. Since the company has preferred the strategy of improving productivity rather than marketability, the likelihood is that the company pursues a cost-leadership strategy.

47. B is correct. The corporate profile would include a description of the company's business, investment activities, governance and strengths and weaknesses.

48. A is correct. Companies pursuing the differentiation strategy try to establish themselves as manufacturers or service providers of something unique in quality, type or means of distribution. This requires strong market research teams to identify and match customer needs with product development and marketing. Tight cost controls, highly efficient systems and investment in productivity improving capital are characteristics of a firm pursuing the cost leadership strategy.

49. C is correct. Major financial investments made by board members is least likely to be included in a comprehensive company analysis report.

**LO.a: Evaluate whether a security, given its current market price and a value estimate, is overvalued, fairly valued, or undervalued by the market.**

1. A given stock is trading at $36.81. An analyst estimates its intrinsic value as $38.25. According to the analyst the stock is *most likely*:
   A. undervalued.
   B. overvalued.
   C. fairly valued.

2. You are evaluating a security which is actively traded and followed by many analysts. Based on your model you arrive at an intrinsic value which is much lower the then current market prices. The sensible course of action will be to:
   A. re-evaluate your model.
   B. place a large buy order.
   C. place a large sell order.

3. If an investor changes his investment horizon from 10 years to 20 years, what will it do to the stock's intrinsic value, keeping all other factors constant?
   A. Increases.
   B. Decreases.
   C. Remains same.

4. Peter Lynch determines the intrinsic value of an equity security to be less than its current market value. Lynch believes that the equity is *most likely*:
   A. undervalued.
   B. overvalued.
   C. fairly valued.

**LO.b: Describe major categories of equity valuation models.**

5. A decrease in the dividend payout ratio will *most likely* decrease the intrinsic value when using a(n):
   A. multiplier model.
   B. asset-based valuation model.
   C. present value model.

6. An analyst is estimating intrinsic value of an equity security. To do so, he has constructed a model which projects cash flows over the next several years. Which of the following models is he *most likely* using?
   A. Asset-based valuation model.
   B. Present value model.
   C. Multiplier model.

**LO.c: Explain the rationale for using present value models to value equity and describe the dividend discount and free-cash-flow-to-equity models.**

7. Free cash flow to equity is calculated as:
    A. Net Income – FCInv + Net borrowing.
    B. CFO – FCInv – Net borrowing.
    C. CFO – FCInv + Net borrowing.

8. Which of the following statements is *most* accurate? A firm's free-cash-flow-to-equity (FCFE):
    A. is not a measure of the firm's dividend-paying capacity.
    B. increases with an increase in the firm's net borrowing.
    C. is significantly affected by the amount of dividends paid by the firm.

9. An analyst interested in finding a firm's dividend paying capacity will, in order to value a firm, *most likely* use:
    A. Gordon growth model.
    B. FCFE model.
    C. Asset valuation model.

10. Which of the following statements is incorrect about FCFE model?
    A. FCFE is a measure of a firm's expected dividends.
    B. It can also be used for a non-dividend paying stock unlike DDM which requires the timing and the amount of the first dividend to be paid.
    C. Not all of the available cash flow is distributed to shareholders because a company retains some part of it for future investments as a going concern.

11. With respect to FCFE model, which of the following statements is *most* accurate?
    A. FCFE model can only be used if a stock pays a dividend .
    B. FCFE model cannot be used if a stock is not expected to pay a dividend.
    C. FCFE model can be used if a stock pays a dividend, is expected to pay a dividend, or is not expected to pay a dividend.

**LO.d: Calculate the intrinsic value of a non-callable, non-convertible preferred stock.**

12. Information on a non-callable, non-convertible preferred stock is given below:
    Par value per share: $20
    Annual dividend per share: $1
    Maturity: 10 years
    Assuming the required rate of return is 8% and the current market price per share of the preferred stock is $17, the *most likely* conclusion is that the preferred stock is:
    A. overvalued.
    B. undervalued.
    C. fairly valued.

13. A company's 6% preferred stock has the following features:
    Par value of $100 and pays quarterly dividends.
    Current market value $80.
    The shares are retractable (at par) with the retraction date set for three years from today.

Similarly rated preferred issues have an estimated nominal required rate of return of 15%.
Analysts expect a sustainable growth rate of 5% for the company's earnings.
The intrinsic value estimate of a share of this preferred issue is *closest* to:

A. $78.57.
B. $80.00.
C. $92.39.

14. An Australian bank has an issue of 3.2%, AUD 50 par value, perpetual preferred shares outstanding. The required rate of return on a similar issue is 6.02%. The intrinsic value of the preferred share is *closest* to:
    A. 94.06.
    B. 26.58.
    C. 23.26.

15. The present value of a non-callable, perpetual, preferred share is 117.6. What will an investor be willing to pay for another preferred share which is similar in all respects except it is callable?
    A. More than 117.6.
    B. Exactly 117.6.
    C. Less than 117.6.

16. The following data is available for a company:
    Par value of preferred stock offered at a 6% dividend rate: $100
    Company's sustainable growth rate: 3%
    Yield on comparable preferred stock issues: 9.5%
    Investor's marginal tax rate: 40%
    The value of the company's preferred stock is *closest* to:
    A. $43.48.
    B. $55.26.
    C. $63.16.

17. Given that the value of the preferred stock of a company is $56, which of the following is *most likely* to be the dividend rate for the stock? Assume par value of stock to be $100, tax rate to be 35%, sustainable growth rate to be 5% and required rate of return of 13.4%.
    A. 4.87%.
    B. 7.15%.
    C. 7.50%.

**LO.e: Calculate and interpret the intrinsic value of an equity security based on the Gordon (constant) growth dividend discount model or a two-stage dividend discount model, as appropriate.**

18. An investor gathers the following data on a company:
    Next year's sales revenue: $150 million
    Next year's net profit margin: 10%
    Dividend payout ratio: 40%

Dividend growth rate expected during Years 2 and 3: 15%
Dividend growth rate expected after Year 3: 5%
Investors' required rate of return: 12%
Number of outstanding shares: 7.5 million
The current value per share of the company's common stock according to the two-stage dividend discount model is *closest* to:

A. \$13.49.
B. \$14.08.
C. \$15.86.

19. An analyst has gathered the following data:
Return on equity 15%
Dividend payout ratio 30%
Required rate of return on shares 18%
Current year's dividend per share \$1.50
Using the Gordon growth model, the intrinsic value per share is *closest* to:

A. \$20.00.
B. \$21.75.
C. \$22.10.

20. An investor gathers the following data:

| | |
|---|---|
| ROE | 15% |
| Retention Ratio | 70% |
| Required Return on Shares | 12% |
| Next Year's EPS | \$5 |

The justified forward P/E is *closest* to:

A. 10.5x.
B. 20x.
C. 27x.

21. Two companies, Gamma and Theta have justified forward P/E ratios of 12.59x and 14.29x respectively. Their ROE and payout ratios are:

| **Company** | **Gamma** | **Theta** |
|---|---|---|
| Return on equity | 13.50% | 15.00% |
| Payout ratio | 45.00% | 50.00% |

The required rate of return is 11%. If Gamma's payout ratio increases to 55% and Theta's payout ratio decreases to 40%, what would be the *most likely* resultant effect on their justified P/E ratios?

A. Gamma's P/E ratio will increase but Theta's P/E ratio will decrease.
B. Gamma's P/E ratio will decrease but Theta's P/E ratio will increase.
C. Both P/E ratios will increase.

22. If an investor expects dividends from shares of common stock for the next three years to be D1, D2 and D3 and the selling price of the stock two and three years from now, P2 and P3 respectively, what is the intrinsic value of the stock today based on the dividend discount model?

A. Present value of P2 and P3.
B. Present value of D2, D3, P2 and P3.
C. Present value of D1, D2, D3, and P3.

23. A security's required rate of return is 12% and its beta is 1.5. The market risk premium is 6%. What is the risk-free rate?
    A. 6%.
    B. 3%.
    C. 9%.

24. ABC Corporation will pay a dividend of $1.25 per share next year. If the required rate of return is 11.32% per year and dividends are expected to grow at a constant rate of 4% per year, the intrinsic value of ABC Corporation stock is *closest* to:
    A. $ 17.76.
    B. $ 17.08.
    C. $ 11.08.

25. In a Gordon growth model, what happens to the intrinsic value if dividend increases?
    A. Increases.
    B. Decreases.
    C. Cannot be determined with certainty.

26. Peter is considering the purchase of a common stock. The current annual dividend is EUR 3.5. This dividend is expected to grow at a rate of 5% annually. If the required return is 7%, the intrinsic value of the stock is *closest* to:
    A. 184.
    B. 175.
    C. 53.

27. Jim gathers the following information about a stock:

| | |
|---|---|
| Current price per share | $54.00 |
| Current annual dividend per share | $2.50 |
| Annual dividend growth rate for Years 1-4 | 12% |
| Annual dividend growth rate for Years 5+ | 6% |
| Required rate of return | 15% |

    Based on DDM, the stock is *most likely*:
    A. overvalued.
    B. fairly valued.
    C. undervalued.

28. Corporation XYZ has just paid a dividend of $2.57 per share. Dividends are expected to grow by 12% for the next two years and 8% the year after that. From the fourth year, the dividends are expected to grow at 6.2% indefinitely. What is the intrinsic value of the stock of XYZ if the required rate of return is 7.2%?
    A. 376.17.
    B. 388.22.

C. 308.65

29. An analyst is attempting to value shares of Mitsubishi. Mitsubishi has just paid a dividend of \$5 per share. Annual dividends are expected to grow at the rate of 6% per year over the next three years. At the end of three years, shares of Mitsubishi are expected to sell for \$ 70. If the required rate of return is 10%, the intrinsic value of a share is *closest* to:
    A. \$ 56.38.
    B. \$ 66.53.
    C. \$ 45.63.

30. A company has the following figures for its dividends history over the last four years:

| **Year** | **2013** | **2012** | **2011** | **2010** | **2009** |
|---|---|---|---|---|---|
| **DPS (\$)** | 2.6 | 2.55 | 2.51 | 2.48 | 2.42 |

A company analyst uses the average of the compounded annual growth rate over the 4-year period and the sustainable growth rate for 2013 in order to estimate the growth rate of the company. She then uses the Gordon growth model to find the value of company's stock.
Given that the required rate of return is 12%, company's ROE in 2013 is 14% and the earnings retention rate is 38%, the stock's intrinsic value is *closest* to:
    A. \$25.98.
    B. \$30.82.
    C. \$31.92.

31. Which of the following is *least likely* to be an assumption of the Gordon growth model?
    A. Dividend growth rate, g, must be constant throughout.
    B. Required rate of return is always greater than dividend growth rate.
    C. Required rate of return, r may be expected to change.

32. Jill Angelica wishes to compute the fundamental leading P/E ratio of the firm SunBeams. She knows the retention ratio, the required rate of return on the stock and the worth of the dividend in dollars. Which of the following is *most likely* to be needed to help Angelica compute the leading P/E ratio?
    A. Expected constant growth rate of dividends.
    B. Earnings per share.
    C. Share price.

33. Chris Rogers forecasted that Android Inc. shall pay its first dividend two years from now worth \$1.50. For the year after that, it has been forecasted that a dividend of \$2.20 shall be paid. This will grow at a constant growth rate of 5%. The risk-free rate is 4%, market risk premium is 6% and beta is 1.2. Which of the following is *most likely* to be the value of a share of Android?
    A. \$30.
    B. \$36.
    C. \$37.

**LO.f: Identify characteristics of companies for which the constant growth or a multistage dividend discount model is appropriate.**

34. In which phase of its lifecycle will it be *most appropriate* to value a company using the Gordon growth model?
    A. Growth.
    B. Mature.
    C. Decline.

35. Company ABC recently started giving dividends to their shareholders. According to analysts, this company has entered into growth phase. Which model would be *most suitable* to value company ABC?
    A. Gordon growth model.
    B. Free cash flow to equity model.
    C. Three-stage dividend discount model.

36. The Gordon Growth Model is best suited for valuing a common stock of a dividend paying company that:
    A. is mature and relatively stable under different economic conditions.
    B. is young and growing at an increasing rate.
    C. has a higher growth rate than the required return on its equity.

37. Emma is trying to evaluate the intrinsic value of the common stock of PQR Corporation. PQR is in a growth industry, moving towards mature phase. Which of the following is the *most appropriate* model to determine the intrinsic value of PQR?
    A. Gordon growth model.
    B. Two-stage dividend discount model.
    C. Three-stage dividend discount model.

**LO.g: Explain the rationale for using price multiples to value equity, how the price to earnings multiple relates to fundamentals, and the use of multiples based on comparables.**

38. The basic difference between P/E multiple based on comparables and fundamentals is that comparables-based P/E takes into account:
    A. future expected cash flows.
    B. market data for other firms in the industry.
    C. future earnings growth.

39. The rationale for using ratios such as price to earnings, price to sales, price to cash flow, and price to book value to predict stock returns is:
    A. low multiples are associated with higher future returns.
    B. high multiples are associated with higher future returns.
    C. multiples have very low correlation with higher future returns.

**LO.h: Calculate and interpret the following multiples: price to earnings, price to an estimate of operating cash flow, price to sales, and price to book value.**

40. For a growth company, which one of the following is correct?
    A. Trailing P/E will be higher than leading P/E.
    B. Leading P/E will be higher than trailing P/E.
    C. Both leading and trailing P/E will be equal.

41. A price to earnings ratio that is derived from the Gordon growth model is directly related to the:
    A. required rate of return.
    B. growth rate.
    C. dividend yield.

42. When dividend payout ratio increases, the forward P/E *most likely*:
    A. increases.
    B. decreases.
    C. might increase or decrease.

43. Which of the following is *most likely* correct with respect to forward P/E?
    A. $\frac{\text{Next year's price}}{\text{Current earnings}}$.
    B. $\frac{\text{Next year's price}}{\text{Next year's earnings}}$.
    C. $\frac{\text{Current price}}{\text{Next year's earnings}}$.

44. The P/S data for a few automobile companies 2009 is given. Based only this information, which stock is most overvalued?

| **Company** | **P/S (2009)** |
|---|---|
| General Motors | 0.02 |
| Ford | 0.13 |
| Daimler | 0.17 |
| Nissan | 0.36 |

    A. General Motors.
    B. Nissan.
    C. Ford.

45. An analyst has gathered the following information for XYZ Corporation:
    Expected dividend per share = $ 70
    Expected earnings per share = $ 100
    Dividends are expected to grow at 6% per year indefinitely
    The required rate of return is 11%
    Based on the information provided, the P/E multiple for XYZ is *closest* to:

A. 6.36.
B. 14.
C. 14.84.

46. An analyst gathers following information about two companies:

| | **Company A** | **Company B** |
|---|---|---|
| Current price per share | 72 | 32 |
| Last year's EPS | 5.38 | 6.58 |
| Current year's expected EPS | 4.58 | 3.22 |

Which of the following statements is *most accurate*?
A. B has higher trailing multiple than A.
B. A has higher current expected multiple than B.
C. B has higher trailing and current expected multiple than A.

47. An analyst gathers the following information about similar companies in a same sector:

| | **X** | **Y** | **Z** |
|---|---|---|---|
| P/S | 3.20 | 1.52 | 1.52 |
| P/B | 7.60 | 10.50 | 7.5 |

Which of the companies is *most likely* to be undervalued?
A. X.
B. Y.
C. Z.

48. An investor gathers the following data to estimate the intrinsic value of a company's stock using the justified forward P/E approach:
Next year's earnings per share \$1.00
Return on equity 14%
Dividend payout ratio 40%
Required return on shares 12%
A. 8.8.
B. 9.7.
C. 11.1.

49. An investor gathers the following data about a company:
Most recent year's dividend per share: \$1.15
Next year's estimate of earnings per share: \$3.00
Estimate of long-run return on equity (ROE): 15%
Estimate of long-run dividend payout ratio: 50%
Investors' required rate of return: 12%

The company's justified forward P/E is *closest* to:

A. 11.1.
B. 12.4.
C. 13.3.

50. A fund manager compiles the following data on two companies:

| | Company A | Company B |
|---|---|---|
| Return on assets | 8.6% | 8.0% |
| Return on equity | 12.1% | 11.3% |
| Dividend payout ratio | 0.35 | 0.30 |
| Required return on equity | 11.0% | 10.2% |
| Weighted average cost of capital | 11.8% | 11.7% |

Based on the information provided, the *most accurate* conclusion is that Company A's stock is more attractive relative to that of Company B's because of its:

A. smaller P/E ratio.
B. greater financial leverage.
C. higher dividend growth rate.

51. Arcal Co.'s stock is selling at $34 and has a P/E multiple of 14 on the basis of the current year's earnings. An analyst estimates that next year's earnings per share for Arcal Co. will be 5% higher and that the stock should be valued on a forward looking basis at the industry average P/E of 15. Based on the analyst's assessment, it is *most likely* that the stock is currently:

A. fairly valued.
B. overvalued.
C. undervalued.

**LO.i: Describe enterprise value multiples and their use in estimating equity value.**

52. When is EV/EBITBA *least likely* used?

A. When earnings are positive.
B. For comparing companies with significant differences in capital structure.
C. To evaluate the cost of a takeover.

53. An analyst has gathered following information about a textile company:
EV/EBITDA = 5.2
EBITDA = $20,000,000
Market value of debt = $72,000,000
Market value of equity = $56,000,000
Book value of debt = $65,000,000
Book value of equity = $48,000,000
Cash for this textile company is *closest* to:

A. $ 16,000,000.
B. $ 24,000,000.
C. $ 9,000,000.

54. Teresa Alves, a fund manager, is comparing companies with significant difference in capital structures as potential investments for her equity portfolio. The multiple that she is *most likely* to utilize in this case is:
    A. EV/EBITDA.
    B. Price-to-book ratio.
    C. Price-to-earnings ratio.

55. An investor who wants to estimate the enterprise value multiple (EV/EBITDA) of a company has gathered the following data:
    Market value of debt: $6 million
    Market capitalization: $25 million
    Cash and short-term investments: $2.5 million
    EBITDA: $12 million
    Firm's marginal tax rate: 30%
    The company's EV/EBITDA multiple is *closest* to:
    A. 2.20.
    B. 2.38.
    C. 2.58.

56. An investor considering the enterprise value approach to valuation gathers the following data:
    EBITDA: $25 million
    Value of debt: $40 million
    Value of preferred stock: $12 million
    Cash & marketable securities: $3.5 million
    Number of common shares outstanding: 7.5 million
    Firm's tax rate: 30%
    Appropriate EV/EBITDA multiple: 4x
    The value per share of the company's common stock is *closest* to:
    A. $4.37.
    B. $5.93.
    C. $6.87.

57. Suppose the following information is available about a company for the year 2012:

| | |
|---|---|
| Price per share | $15 |
| Shares outstanding | 1,000,000 |
| Market Value of Debt | $750,000 |
| Cash and Short Term Investments | $1,250,000 |
| Marginal Tax Rate | 40% |
| Market Value of Preferred Stock | $500,000 |

The company has an EV/EBITDA ratio of 7.5. The EBITDA of the company is *closest* to:
    A. $2,000,000.
    B. $15,000,000.
    C. $17,000,000.

**LO.j: Describe asset-based valuation models and their use in estimating equity value.**

58. An analyst wishes to determine the intrinsic value of a company that has goodwill and patents comprising more than 40% of total assets. Further, the analyst wants to focus on both the firm's capacity to pay dividends and the expected dividends. Considering the case, which of the following valuation models is the analyst *least likely* to utilize?
    A. Asset-based valuation model.
    B. Free-cash-flow-to-equity model.
    C. Gordon dividend growth model.

59. The market value of debt for a company can be calculated as enterprise value:
    A. minus market value of equity, plus market value of preferred stock and cash and investments.
    B. plus market value of equity, market value of preferred stock, minus cash and investments.
    C. minus market value of equity, market value of preferred stock, plus cash and investments.

60. An analyst gathers the following information about a company:

**Balance Sheet**

| **Assets** | **Liabilities and Shareholders' Equity** |
|---|---|
| Cash: $5,000 | Accounts payable: $12,000 |
| Accounts receivable: $18,000 | Notes payable: $25,000 |
| Inventory: $55,000 | Long-term debt: $50,000 |
| Net fixed assets 90,000 | Common shareholders' equity: $81,000 |
| **Total assets: $168,000** | **Total liabilities and equity: $168,000** |

**Additional Information**

Number of outstanding shares: 5,000
Market value of long-term debt: $55,000
Market value of accounts receivable and inventory: 80% of reported values
Net fixed assets: 125% of reported value
Accounts payable and notes payable: Same as the reported value
Using asset-based valuation approach, the estimated value per share is *closest* to:
    A. $16.20.
    B. $16.78.
    C. $16.95.

**LO.k: Explain advantages and disadvantages of each category of valuation model.**

61. Which of the following is *least likely* a disadvantage of using asset-based valuation model?
    A. Market values are hard to determine.
    B. Impacted by economic conditions.
    C. Does not account for intangible assets.

62. Which of the following is *least likely* an advantage of using price multiples valuation model?
    A. They can be used in time series and cross-sectional comparisons.
    B. They can provide floor values.

C. They are readily available and widely used.

**Solutions**

1. A is correct. Since the market value is less than intrinsic value the stock is undervalued.

2. A is correct. For a security that is actively traded and followed it is unlikely that the intrinsic value differs substantially from the market value.

3. C is correct. The intrinsic value of a security is independent of the investor's holding period.

4. B is correct. Since the market value is more than intrinsic value the stock is overvalued.

5. C is correct. A decrease in the dividend payout ratio will decrease the cash expected to be distributed to shareholders. The Dividend discount model is the present value of the cash expected to be distributed to shareholders. Therefore a decrease in the dividend payout ratio will decrease the intrinsic value in a present value model.

6. B is correct. Since he is evaluating future cash flows he is most likely using a present-value model.

7. C is correct.

8. B is correct. FCFE increases with an increase in net borrowings—as can be seen from the formula given below:
   FCFE = CFO – FCInv + Net borrowing.

9. B is correct. FCFE is a measure of the firm's dividend paying capacity.

10. A is correct. FCFE is a measure of a firm's dividend-paying capacity rather than expected dividends.

11. C is correct. FCFE model can be used if a stock pays a dividend, is expected to pay a dividend, or is not expected to pay a dividend.

12. A is correct. Using a financial calculator, calculate the present value as:

    FV = $20; N = 10; PMT = 1; I/Y = 8%; CPT PV = $15.97
    Since the intrinsic value is less than the current market price, the preferred stock is overvalued.

13. A is correct. Quarterly dividend = $\frac{\$100 * 0.06}{4}$ = \$1.5 a share;
    Quarterly required return = 15%/4 = 3.75%
    Compute PV using a financial calculator:
    PMT = \$1.5; N = 12; FV = \$100; I = 3.75%; CPT PV = \$78.57.

14. B is correct.
    Dividend = 3.2% of 50 = 1.6
    Intrinsic value = $\frac{1.6}{0.0602}$ = 26.58

15. C is correct. The investor will pay less for this share because of the risk that it might be called by the issuer.

16. C is correct.
    $V_0 = \frac{D_0}{r} = 100 * \frac{0.06}{0.095}$ = \$63.16.

17. C is correct.
    $$\text{Value of preferred stock} = \frac{\text{Dividend}}{\text{Required rate of return}}$$
    $$56 = \frac{\text{Dividend}}{0.134}$$
    $$\text{Dividend} = 7.504$$
    $$\text{Dividend rate} = \frac{\text{Dividend}}{\text{Par value}} = \frac{7.504}{100} \approx 7.50\%$$

18. A is correct. Net profit margin $= \frac{\text{Net earnings}}{\text{Sales}}$
    Net earnings $=$ Net profit margin $*$ Sales;
    Dividends per share (“$D_n$”) = $\frac{\text{Net earnings} * \text{Payout ratio}}{\text{\# of outstanding shares}}$;
    Therefore, $D_1 = \frac{\$150 \text{ million} * 0.10 * 0.40}{7.5 \text{ million}}$ = \$0.80
    D2 = \$0.80 $* (1 + 0.15)$ = \$0.92
    D3 = \$0.80 $* (1 + 0.15)^2$ = \$1.06
    D4 = \$0.80 $* (1 + 0.15)^2 * (1 + 0.05)$ = \$1.11
    $V_3 = \frac{1.11}{0.12 - 0.05}$ = 15.86
    $V_0 = \frac{0.8}{1.12} + \frac{0.92}{1.12^2} + \frac{1.06}{1.12^3} + \frac{15.86}{1.12^3}$ = \$13.49

19. C is correct. $g = b * ROE$; $b$ = earnings retention rate = (1 – dividend payout ratio)
    $D_1 = D_0(1 + g)$; $V_0 = \frac{D_1}{r - g}$
    $b = 1 - 0.30 = 0.70$; $g = 0.70 * 15 = 10.5\%$;
    $D_1 = 1.50\,(1.105) = \$1.6575$;
    $V_0 = \frac{1.6575}{0.18 - 0.105}$ = \$22.10

20. B is correct. Growth = Retention Ratio $*$ ROE = 0.7 * 0.15 = 0.105
    Justified Forward PE= $\frac{\text{Payout Ratio}}{r-g} = \frac{1-0.7}{0.12-0.105}$ = 20

21. B is correct.
    **Gamma:**
    New Growth rate = (1 – payout ratio) $*$ ROE = (1 – 0.55) * 0.135 = 6.075%
    New $\frac{P_0}{E_1} = \frac{p}{r-g} = \frac{0.55}{0.11-0.06075}$ = 11.17x
    Therefore P/E ratio has decreased for Gamma from 12.59x to 11.17x.
    **Theta:**
    New Growth rate = $\left(1 - payout\ ratio\right) * \ ROE$ = (1 – 0.40) * 0.15 = 9%
    New $\frac{P_0}{E_1} = \frac{p}{r-g} = \frac{0.40}{0.11-0.09}$ = 20x
    Therefore P/E ratio of Theta has increased from 14.29x to 20x.

22. C is correct.

23. B is correct. 12 = r + (1.5 * 6). r = 3.

24. B is correct. Intrinsic value via Gordon growth model = $\frac{1.25}{0.1132-0.04}$ = \$ 17.08

25. C is correct. When dividend increases, numerator increases.
    If the payout ratio increases, retention rate decreases and value of g decreases.
    If g decreases, the denominator increases. As a result, the impact on value if dividend is increased cannot be determined with certainty.

26. A is correct. V = $\frac{3.5(1.05)}{0.07-0.05}$= EUR 184.

27. A is correct.

    $D_1 = 2.50(1.12) = 2.80$
    $D_2 = 2.50(1.12)^2 = 3.14$
    $D_3 = 2.50(1.12)^3 = 3.51$
    $D_4 = 2.50(1.12)^4 = 3.93$
    Since $D_4$ will grow at 6% and the required return is 15%, the value at time 4 can be calculated at $\frac{3.93(1.06)}{0.15-0.06}$ = 46.28. Combining this value at time 4 with the dividend at the end of 4 years, we have a total of 50.21.

    We can now enter the following cash flows: C01 = 2.80, C02 = 3.14, C03 = 3.51, C04 = 50.21. For a discount rate of 15%, the present value is 35.82. Since the market price of 54 is much higher, the share is overvalued.

28. C is correct.
    $D_1$ = 2.57(1.12) = 2.88

$D_2 = 2.57(1.12)^2 = 3.22$
$D_3 = 2.57(1.12)^2(1.08) = 3.48$
$D_4 = 2.57(1.12)^2(1.08)(1.062) = 3.70$

Since $D_4$ will grow at 6.2% and the required return is 7.2%, the value at time 4 can be calculated at $\frac{3.70(1.062)}{0.072 - 0.062} = 392.94$. Combining this value at time 4 with the dividend at the end of 4 years, we have a total of 396.64.

We can now enter the following cash flows: C01 = 2.88, C02 = 3.122, C03 = 3.48, C04 = 396.64. For a discount rate of 7.2%, the present value is 308.65.

29. B is correct.
$V = \frac{5.3}{1.1} + \frac{5.618}{1.1^2} + \frac{5.96}{1.1^3} + \frac{70}{1.1^3} = 66.53$

30. C is correct. Compounded annual growth rate over the period can be calculated using the following formula:
$\text{Ending Value} = \text{Beginning Value} * (1 + \text{growth rate})\hat{}N$
$2.6 = 2.42 * (1+ g)^4$
$g = 1.81\%$
Sustainable growth rate for 2013:
g = ROE * Retention rate = 0.14 * 0.38 = 5.32%
Average growth rate = $(5.32\% + 1.81\%) * 0.5 = 3.565\%$
Stock's intrinsic value by Gordon growth model = $\frac{D_1}{r - g}$
$= \frac{2.6 * 1.03565}{0.12 - 0.03565}$
= $31.92

31. C is correct. Required rate of return is assumed to be constant in the Gordon growth model and thus is not expected to change.

32. A is correct. The firm's fundamental leading P/E Ratio is given by:
$$\frac{\text{Expected dividend payout ratio}}{\text{Required rate} - \text{growth rate of dividends}}$$
Expected dividend payout ratio may be calculated by: 1 – retention ratio.
Therefore, the only bit of information needed for computation is expected constant growth rate of dividends.

33. A is correct.
**Step 1:** Compute the required rate of return.
$R = R_f + \beta\,(\text{Market risk premium})$
R = 4 + 1.2 (6) = 11.2%
**Step 2:** Compute the worth of share at t = 2
Share price:

$$\frac{\text{Dividend}}{\text{r} - \text{g}} = \frac{2.2}{0.112 - 0.05} = \$35.48$$

**Step 3:** Compute the total of dividend and share worth.
Total = 35.48 + 1.5 = $36.98
**Step 4:** Discount back using the required rate of return
$= \frac{36.98}{1.112^2} = \$29.91$

34. B is correct. The Gordon growth model is often used to value dividend paying companies in their mature phase since the dividend growth would also be stable in this phase. The growth of the dividend will be linked to the growth of the company which would be linked to the growth of the economy.

35. C is correct. Three-stage dividend discount model is used to value young companies entering the growth phase.

36. A is correct. Mature, relatively stable dividend paying stocks can be valued using Gordon Growth Model. This model is not applicable to companies that are just entering the growth phase or with higher growth rates than the required return on its equity.

37. B is correct. The two stage models are best used for companies that are transitioning from a growth stage to a mature stage.

38. B is correct. P/E multiple based on comparable take into account the P/E ratios of other comparable firms in the industry. Fundamentals-based P/E takes into account fundamental values related to the company such as: dividends, growth rate and required return.

39. A is correct. Many price multiples have been shown to be useful to predict stock returns, with low multiples associated with higher future returns.

40. A is correct. The trailing P/E will be higher as the earnings are higher in the future periods. So the leading P/E will be lower.

41. B is correct. A P/E ratio derived from Gordon growth model is directly related to growth rate and dividend payout ratio and inversely related to required rate of return.

42. C is correct. P/E = Payout Ratio / (r – g). A higher payout ratio means that the numerator increases. However, a higher payout ratio also means that that the retention ratio is lower and so the growth rate will be lower. (Remember that the growth rate is approximately equal to the retention ratio x ROE.) A lower growth rate implies that the denominator increases. Since both the numerator and denominator increase, the impact on the overall ratio is not very clear.

43. C is correct.

44. B is correct. Since Nissan is trading at the highest price per unit of sales, it is the most overpriced.

45. B is correct. P/E = $(70/100)/(0.11 - 0.06)$ = 14

46. B is correct.
A's Trailing P/E = $\frac{72}{5.38}$ = 13.38
B's trailing P/E = $\frac{32}{6.58}$ = 4.86
A's current expected P/E = $\frac{72}{4.58}$ = 15.7
B's current expected P/E = $\frac{32}{3.22}$ = 9.94

47. C is correct. Z has lowest P/B and P/S ratio.

48. C is correct. Dividend growth rate = $(1 - \text{Payout ratio}) * \text{ROE}$;
Justified forward P/E: $\frac{P_0}{E_1} = \frac{p}{r-g}$.
Dividend growth rate = $(1 - 0.4) * 14\%$ = 8.4%;
Justified forward P/E = $\frac{0.4}{0.12 - 0.084}$ = 11.1x

49. A is correct.
Justified forward P/E: $\frac{P_0}{E_1} = \frac{p}{r-g}$
p = payout ratio = 50% (given);
r = required rate of return = 12% (given)
g = $(1 - \text{Dividend payout ratio}) * \text{ROE} = (1 - 0.50) * 15$ = 7.5%
$\frac{P_0}{E_1} = \frac{p}{r-g} = \frac{0.50}{0.12 - 0.075}$ = 11.1x

50. A is correct. From the computations shown below Company A's stock is more attractive because of its smaller P/E ratio than Company B's stock.

| | Company A | Company B |
|---|---|---|
| Dividend growth rate (g) | $12.1 * (1 - 0.35)$ = 7.865% | $11.3\ (1 - 0.30)$ = 7.91% |
| P/E ratio = $\frac{\text{div.payout ratio}}{r-g}$ | | |
| | $\frac{0.35}{0.11-0.07865}$ = 11.2x | $\frac{0.3}{0.102-0.079}$ = 13x |
| Financial leverage = (ROE/ROA) | | |
| | $\frac{12.1}{8.6}$ = 1.4x | $\frac{11.3}{8.0}$ = 1.4x |

51. C is correct. The stock is currently undervalued by $4.25 as its intrinsic value is $38.25 compared to the price of $34: Next year's EPS = $\left(\frac{\$34}{14}\right) * 1.05$ = $2.55; Intrinsic value = $\$2.55 * 15$ = $38.25.

52. A is correct. EV/ EBITDA is used when earnings are negative making P/E useless. EBITDA is usually positive.

53. B is correct.
EV = $5.2 * 20{,}000{,}000$ = 104,000,000
EV = MVD + MVE - Cash
Cash = $72{,}000{,}000 + 56{,}000{,}000 - 104{,}000{,}000$ = 24,000,000

54. A is correct. The EV/EBITDA approach is most useful when comparing companies with significant differences in capital structure. EBITDA is computed prior to payment to any of the company's financial stakeholders and is not impacted by the amount of debt leverage.

55. B is correct. Enterprise value (EV) = Market capitalization + MV of debt + MV of preferred stock – Cash and short-term investments.
EV = 25 + 6 – 2.5 = 28.5; $\frac{\text{EV}}{\text{EBITDA}} = \frac{28.5}{12}$ = 2.38.

56. C is correct. First, compute the enterprise value (EV) from EBIDTA * EV/EBITDA multiple. Then determine market capitalization (value of equity) using the following expression. Finally, compute the value per share.
EV = 25 * 4 = 100 million
EV = Market capitalization + MV of preferred stock + MV of debt – Cash and investments
Market capitalization = EV – MV of Preferred stock – MV of debt + Cash and investments
Market capitalization = 100 – 12 – 40 +3.5 = 51.5 million
Value per share = $\frac{\text{Market capitalization}}{\text{Number of outstanding shares}}$
Value per share = $\frac{51.5}{7.5}$ = $6.87

57. A is correct. Enterprise Value = Market Cap + MV of Debt + MV of Preferred Stock – Cash and Short Term Investments = $(15 * 1000000) + 750000 + 500000 - 1250000$ = $15,000,000
$\frac{\text{EV}}{\text{EBITDA}}$ = 7.5; EBITDA = $\frac{\text{EV}}{7.5} = \frac{15{,}000{,}000}{7.5}$ = $2,000,000

58. A is correct. An asset-based valuation model is not appropriate considering the high proportion of intangibles (goodwill and patents) in the firm's assets.

59. C is correct.

60. B is correct. Market value of assets: $5000 + (18000 + 55000) * 0.8 + 90000 * 1.25$ = 175900
Market value of liabilities: $12000 + 25000 + 55000$ = 92000

Estimated value per share: $\frac{175900 - 92000}{5000}$ = \$16.78

61. B is correct. Changes in economic conditions have least impact on value calculated using asset based valuation approach.

62. B is correct. Providing floor values is an advantage of asset based model not price multiple model.

**LO.a: Describe the basic features of a fixed-income security.**

1. Which of the following statements is the *most accurate* description of non-sovereign and quasi-government bonds?
   A. Non-sovereign bonds are issued by agencies that are owned or sponsored by governments. Quasi-government bonds are issued by local government authorities.
   B. Non-sovereign bonds are issued by companies. Quasi-government bonds are issued by supranational organizations.
   C. Non-sovereign bonds are issued by local government authorities. Quasi-government bonds are issued by agencies that are owned or sponsored by governments.

2. Red-star Inc. issued bonds 2.5 years ago with an original maturity of 3 years. Voltas Inc. issued bonds 3 months ago with an original maturity of 9 months. Currently, both these bonds have a remaining tenure of 6 months. The bonds would *most likely* be classified as:
   A. money market securities.
   B. Red-star's bonds are capital market securities and Volta's bonds are money market securities.
   C. capital market securities.

3. Which of the following statements are *most likely* to be correct about coupon payment structures?
   **Statement I:** Floating rate notes are affected more when interest rates increase and as a result have greater interest rate risk.
   **Statement II:** Bonds with step-up coupons offer bondholders some protection against rising interest rates.
   **Statement III:** A credit-linked coupon bond has a coupon that changes with the bond's credit rating while a payment-in-kind coupon bond allows the issuer to pay interest in the form of additional amounts of bond issue rather than cash payment.
   A. Statement I and II.
   B. Statement I and III.
   C. Statement II and III.

4. A bond with a par value of $10,000 is currently quoted at 102. What is the current market price of the bond? Is it trading at a discount or a premium to its par value?
   A. Current market price is $10,020 and the bond is trading at a premium.
   B. Current market price is $9,800 and the bond is trading at a discount.
   C. Current market price is $10,200 and the bond is trading at a premium.

5. An organization issued bonds of par value $1,000 and a coupon rate of 5%. The coupons are paid quarterly. The periodic interest payment is:
   A. $50, paid once a year.
   B. $25, paid twice a year.
   C. $12.5, paid four times in a year.

6. Which of the following is *most likely* an example of a sovereign bond? A bond issued by:
   A. the U.S government.

B. the State of Minnesota.
C. the International Monetary Fund.

7. Andrew Corp. issues a bond to Brad Corp. worth $100,000. Interest rate payments schedule and rate have been agreed upon. However, due to Andrew's financial instability, it may fail to make timely interest payments. The risk of loss to Brad resulting from this is *best* known as:
A. credit risk.
B. interest rate risk.
C. reinvestment risk.

8. A capital market security *most likely* matures in:
A. one year or less.
B. between six to eighteen months.
C. more than one year.

9. A bond is trading at a premium, if the bond's price is:
A. lower than par value.
B. same as par value.
C. higher than par value.

10. A bond has a par value of $1,000 and a coupon rate of 10%. Coupon payments are made semi-annually. The periodic interest payment is:
A. $50, paid twice a year.
B. $50, paid once a year.
C. $100, paid once a year.

11. The type of bond that makes coupon payment in one currency and pays par value at maturity in another currency is a:
A. currency option bond.
B. pure discount bond.
C. dual-currency bond.

12. Carla owns a floating rate note. Interest payments for the note are to be made on a semiannual basis with the second payment due in December 2013. The agreed upon coupon rate is six-month LIBOR + 30 bps. The table below shows the six-month LIBOR rates for the year 2013:

| **Date** | **Six-month LIBOR** |
|---|---|
| January 1, 2013 | 5.0% |
| June 30, 2013 | 5.5% |
| December 31, 2013 | 6.0% |

Which of the following is *most likely* to be the applicable interest rate for the second payment?
A. 5.30%.
B. 5.80%.
C. 6.30%.

13. The coupon rate of a floating- rate note is six-month Libor + 50 bps. It makes payments in June and December. The six-month Libor was 4.00% at the end of June 2014 and 4.50% at the end of December 2014. The interest rate used to calculate the payment due in December 2014 is:
    A. 4.50%.
    B. 5.00%.
    C. 4.00%.

**LO.b: Describe content of a bond indenture.**

14. Assets underlying the debt obligation above and beyond the issuer's promise to pay are:
    A. collaterals.
    B. credit enhancements.
    C. covenants.

15. The term *least likely* used to refer to the legal contract under which a bond is issued is:
    A. indenture.
    B. trust deed.
    C. letter of credit.

16. The type of collateral used to secure equipment trust bonds is *most likely*:
    A. securities.
    B. mortgages.
    C. physical assets.

17. Which of the following is *most likely* to be an example of an internal credit enhancement?
    A. Excess spread.
    B. Letter of credit.
    C. Surety bond.

18. Which of the following is *least likely* an internal credit enhancement?
    A. Overcollateralization.
    B. Excess spread.
    C. Cash collateral account.

19. Which of the following is *least likely* an external credit enhancement?
    A. Subordination.
    B. Letter of credit.
    C. Cash collateral account.

**LO.c: Compare affirmative and negative covenants and identify examples of each.**

20. Which of the following statements is the *most accurate* description of affirmative and negative covenants?

A. Affirmative covenants refer to the actions the borrower is required to perform. Negative covenants are restrictions on the borrower.
B. Affirmative covenants refer to restrictions on the borrower. Negative covenants refer to the actions the borrower is required to perform.
C. Affirmative covenants are actions the lender is required to perform. Negative covenants are actions the borrower is required to perform.

21. Fendi is required to pay taxes as they become due and also maintain his current line of business. These two are examples of:
A. affirmative covenants only.
B. negative covenants only.
C. affirmative and negative covenants only.

22. A covenant in a company's bond indenture states that the dividends will not exceed 10% of earnings. This is *most likely* a(n):
A. negative covenant.
B. affirmative covenant.
C. neutral covenant.

23. A covenant in a company's bond indenture states that the company will comply with all laws and regulations. This is *most likely* a(n):
A. negative covenant.
B. affirmative covenant.
C. neutral covenant.

24. Which of the following is *least likely* to be an example of an affirmative covenant?
A. Taxes will be paid on time.
B. The debt-to-equity ratio will not exceed 0.5.
C. Assets will be maintained.

25. Analyst 1: Affirmative covenants typically impose additional costs to the issuer and materially constrain the issuer's potential business decisions.
Analyst 2: Negative covenants typically impose additional costs to the issuer and materially constrain the issuer's potential business decisions.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

**LO.d: Describe how legal, regulatory, and tax considerations affect the issuance and trading of fixed-income securities.**

26. An example of a domestic bond is a bond issued by:
A. Honda from Japan, denominated in Canadian dollars, and sold in Canada.
B. the TATA group from India, denominated in Indian Rupee and sold in India.

C. Wal-Mart from China, denominated in Chinese Yuan, and sold in various countries in Europe, the Middle East, and Asia Pacific.

27. Tata Motors, an Indian company, issues a bond in United Kingdom denominated in United Kingdom pounds. This is *most likely* to be an example of:
A. a Eurobond.
B. a foreign bond.
C. a domestic bond.

28. A bond issued by Samsung from South Korea, denominated in U.S. dollars but not registered with the SEC, and sold to an institutional investor in Europe, is *most likely* an example of a(n):
A. Eurobond.
B. global bond.
C. foreign bond.

29. Assuming that Poland has an original issue discount tax provision, an investor in Poland purchases a 20-year zero coupon bond at a deep discount to par value. Given that the investor shall hold the bond till maturity, he is *most likely* to report:
A. taxable income from the bond every year until maturity.
B. tax deduction in the year of purchase of bond.
C. capital gain at the end of 20 years.

30. Analyst 1: Most Eurobonds are bearer bonds and ownership is recorded by name or serial number.
Analyst 2: Most Eurobonds are registered bonds and the trustee does not keep records of who owns the bonds.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

31. Analyst 1: The major advantage of a SPV is bankruptcy remoteness.
Analyst 2: The major advantage of a SPV is beneficial tax treatments.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

32. The source of payment for supranational bonds is *least likely* based on:
A. Repayment of previous loans made by the organization.
B. Taxing authority.
C. Paid-in capital of the member states.

33. Daniel Davos aims to convince the finance division at his company to issue a bond through a special purpose vehicle. Which of the following advantages is he *most likely* to use as his line of argument?
    A. Bankruptcy remoteness.
    B. Greater liquidity.
    C. Lower issuing costs.

34. A company issued a 5-year zero-coupon bond with a par value of $100 and sold it for $80. Assuming an original discount tax provision, an investor who buys the zero-coupon bond at issuance and holds it until maturity *most likely*:
    A. has to include $4 in his taxable income every tax year for 5 years and has to declare a capital gain of $20 at maturity.
    B. has to include $4 in his taxable income every tax year for 5 years and does not have to declare a capital gain at maturity.
    C. does not have to include anything in his taxable income every tax year for 5 years but has to declare a capital gain of $20 at maturity.

35. A Baa2 rated corporation wishes to issue debt to finance its operations at the lowest possible cost. If it decides to sell a pool of receivables into a special purpose vehicle (SPV), its primary motivation is *least likely* to:
    A. Allow the corporation to retain a first lien on the assets of the SPV.
    B. Segregate the assets into a bankruptcy-remote entity for bondholders.
    C. The SPV can achieve a rating as high as Aaa and borrow at lower rates.

**LO.e: Describe how cash flows of fixed-income securities are structured.**

36. The structure that requires the smallest repayment of principal at maturity is that of a:
    A. fully amortized bond.
    B. bullet bond.
    C. partially amortized bond.

37. A company issued 10 year bonds with a notional principal of $10 million. The payment structure of the issue states that the company will start repaying the principal from fifth year onwards. Each year the company will pay $2 million. This is *most likely* a(n):
    A. balloon structure.
    B. amortizing loan.
    C. sinking fund provision.

38. Edward issues a bond which has a structure that shall result in the largest repayment of principal at maturity. Which of the following bonds is he *most likely* to have issued?
    A. fully amortized bond.
    B. partially amortized bond.
    C. plain vanilla bond.

39. WINZ Inc. issued bonds with a coupon rate of 5% and maturity of 30 years. The company will increase the coupon rate by 0.25% every 5 years. The bonds are *most likely*:

A. floating rate bonds.
B. step up coupon bonds.
C. deferred coupon bonds.

40. A bond pays no coupons for its first few years but then pays a higher coupon than it otherwise normally would for the remainder of its life. The bond is *least likely* a(n):
A. credit linked coupon bond.
B. split coupon bond.
C. deferred coupon bonds.

41. Fully amortizing bonds with periodic payments adjusted for inflation are called:
A. interest indexed bonds.
B. indexed annuity bonds.
C. capital indexed bonds.

42. A plain vanilla bond has a maturity of 5 years, a par value of $100, and a coupon rate of 7%. The principal repayment in the first year is *closest* to:
A. $0.00.
B. $7.00.
C. $1.08.

43. Compared to a partially amortized bond, the interest amounts of an otherwise similar fully amortized bond are:
A. lower or equal.
B. equal.
C. higher or equal.

44. Which of the following statements is *most accurate*?
A. FRNs usually pay annual coupons.
B. FRNs usually pay quarterly coupons.
C. FRNs usually pay semi-annual coupons.

45. A zero-coupon bond can be classified as a:
A. step-up bond.
B. credit-linked bond.
C. deferred coupon bond.

46. An investor wants protection against increases in market interest rate. Which of the following bonds is he *least likely* to buy?
A. Step-up bonds.
B. Floating rate notes.
C. Inverse floating rate notes.

47. In case of capital indexed bonds linked to inflation, when deflation occurs:
A. the principal amount remains unchanged but the coupon rate decreases.
B. the coupon rate remains unchanged but the principal amount decreases.

C. the coupon payment remains unchanged but the principal amount decreases.

**LO.f: Describe contingency provisions affecting the timing and/or nature of cash flows of fixed-income securities and identify whether such provisions benefit the borrower or the lender.**

48. A company issued bonds with 9% coupon rate and a maturity of 10 years. These bonds give the issuer right to redeem all or part of the issued bonds after 5 years at a specific rate. The option described here is *most likely* a:
A. put option.
B. call option.
C. convertible option.

49. A company has issued bonds with 9% coupon rate and a maturity of 10 years. These bonds give the bondholder right to sell back all or part of the issued bonds in future at specific rate. The option described here is *most likely* a:
A. put option.
B. call option.
C. convertible option.

**The following information is to be used for question 50 and 51.**
XYZ Corporation issues a 30 year bond priced at 98.25 as a percentage of par on January 1, 2013. The bond is callable in whole or partially on every January 1 at the option of the issuer. The bond is first callable in 2023. Call prices have been provided in the table below:

| Year | Price | Year | Price |
|---|---|---|---|
| 2023 | 102.22 | 2027 | 101.55 |
| 2024 | 102.00 | 2028 | 101.32 |
| 2025 | 101.89 | 2029 | 100.56 |
| 2026 | 101.69 | 2030 onwards | 100.00 |

Each bond has a par value of $1000.

50. Which of the follow statements is *most likely* correct?
**Statement I:** The call protection period is 10 years.
**Statement II:** The call provision is an American call.
A. Statement I.
B. Statement II.
C. Statement I and II.

51. Which of the following is *most likely* to be the call premium (per bond) in 2025?
A. $18.90.
B. $101.89.
C. $189.00.

52. The minimum value of a convertible bond is *most likely* the:
A. value of the bond without conversion option.

B. face value.
C. rate at which it can be converted to equity shares.

53. If a bond is callable at predetermined dates after the call protection period, it is *most likely* a(n):
A. American style callable bond.
B. European style callable bond.
C. Bermuda Style callable bond.

54. A bond is issued with face value of $1,000, coupon rate of 7% and maturity of 10 years. The bond also has a call option to redeem the bonds at 103% any time after 3 years. What is the maximum value of this bond if the yield in market falls to 5% after 3 years?
A. $1,300.
B. $970.
C. $1,030.

55. Which of the following statements is *least accurate?*
A. A warrant is an embedded option.
B. A call provision is an embedded option.
C. A conversion provision is an embedded option.

56. Which of the following statements is *most accurate*?
A. Putable bonds usually sell at a lower price than similar option free bonds.
B. Callable bonds usually sell at a lower price than similar option free bonds.
C. Convertible bonds usually sell at a lower price than similar option free bonds.

57. If a bondholder is concerned about additional reinvestment risk, then the bond is *most likely* a:
A. convertible bond.
B. putable bond.
C. callable bond.

58. George is an issuer of a 10 year bond. Which of the following provisions is *most likely* to be a benefit to him?
A. Call provision.
B. Conversion provision.
C. Put provision.

59. Which of the following is *least likely* to be the reason why a putable bond is beneficial to the bondholder?
A. Cash can be reinvested at higher rates.
B. Pre-specified selling price is helpful if interest rates rise.
C. Provision of better credit quality against a decline in interest rates.

60. A warrant is *least likely* to be:
A. an attached option.

B. an embedded option.
C. a yield enhancement.

61. The call provision of a callable bond:
    A. limits the risk to bondholder.
    B. limits the risk to issuer.
    C. does not materially affect the risk of either the issuer or the bondholder.

62. The following information is provided for ECG Corporation's convertible bond:

| | |
|---|---|
| Par value of bond | $1,000 |
| Current market price of bond | $1,100 |
| Conversion price | $50 |

    Which of the following is *most likely* to be the conversion ratio?
    A. 20:1.
    B. 22:1.
    C. 2:1.

63. Assume that a convertible bond issued in Japan has a par value of 1,000 and is currently priced at 1,090. The underlying share price is 60 and the conversion ratio is 20:1. The conversion condition for this bond is:
    A. parity.
    B. above parity.
    C. below parity.

64. Engro Corp recently issued a floating-rate note (FRN) that includes a feature that prevents its coupon rate from rising above a pre-specified maximum rate. This feature in an FRN is *most likely* referred to as a:
    A. cap.
    B. floor.
    C. caplet.

65. Compared to a similar option-free bond, a convertible bond will typically:
    A. trade at a lower price.
    B. trade at the same price.
    C. trade at a higher price.

**Solutions**

1. C is correct. Bonds issued by local government authorities are called non-sovereign bonds. Bonds issued by agencies that are owned or sponsored by governments are called quasi-government bonds. Additionally, bonds issued by supranational organizations are called supranational bonds. Bonds issued by national governments are called sovereign bonds. Bonds issued by companies are called corporate bonds.

2. B is correct. A bond with an original maturity of more than one year it is called capital market security. A bond with an original maturity of one year or less is called money market security.

3. C is correct. Statements II and III are correct. Statement I is incorrect because floating rate notes are less affected when interest rate changes and therefore have less interest rate risk.

4. C is correct. A bond quoted at 102 reflects a premium of 2% over its par value. This results in current market price of $10,200. Since the market price is greater than the par value, the bond is trading at a premium.

5. C is correct. Coupon rate of 5% paid quarterly means $\frac{5}{4}$ = 1.25% of par is paid every quarter. On a face value of $1,000, this results in a periodic interest payment of $12.5. This amount is paid every quarter i.e. four times a year.

6. A is correct. A sovereign bond is a bond issued by a national government, such as the U.S. government. A bond issued by a local government, such as the State of Minnesota, is a non-sovereign bond. A bond issued by the IMF is a supranational bond.

7. A is correct. Credit risk is the risk of loss resulting from the issuer failing to make full and timely payments of interest and/or repayments of principal.

8. C is correct. The primary difference between a money market security and a capital market security is the maturity at issuance. Money market securities mature in one year or less, whereas capital market securities mature in more than one year.

9. C is correct. If a bond's price is higher than its par value, the bond is trading at a premium.

10. A is correct. The annual coupon payment is $10\% * \$1000$ = $100. The coupon payments are paid semi-annually, so $50 is paid twice a year.

11. C is correct. A dual-currency bond makes coupon payments in one currency and pays the par value at maturity in another currency. A currency option bond gives the bondholders the right to choose the currency in which they want to receive each interest payment and principal repayment. A pure discount bond is issued at a discount to par value and redeemed at par.

12. B is correct. The applicable interest rate for the second payment due in December is the six month LIBOR at the end of June 2013 plus 30 bps. Therefore, 5.5% + 0.3% = 5.8%.

13. A is correct. The interest rate that should be used to calculate the payment due in December 2014 is the six-month Libor at the beginning of the period (i.e. the end of June 2014) plus 50 bps. Thus, it is 4.50% (4.00% + 0.50%)

14. A is correct. Collaterals are assets underlying the debt obligation above and beyond the issuer's promise to pay. Credit enhancements are provisions that may be used to reduce the credit risk of the bond issue. Covenants are clauses that specify the rights of bondholders and obligations of the issuer.

15. C is correct. A letter of credit is an external credit enhancement. A legal contract under which a bond is issued is called indenture or a trust deed.

16. C is correct. Equipment trust certificates are backed by physical assets. Mortgage backed securities are backed by mortgages. Collateral trust bonds are backed by securities.

17. A is correct. Excess spread is an example of an internal credit enhancement while letter of credit and surety bond are examples of external credit enhancement.

18. C is correct. A cash collateral account is an external credit enhancement that allows the issuer to immediately borrow the credit-enhancement amount and then invest it. Overcollateralization and excess spread are internal credit enhancements.

19. A is correct. Subordination is an internal credit enhancement, which refers to the ordering of claim priorities for ownership or interest in an asset. Letter of credit and cash collateral account are external credit enhancements.

20. A is correct. Affirmative covenants refer to the actions the borrower is required to perform and negative covenants are restrictions on the borrower.

21. A is correct. These are examples of positive or affirmative covenants.

22. A is correct. This covenant sets forth restrictions on the company's activities. Hence, it is a negative covenant.

23. B is correct. This covenant states actions that the borrower must take. Hence, it is an affirmative covenant.

24. B is correct. B is a negative covenant; it indicates what the issuer cannot do. A and C are incorrect because they are an example of an affirmative covenants which indicate what the issuer "must do" and are administrative in nature.

25. B is correct. Negative covenants typically impose additional costs to the issuer and materially constrain the issuer's potential business decisions.

26. B is correct. A domestic bond is issued by a local issuer, denominated in local currency, and sold in the domestic market. Option A is an example of foreign bond. Option C is an example of a Eurobond.

27. B is correct. Bonds issued by entities that are incorporated in that country are called domestic bonds, whereas bonds issued by entities that are incorporated in another country are called foreign bonds.

28. A is correct. A Eurobond is a bond that is issued internationally, outside the jurisdiction of any single country. Thus, a bond issued by Samsung from South Korea, denominated in U.S. dollars, but not registered with the SEC, is an example of a Eurobond. Global bonds are bonds that are issued simultaneously in the Eurobond market and in at least one domestic bond market. C is incorrect because if Samsung's bond issue were a foreign bond, it would be registered with the SEC.

29. A is correct. The original issue discount tax provision requires the investor to include a prorated portion of the original issue discount in his taxable income every year till maturity.

30. C is correct. Most Eurobonds are bearer bonds. The trustee does not keep records of who owns the bonds; only the clearing system knows who the bond owners are.

31. A is correct. An SPV is a bankruptcy-remote vehicle. If the sponsor defaults, no claims can be made to recover the assets that were transferred to the SPV.

32. B is correct. The source of payment for bonds issued by supranational organizations is either the repayment of previous loans made by the organization or the paid-in capital of its member states.

33. A is correct. A special purpose vehicle is a bankruptcy remote vehicle which is achieved by transferring the assets from the sponsor to the SPV. With the completion of the transfer, the sponsor does not have ownership rights. In case the sponsor defaults, no claims can be made to recover the assets that were transferred.

34. B is correct. The original issue discount tax provision requires the investor to include a prorated portion of the original issue discount in his taxable income every tax year until maturity. The original issue discount is the difference between the par value and the original issue price — that is, \$100 – \$80 = \$20. The bond's maturity is 5 years. Thus, the prorated portion that must be included each year is \$20/5 = \$4. The original issue discount tax provision allows the investor to increase his cost basis in the bond so that when the bond matures, the investor faces no capital gain or loss.

35. A is correct. The primary motivation of forming a special purpose vehicle (SPV) includes segregation of the assets into a bankruptcy-remote entity for bondholders and the SPV can achieve a rating as high as Aaa and borrow at lower rates.

36. A is correct. In a fully amortized the principal is repaid over time. In a partially amortized a part of the principal is repaid over time and a part is paid at maturity as a balloon payment. Due to the balloon payment the principal repaid is more than the fully amortized bond. In a bullet bond the entire principal is repaid at maturity.

37. C is correct. In sinking fund provision, the company pays back the principal in installments as per a predefined schedule over a period of time.

38. C is correct. A plain vanilla bond, also known as a bullet bond, has the largest repayment of principal. The principal is repaid with time for partially and fully paid amortized bonds.

39. B is correct. Step up coupon bond structure specifies an increase in the coupon rate at pre-defined period.

40. A is correct. A bond that pays no coupons for its first few years, but then pays a higher coupon than it otherwise normally would for the remainder of its life is called a deferred coupon bond or a split bond. A credit linked coupon bond has a coupon that changes when the bond's credit rating changes.

41. B is correct. Indexed annuity bonds are fully amortized bonds with periodic payments directly adjusted for inflation and deflation. In contrast, interest indexed and capital indexed bonds are non-amortizing.

42. A is correct. A plain vanilla (or bullet) bond does not make any principal repayment until the maturity date.

43. A is correct. Except at maturity, the principal repayments are higher for a fully amortized bond than for an otherwise similar partially amortized bond. Consequently, the principal amounts outstanding and, therefore, the amounts of interest payments are higher for a partially amortized bond than for a fully amortized bond, all else equal. The only exception is the first interest payment, which is the same for both repayment structures. This is because no principal repayment has been made by the time the first coupon is paid.

44. B is correct. Most FRNs pay interest quarterly and are tied to a three-month reference rate such as Libor.

45. C is correct. Because interest is effectively deferred until maturity, a zero-coupon bond can be thought of as a deferred coupon bond. Options A and B are incorrect because both step-up bonds and credit-linked bonds pay regular coupons. For a step-up bond, the coupon increases by specified margins at specified dates. For a credit- linked bond, the coupon changes when the bond's credit rating changes.

46. C is correct. The coupon rate on an inverse FRN has an inverse relationship to the reference rate. Thus, an inverse FRN does not offer protection to the investor when market interest rates increase. Options A and B are incorrect because step-up bonds and FRNs both offer some protection against increases in market interest rates.

47. B is correct. Following a deflation, the coupon rate of a capital- indexed bond remains unchanged, but the principal amount is adjusted downward for deflation. Thus, the coupon payment, which is equal to the fixed coupon rate multiplied by the inflation-adjusted principal amount, decreases.

48. B is correct. The option that gives the issuer right to redeem all or part of the issued bonds in future at a specific rate is called call option. And such bonds are called callable bonds.

49. A is correct. The option that gives the bondholder right to sell back all or part of the issued bonds in future at specific rate is put call option. And such bonds are called putable bonds.

50. A is correct. Call provision period = 2023 – 2013 = 10 years.
    The call provision is a Bermuda call because it is on specific dates following the call protection period.

51. A is correct. Call premium = $(101.89\% * \$1000) - (\$1000)$ = $18.9.

52. A is correct. The convertible bond has downside protection. Even if the price of shares go down the value of convertible bond will at least remain at par with the value of the bond without conversion

53. C is correct. An American style callable bond can be called any time after the call protection period. A European style callable bond can be called only once on the call date. A Bermuda style callable bond can be called on predetermined dates following the call protection period.

54. C is correct. A callable bond's maximum value is the call price. In this case the call price is 103% of $1,000 which is $1,030.

55. A is correct. A warrant is a separate, tradable security that entitles the holder to buy the underlying common share of the issuing company. Options B and C are incorrect because the call provision and the conversion provision are embedded options

56. B is correct. The put provision and the conversion provision are options that benefit the investor. Thus, putable bonds and convertible bonds sell at higher prices and lower yields relative to otherwise similar bonds that lack those provisions. B is correct because the call provision is an option that benefits the issuer. Because of this, callable bonds sell at lower prices and higher yields relative to otherwise similar non-callable bonds.

57. C is correct. Reinvestment risk refers to the effect that lower interest rates have on available rates of return when reinvesting the cash flows received from an earlier investment. Because bonds are typically called following a decline in market interest rates, reinvestment risk is particularly relevant for the holder of a callable bond.

58. A is correct. A call provision is a benefit to the issuer as it gives the issuer the right to redeem all or part of the bond before the specified maturity date.

59. C is correct. This is an explanation as to why callable bonds are beneficial to the issuer.

60. B is correct. A warrant is not an embedded option but rather an attached option. Warrants are considered yield enhancements.

61. B is correct. A callable bond limits the risk to the issuer. If interest rates fall the issuer can call the bond and issue a new bond at lower interest rates.

62. A is correct. Conversion Ratio = $\frac{\text{Par Value}}{\text{Conversion Price}} = \frac{1000}{50}$ = 20.

63. B is correct. The conversion value of the bond is 60 * 20 = 1,200. The price of the convertible bond is 1,090. Thus, the conversion value of the bond is more than the bond's price, and this condition is referred to as above parity.

64. A is correct. An FRN with a cap on the coupon rate prevents the coupon rate from rising above a pre-specified minimum rate.

65. C is correct. The conversion feature is beneficial to bondholders, thus a convertible bond will typically trade at a higher price as compared to a similar option free bond.

**LO.a: Describe classifications of global fixed-income markets.**

1. A fixed income security has an original maturity of 1 year and a credit rating of BBB. The *most accurate* description of the security is:
   A. money market security and junk bond.
   B. capital market security and investment grade.
   C. money market security and investment grade.

2. Any rating below BBB by Standard & Poor's (S&P) is *least likely* to be referred to as:
   A. junk grade.
   B. low yield grade.
   C. speculative grade.

3. Which of the following principal repayment structures allows for retirement of bond on an annual basis through a random drawing?
   A. Serial maturity structure.
   B. Sinking fund arrangement.
   C. Term maturity structure.

4. The interest rate of a security is adjusted periodically as per inflation. This is *most likely* a (n):
   A. floating rate bond.
   B. index-linked bond.
   C. inflation rate bond.

5. Inflation-linked bonds are structured in a way that:
   A. inflation adjustment is made via the coupon payments.
   B. inflation adjustment is made via the principal repayment.
   C. inflation adjustment is made via the coupon payments, principal repayment, or both.

6. Which of the following is *least likely* an issuer of bonds?
   A. Supranational organizations.
   B. Pension fund.
   C. Local government.

7. Analyst 1: Non-sovereign government bonds are bonds issued by agencies that are owned by governments.
   Analyst 2: Non-sovereign government bonds are bonds issued by an international organization such as World Bank.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Neither.

8. A fixed-income security issued with a maturity at issuance of five months is *most likely* classified as a:

A. securitized investment.
B. money market security.
C. capital market security.

9. Which of the following is *least likely* to be an advantage of Eurobonds in comparison to domestic or foreign bonds?
A. The Eurobond market is characterized by less reporting and regulatory constraints.
B. Eurobonds are subject to lower taxation in comparison to domestic and foreign bonds.
C. Eurobond issuers are exposed to less interest rate risk.

10. The price of a bond issued in Singapore by an American company and denominated in Singaporean dollars is *most likely* to:
A. change as Singapore's interest rates change.
B. change as U.S interest rates change.
C. be unaffected by changes in U.S. and Singaporean interest rates.

11. Analyst 1: A bond issued internationally, outside the jurisdiction of the country in whose currency the bond is denominated, is best described as a foreign bond.
Analyst 2: A bond issued internationally, outside the jurisdiction of the country in whose currency the bond is denominated, is best described as a Euro bond.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither.

**LO.b: Describe the use of interbank offered rates as reference rates in floating-rate debt.**

12. Libor rates reflect rates at which a select set of banks believe they could borrow unsecured funds from other banks in the London interbank market for different currencies and different borrowing periods ranging from:
A. overnight to six months.
B. overnight to one year.
C. overnight to ten years.

13. A European country issued floating rate bonds denominated in U.S. dollars that pay coupons quarterly. The *most likely* reference rate of this bond is:
A. U.S. dollar 12 month Libor.
B. Euro 3 month Libor.
C. U.S. dollar 3 month Libor.

14. Which of the following statements is the *most accurate*?
A. Interbank offered rates are best described as the rates at which major banks can borrow from other major banks against some form of collateral.
B. Interbank offered rates are best described as the rates at which major banks can issue short-term debt.

C. Interbank offered rates are best described as the rates at which major banks can borrow unsecured funds from other major banks.

15. A company issues floating-rate bonds. The coupon rate is expressed as the six-month Libor plus a spread. The coupon payments are *most likely* to increase as:
    A. the spread increases.
    B. Libor increases.
    C. the company's credit quality decreases.

**LO.c: Describe mechanisms available for issuing bonds in primary markets.**

16. A company wants to ensure that its entire bond issue is sold. The *most appropriate* option for the company is:
    A. best effort offering.
    B. underwriting offering.
    C. shelf registrations.

17. Which of the following statements is *most likely* to be correct about bond issuance?
    Statement I: Public offerings and private placements are two mechanisms of issuing bonds in a primary market.
    Statement II: Shelf registrations are a form of private placements.
    Statement III: An auction is a public offering method that involves bidding.
    A. Statements I and II.
    B. Statements I and III.
    C. Statements II and III.

18. What is the role of investment banks in a best effort offering for a bond issue?
    A. Buying the unsold portion of the issue.
    B. Selling bonds on a commission basis.
    C. Buying the unsold portion of the issue at a premium price.

19. Which of the following options will a company *most likely* select to save repeated costs related to issuing additional bonds?
    A. Auction.
    B. Shelf registration.
    C. Best effort offering.

20. Which of the following statements is *least accurate*?
    A. In a primary market, bonds are issued for the first time to raise capital.
    B. A primary market has a specific location where the trading of bonds takes place.
    C. In a secondary market, existing bonds are traded among individuals and institutions.

21. Which of the following statements is *most accurate*?
    A. U.S. Treasury bonds are typically sold to the public via an auction.
    B. U.S. Treasury bonds are typically sold to the public via a primary dealer.
    C. U.S. Treasury bonds are typically sold to the public via a secondary bond market.

22. In a single-price bond auction, an investor who places a competitive bid and specifies a rate that is lower than the rate determined at auction will *most likely*:
    A. not receive any bonds.
    B. receive the bonds at the rate determined at auction.
    C. receive the bonds at the rate specified in the investor's competitive bid.

**LO.d: Describe secondary markets for bonds.**

23. An investor wants to buy bonds of Rex Inc. in the secondary market. He notices that the bonds have a high bid-ask spread. This *most likely* indicates that:
    A. the bonds have high liquidity.
    B. the bonds have low liquidity.
    C. the bonds are overvalued.

24. Analyst 1: Usually, the settlement for corporate bonds takes place on the third trading day after the trade date. For government bonds it takes place on the next trading day after the trade date. For money market securities it takes place on the day of trade itself.
    Analyst 2: Usually, the settlement for government bonds takes place on third trading day after the trade date. For corporate bonds it takes place on the next trading day after the trade date. For money market securities it takes place on the day of trade itself.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

25. Which of the following *best* describes a secondary market for bonds? A market:
    A. in which bonds are issued for the first time to raise capital.
    B. in which auction process is used to determine prices.
    C. in which existing bonds are traded among individuals and institutions.

26. Which of the following statements is *most likely* to be correct regarding secondary bond markets?
    A. Secondary bond markets are only structured as organized exchanges where buyers and sellers meet to arrange their trades.
    B. Settlement, a process that occurs after trade is made, is T+1 typically for corporate bonds.
    C. The greater the bid-ask spread, the greater the bond's illiquidity.

27. A bond purchased in a primary market is *least likely* to be purchased from:
    A. the bond's issuer.
    B. the bond's lead underwriter.
    C. another investor in the bond.

28. Government bonds will *least likely* settle on the:
    A. trade date.
    B. trade date plus one day.

C. trade date plus three days.

**LO.e: Describe securities issued by sovereign governments.**

29. Which of the following statements is *most* accurate?
    A. Quasi-government bonds are issued by local governments.
    B. Sovereign bonds are issued by national governments.
    C. Non-sovereign government bonds are issued by government sponsored entities.

30. Which of the following describes an on-the-run sovereign security?
    A. Continuously issued bonds by the government.
    B. Recently issued bonds by the government.
    C. Scarcely issued bonds by the semi-government institutions.

31. Analyst 1: Sovereign bonds with a maturity at issuance shorter than one year are most likely floating rate bonds.
    Analyst 2: Sovereign bonds with a maturity at issuance shorter than one year are most likely zero coupon bonds.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

32. Which of the following statements is *most accurate*?
    A. Floating-rate bonds are issued by national governments as the best way to reduce credit risk.
    B. Floating-rate bonds are issued by national governments as the best way to reduce inflation risk.
    C. Floating-rate bonds are issued by national governments as the best way to reduce interest rate risk.

33. Sovereign bonds with no stated maturity date are *most likely* known as:
    A. linkers.
    B. floaters.
    C. consols.

**LO.f: Describe securities issued by non-sovereign governments, quasi-government entities, and supranational agencies.**

34. Speedy Rail Services is a government sponsored entity that issues bonds. This is *most likely* to be classified as a bond issued by a:
    A. quasi-government entity.
    B. sovereign government entity.
    C. supranational entity.

35. Haley owns a non-sovereign bond, while James owns a sovereign bond. If the two bonds have similar characteristics, Haley's security is *least likely* to have:
    A. greater liquidity.
    B. higher yield.
    C. lower price.

36. A state government issued bonds to fund a highway construction project. The cash-flow of these bonds is backed by the projected income from this project. This bond is *most likely* a:
    A. sovereign bond.
    B. non-sovereign bond.
    C. quasi government bond.

37. Government of Japan created a special entity to boost the technology sector. The entity issued bonds to raise capital. What type of bonds are these? Will they offer the same yield as the sovereign bonds?
    A. Agency bonds, they will have higher yields.
    B. Non-sovereign bonds, they will have lower yields.
    C. Supranational bonds, they will have higher yields.

38. A bond issued by a multilateral agency such as the Asian Development Bank is *best* described as a:
    A. sovereign bond.
    B. supranational bond.
    C. quasi-government bond.

39. Compared to non-sovereign bonds, sovereign bonds with similar characteristics *most likely* trade at a yield that is:
    A. lower.
    B. the same.
    C. higher.

40. Analyst 1: Most bonds issued by a governmental agency are repaid from the cash flows generated by the agency.
    Analyst 2: All bonds issued by a governmental agency are guaranteed by the national government that sponsored the agency.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

**LO.g: Describe types of debt issued by corporations.**

41. Which of the following statements is *most accurate*?
    A. Generally, companies use commercial paper as a bridge financing instrument and the interest cost is higher than a bank loan.

B. Generally, companies use commercial paper as a bridge financing instrument and the interest cost is lower than a bank loan.
C. Generally, companies use syndicated loan as bridge financing instrument and the interest cost is lower than bank loan.

42. A short term unsecured security that is used by companies as a source of short-term and bridge financing is *most likely* to be known as:
    A. bilateral loan.
    B. commercial paper.
    C. syndicated loan.

43. Some form of collateral is pledged to ensure the payment of debt for:
    A. highly rated sovereign bonds.
    B. secured corporate debt.
    C. unsecured corporate debt.

44. Many issuers roll over their commercial papers on a regular basis. To reduce roll over risk they are usually required to:
    A. have sufficient T-bills as collateral.
    B. apply for a bilateral loan.
    C. maintain backup lines of credit with banks.

45. A company issued bonds where a stated number of bonds will mature each year before maturity. These bonds *most likely* have a :
    A. term maturity.
    B. serial maturity.
    C. sinking fund provision.

46. A loan made by a bank to a private company is *most likely* a:
    A. bilateral loan.
    B. syndicated loan.
    C. private placement.

47. Which of the following statements relating to commercial paper is *most accurate*?
    A. Companies use commercial paper only for funding working capital.
    B. Companies use commercial paper only as an interim source of financing.
    C. Companies use commercial paper both for funding working capital and as an interim source of funding.

48. Which of the following is *least likely* to be the reason for a higher yield on commercial papers?
    A. Lower credit risk in comparison to highly rated sovereign bonds.
    B. Lower liquidity in comparison to short term sovereign bonds.
    C. Tax reasons in comparison to short-term municipal bonds.

49. Maturities of Euro-commercial paper range from:

A. overnight to six months.
B. overnight to one year.
C. six months to one year.

50. A pure discount bond is *least likely* to be classified as a:
    A. floating rate bond.
    B. fixed rate bond.
    C. zero coupon bond.

51. A bond issue that has a random number of bonds that mature and are paid off each year before final maturity *most likely* has a:
    A. term maturity.
    B. serial maturity.
    C. sinking fund arrangement.

52. Analyst 1: A Eurocommercial paper is typically issued at an interest-bearing basis, while a U.S. commercial paper is typically issued on a discount-basis.
    Analyst 2: A Eurocommercial paper is typically issued at a discount basis, while a U.S. commercial paper is typically issued on an interest-bearing basis.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

**LO.h: Describe short-term funding alternatives available to banks.**

53. Analyst 1: A non-negotiable certificate of deposit has a penalty for early withdrawal of funds.
    Analyst 2: A negotiable certificate of deposit has a penalty for early withdrawal of funds.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

54. Which of the following is *not* considered a retail fund?
    A. Money market accounts.
    B. Certificate of deposits.
    C. Checking accounts.

55. Which of the following certificates of deposit (CD) allows an investor to sell the CD in the open market prior to the maturity date?
    A. Negotiable certificate of deposit.
    B. Non-negotiable certificate of deposit.
    C. Negotiable and non-negotiable certificate of deposit.

56. Analyst 1: Central bank fund market is a market where banks borrow from and lend to the central bank. The rate at which these transactions take place is called repo rate.
    Analyst 2: Central bank fund market is a market where banks lend to and borrow from each other. The rate at which these transactions take place is called central bank funds rate.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither.

57. Which of the following statements is *most accurate*?
    A. Negotiable CDs are open for yield negotiation and adjustment while nonnegotiable CDs are not open for yield negotiation and adjustment.
    B. Negotiable CDs can be sold while nonnegotiable CDs cannot be sold.
    C. Negotiable CDs are open for negotiation of maturity period while nonnegotiable CDs are not open for such negotiation.

58. Which of the following is *most likely* considered wholesale funds?
    A. Money market accounts.
    B. Central bank funds.
    C. Repurchase agreements.

59. Short term wholesale funds are *least likely* to include:
    A. central bank funds.
    B. demand deposits.
    C. interbank funds.

60. Which of the following statements is *most accurate*?
    A. Holding reserves with the central bank is a requirement for banks in all countries.
    B. Holding reserves with the central bank is an opportunity cost for banks.
    C. Holding reserves with the central bank is an opportunity to receive interest on excess funds for banks.

**LO.i: Describe repurchase agreements (repos) and the risks associated with them.**

61. Which of the following statements is *most accurate*?
    A. A repurchase agreement is like an interbank deposit.
    B. A repurchase agreement is like a collateralized loan.
    C. A repurchase agreement is like a negotiable certificate of deposit.

62. Party A sells a 90-day T-bill to Party B for $99.85 with a commitment to by the T-bill back the next day for $99.87. From the perspective of Party B this transaction can be referred to as a:
    A. repo agreement.
    B. reverse repo agreement.
    C. forward rate agreement.

63. The level of repo margin is lower when:
    A. the length of the repurchase agreement is high.
    B. the supply of the collateral is low.
    C. the quality of the collateral is low.

64. The sale of a security with a simultaneous agreement by the seller to purchase the same security back from the purchaser at an agreed-on price and future date is *most likely* to be known as:
    A. central bank funds.
    B. certificate of deposit.
    C. repurchase agreement.

65. If the repurchase agreement is for more than one day, it is *most likely* to be known as:
    A. overnight repo.
    B. repo to maturity.
    C. term repo.

66. Which of the following is *least likely* to be correct about repo rates?
    A. Repo rates are typically lower for highly rated collaterals.
    B. Repo rates generally increase with maturity.
    C. Repo rates are generally higher when a delivery of the collateral to the lender is required.

67. The repo rate is higher when:
    A. the credit quality of the borrower is high.
    B. the interest rates for alternative sources of funds are high.
    C. the collateral security is delivered to the lender.

68. Which of the following statements is *most accurate*?
    A. The interest rate on a repurchase agreement is known as repo rate.
    B. The interest rate on a repurchase agreement is known as repo yield.
    C. The interest rate on a repurchase agreement is known as repo margin.

## Solutions

1. C is correct. A security with an original maturity of one year or less is a money market security. A security with a credit rating of BBB or higher is investment grade.

2. B is correct. The rating below BBB by Standard & Poor's is known as junk, high yield, speculative, or non-investment grade.

3. B is correct. A sinking fund arrangement allows for the retirement of bond on an annual basis based on a random drawing. A serial maturity structure, a stated number of bonds mature and are paid off each year before final maturity. A term maturity structure allows for one lump sum payment at maturity.

4. B is correct. Any bond that is aligned with an index or inflation is called index-linked bonds.

5. C is correct. Inflation-linked bonds can be structured in a variety of ways; the inflation adjustment can be made via the coupon payments, the principal repayment, or both.

6. B is correct. Pension funds are typically investors in, not issuers of, bonds. A and C are incorrect because major issuers of bonds include sovereign (national) governments, non-sovereign (local) governments, quasi-government agencies, supranational organizations, and financial and non-financial companies.

7. C is correct. Non-sovereign (local) government bond issuers include provinces, regions, states, and cities. Analyst 1 is incorrect because quasi-government bonds are issued by agencies that are either owned or sponsored by governments. Analyst 2 is incorrect because supranational bonds are issued by international organizations.

8. B is correct. Money market securities are issued with a maturity at issuance (original maturity) ranging from overnight to one year. A is incorrect because securitization does not relate to a bond's maturity, but to the process that transforms private transactions between borrowers and lenders into securities traded in public markets. C is incorrect because capital market securities are issued with an original maturity longer than one year.

9. C is correct. The interest rate risk does not differ for Eurobonds, foreign bonds, or domestic bonds. Thus, this is not an advantage.

10. A is correct. The currency denomination of a bond's cash flows influences which country's interest rates affect a bond's price. The price of a bond issued by an American company and denominated in Singaporean dollars will be affected by Singapore's interest rates.

11. B is correct. Eurobonds are issued internationally, outside the jurisdiction of any single country. Foreign bonds are issued in a specific country, in the currency of that country, by an issuer domiciled in another country.

12. B is correct. The borrowing periods corresponding to LIBOR range from overnight to one year.

13. C is correct. For floating rate bonds denominated in U.S. dollars the reference rate is usually the U.S. dollar Libor. If coupons are paid quarterly the reference rate will usually be the U.S. dollar 3 month Libor.

14. C is correct. Interbank offered rates represent a set of interest rates at which major banks believe they could borrow unsecured funds from other major banks in the interbank money market for different currencies and different borrowing periods ranging from overnight to one year.

15. B is correct. The coupon payments on a floating-rate bond that is tied to the six-month Libor will reset every six months, based on changes in Libor. Thus, as Libor increases, so will the coupon payments. A is incorrect because the spread on a floating-rate bond is typically

constant; it is set when the bond is issued and does not change afterward. C is incorrect because the issuer's credit quality affects the spread and thus the coupon rate that serves as the basis for the calculation of the coupon payments, but only when the spread is set—that is, at issuance.

16. B is correct. In an underwriting offering, the investment bank buys the whole issue from the issuer and takes the risk of reselling it to investors or dealers.

17. B is correct. Statement I and III are correct. Statement II is incorrect because shelf registration is a form of public offering.

18. B is correct. In best effort offering, the investment bank sells the bond on commission basis. Contrary to an underwritten offering, where the investment bank commits to selling 100% of the issue, in a best effort offering issue, it only sells as many securities as it can.

19. B is correct. In shelf registration, the issuer is able to offer additional bonds without preparing a new and separate offering circular each time. This saves repeated administrative expenses and registration fees.

20. B is correct. Options A and C are the definitions of primary and secondary markets respectively. Option B is the correct answer, because having a specific location where the trading of bonds takes place is not a requirement of primary markets.

21. A is correct. Treasury bonds are typically sold to the public via an auction. B is incorrect because primary dealers are often bidders in the auction; they are financial institutions that are active in trading U.S. Treasury bonds. C is incorrect because any bond issue coming directly to the market is considered to be in the primary, not the secondary, market.

22. B is correct. In a single-price bond auction, a bidder that enters a competitive bid specifies the rate (yield) that is considered acceptable. If the rate specified in the competitive bid is lower than the coupon rate determined at auction, the investor will receive the bonds. All winning bidders pay the same price at the rate determined at the auction.

23. B is correct. In the secondary market, Bid-ask spreads reflects the liquidity of a market. The lower the spread, the better the liquidity.

24. A is correct. Usually, corporate bonds have T + 3 settlement, government bonds T + 1 settlement, and money market securities are settled on the day of the trade itself.

25. C is correct. A market in which existing bonds are traded among individuals and institutions is the definition of a secondary market. A is incorrect because primary bond markets are markets in which bonds are issued for the first time to raise capital. B is incorrect because having an auction to determine prices is not a requirement for a secondary bond market.

26. C is correct. The greater the bid-ask spread, the less the liquidity of the bond, hence the greater the illiquidity of the bond. A is incorrect because secondary bond markets can either

be organized exchanges or over the counter markets. B is incorrect because the settlement date for corporate bonds is on a T+3 basis.

27. C is correct. In secondary bond markets, bonds are traded among investors. A and B are incorrect because a bond purchased from the bond's issuer or from the bond's lead underwriter would happen in the primary, not secondary, market.

28. C is correct. Corporate bonds typically settle on a T + 3 basis—that is, three days after the transaction date. A is incorrect because cash settlement occurs for some government and quasi-government bonds and for many money market trades. B is incorrect because settlement on a T + 1 basis is typical for government.

29. B is correct. Bonds issued by the government of a country are sovereign bonds. Options A and C are incorrect, they have the respective descriptions interchanged.

30. B is correct. Sovereign bonds are securities issued by the government. On-the-run refers to securities that have been issued recently.

31. B is correct. Most bonds issued by national governments with a maturity at issuance (original maturity) shorter than one year are zero-coupon bonds.

32. C is correct. The coupon rates of floating-rate bonds are reset periodically based on changes in the level of a reference rate such as Libor, which reduces interest rate risk. A is incorrect because credit risk, although low for sovereign bonds, cannot be reduced by linking the coupon rate to a reference rate. B is incorrect because although the inflation risk is lower for floating-rate bonds than for fixed- rate bonds, floating-rate bonds are not as good as inflation-linked bonds to reduce inflation risk.

33. C is correct. Consols are sovereign bonds with no stated maturity date issued by the U.K. government. Sovereign bonds whose coupon payments and/or principal repayment are adjusted by a consumer price index are known as inflation-linked bonds or linkers. Floaters describe floating-rate bonds that have a coupon rate tied to a reference rate such as Libor.

34. A is correct. Quasi-government entities are owned or sponsored by the government and usually include rail services or utilities.

35. A is correct. Non-sovereign bonds usually trade at a higher yield and lower price than sovereign bonds with similar characteristics. The higher yield can be a consequence of non-sovereign bonds being less liquid than the sovereign bonds.

36. B is correct. A bond issued by local government to fund a specific project is called a Non-sovereign bonds.

37. A is correct. The bonds issued by an entity set up by the government for some special purpose are called agency bonds. These bonds typically offer a higher yield than the sovereign bonds.

38. B is correct. Bonds issued by multilateral agencies are called supranational bonds.

39. A is correct. Non-sovereign bonds usually trade at a higher yield and lower price than sovereign bonds with similar characteristics. The higher yield is because of the higher credit risk associated with non-sovereign issuers relative to sovereign issuers. The higher yield may also be a consequence of non-sovereign bonds being less liquid than sovereign bonds with similar characteristics.

40. A is correct. Most bonds issued by a governmental agency are repaid from the cash flows generated by the agency or from the project the bond issue is financing. Some bonds issued by governmental agencies are guaranteed by the national government that sponsored the agency; bonds are most likely repaid first from the cash flows generated by the agency.

41. B is correct. Bridge financing is used to bridge the gap until an organization issues long term debt. Generally, companies use commercial paper as bridge financing instrument. The interest cost is lower with commercial paper than with a bank loan.

42. B is correct. Commercial paper is a short term unsecured security that is used by companies as a source of short-term and bridge financing.

43. B is correct. In case of secured corporate debt, some form of collateral is pledged to ensure the payment of the debt. In case of unsecured debt, claims are settled by the general assets of the company. Highly rated sovereign bonds are not exposed to great credit risk.

44. C is correct. Under backup lines of credit, the bank provides fund when the commercial paper matures.

45. B is correct. A bond issue under which a stated number of bonds will mature each year before maturity is called a serial maturity bond issue.

46. A is correct. A bilateral loan is a loan from a single lender to a single borrower. B is incorrect because a loan from a group of lenders to a single borrower is a syndicated loan. C is incorrect because a private placement involves placing the debt issued by a borrower directly with a lender or a group of lenders. The fact that the borrower is a private company is irrelevant.

47. C is correct. Companies use commercial paper as a source of funding working capital and seasonal demand for cash, as well as an interim source of financing until permanent financing can be arranged.

48. A is correct. A commercial paper has greater yield in comparison to highly rated sovereign bonds because of greater exposure to credit risk rather than a greater tenor.

49. B is correct. Euro commercial paper ranges in maturity from overnight to 364 days.

50. A is correct. Pure discount bonds are also called zero coupon bonds. They are certainly not floating rating rate bonds.

51. C is correct. A sinking fund arrangement, like a serial maturity structure, results in a portion of the bond issue being paid off every year. However, with a serial maturity structure, the bonds are paid off because the maturity dates are spread out during the life of the bond and the bonds that are retired are maturing; the bondholders know in advance which bonds will be retired. In contrast, the bonds retired annually with a sinking fund arrangement are designated by a random drawing. A is incorrect because a bond issue with a term maturity structure is paid off in one lump sum at maturity.

52. A is correct. A Eurocommercial paper is typically issued at an interest-bearing basis, while a U.S. commercial paper is typically issued on a discount-basis.

53. A is correct. In a non-negotiable CD, the interest and deposit are paid at maturity. There is a penalty if the depositor withdraws funds before maturity.

54. B is correct. Certificate of deposits are wholesale funds, whereas money market accounts and checking accounts are retail funds.

55. A is correct. Negotiable CD allows an investor to sell the CD in the open market prior to the maturity date.

56. B is correct. Banks are required to maintain a certain amount of money with central bank. They can lend or borrow this money to maintain this balance. This market is called central bank fund market. The rate at which these transactions take place is called central bank funds rate.

57. B is correct. Negotiable CDs can be sold to others while nonnegotiable CDs cannot be sold.

58. B is correct. Wholesale funds refer to the funds that financial institutions lend to and borrow from each other. They include central bank funds, interbank funds, and certificates of deposit.

59. B is correct. Short term wholesale funds do not include demand deposits. Demand deposits are part of retail deposits.

60. B is correct. Funds held in reserve with the national central bank are an opportunity cost because they cannot be invested with higher interest or loaned out to consumers or commercial enterprises. A is incorrect because although many countries require deposit-taking banks to place a reserve balance with the national central bank, this is not always the case. C is incorrect because some central banks pay no interest on reserve funds, and sometimes even charge for keeping reserve funds.

61. B is correct. A repurchase agreement can be viewed as a collateralized loan where the security sold and subsequently repurchased represents the collateral posted. Interbank deposits and certificate of deposits are unsecured loans and have no collateral involved.

62. B is correct. Party A is borrowing and Party B is lending. From Party B's perspective this is a reverse repo.

63. B is correct. The repo margin is lower when the underlying collateral is in short supply or if there is a high demand for it.

64. C is correct. A repurchase agreement or repo is the sale of a security with a simultaneous agreement by the seller to purchase the same security back from the purchaser at an agreed-on price and future date.

65. C is correct. A repurchase agreement for one day is called an overnight repo. A repurchase agreement for more than one day is called a term repo. A repurchase agreement lasting until maturity date is known as a repo to maturity.

66. C is correct. For the delivery requirement of the collateral, repo rates are generally lower when a delivery to the lender is required.

67. B is correct. The repo rate is:
    - higher, the longer the repo term.
    - lower, the higher the credit quality of the collateral security.
    - lower when the collateral security is delivered to the lender.
    - higher when the interest rates for alternative sources of funds are higher.

68. A is correct. The repo rate is the interest rate on a repurchase agreement. B is incorrect because the interest on a repurchase agreement is known as the repo rate, not repo yield. C is incorrect because the repo margin refers to the difference between the market value of the security used as collateral and the value of the loan.

**LO.a: Calculate a bond's price given a market discount rate.**

1. A bond with 5 years remaining to maturity offers a coupon rate of 9% with interest paid annually. At a market discount rate of 9%, the price of the bond per $100 of par is *closest* to:
   A. $97.15.
   B. $100.00.
   C. $103.26.

2. An investor who owns a bond with a 10% coupon rate that pays interest semiannually and matures in four years is considering selling it. If the required rate of return on the bond is 12%, the price of the bond per $100 of par value is *closest* to:
   A. **$**93.79.
   B. $100.00.
   C. $106.34.

3. A four-year bond has a coupon rate of 6% paid annually. Given that the market discount rate is 4%, the price of the bond is most likely to be:
   A. $93.1.
   B. $102.1.
   C. $107.3.

4. A bond offering an annual coupon rate of 6%, paying interest semiannually, matures in 6 years. Given that the market discount rate is 4%, which of the following is most likely to be the price of the bond?
   A. $94.8.
   B. $105.6.
   C. $110.5.

5. A bond offers an annual coupon rate of 6%, with interest paid quarterly. The bond matures in three years. At a market discount rate of 5%, the price of this bond per $100 of par value is *closest* to:
   A. $98.26.
   B. $100.00.
   C. $102.76.

6. A zero coupon bond with a face value of $500 matures in 10 years. At a market discount rate of 5% and assuming annual compounding, the price of the bond is *closest* to:
   A. $310.97.
   B. $306.96.
   C. $300.05.

7. The market value of a 20-year zero-coupon bond with a maturity value of $100 discounted at a 15% annual interest rate with semi-annual compounding is *closest* to:
   A. $74.88.
   B. $76.61.
   C. $5.54.

8. Analyst 1: A bond is priced at premium when the coupon rate is greater than the market discount rate. A bond is priced at discount when the coupon rate is less than the market discount rate.
   Analyst 2: A bond is priced at premium when the coupon rate is less than the market discount rate. A bond is priced at discount when the coupon rate is more than the market discount rate.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Neither.

9. A 1-year, semiannual-pay bond has a $1,000 face value and a 10% coupon. Which of the following statements is *most* accurate?
   A. At a discount rate of 8%, the bond will be priced at a discount.
   B. At a discount rate of 10%, the bond will be priced at par.
   C. At a discount rate of 12%, the bond will be priced at a premium.

**LO.b: Identify the relationships among a bond's price, coupon rate, maturity, and market discount rate (yield-to-maturity).**

10. The price-yield relationship for an option-free bond is *most likely* a:
    A. straight line relationship.
    B. convex relationship.
    C. concave relationship.

11. The bond is most likely to be priced at a premium above par value when:
    A. Coupon rate < Market discount rate.
    B. Coupon rate = Market discount rate.
    C. Coupon rate > Market discount rate.

12. According to constant-yield price trajectory, if a bond is selling at a discount, its price:
    A. increases over time.
    B. decreases over time.
    C. is unchanged.

13. Bond A has term to maturity of 1 year. Bond B has a term to maturity of 10 years. All else equal:
    A. bond A will have greater price volatility.
    B. bond B will have greater price volatility.
    C. both bonds will have the same price volatility.

14. Bond A has a coupon of 7%. Bond B has a coupon of 4%. All else equal:
    A. bond A will have greater price volatility.
    B. bond B will have greater price volatility.
    C. both bonds will have the same price volatility.

15. The yield to maturity is least likely to be known as:
    A. implied coupon rate.
    B. internal rate of return.
    C. yield to redemption.

16. Which of the following is most likely to be the price of a zero coupon bond maturing in 12 years, with par value $100? Assume the market discount rate to be 3.5%, and annual compounding.
    A. $66.2.
    B. $69.8.
    C. $72.4.

17. The following table shows details of three bonds.

| Bond | Price | Coupon Rate | Time-to Maturity |
|---|---|---|---|
| A | 102.8 | 4% | 3 years |
| B | 100.0 | 5% | 3 years |
| C | 98.6 | 4% | 4 years |

    Given that the market discount rates for all three bonds increases by 150 basis points, which of the following bonds is most likely to experience the smallest percentage change in price?
    A. Bond A.
    B. Bond B.
    C. Bond C.

18. A Singaporean institutional investor owns a 3-year bond priced at S$104.80. Given that the coupon payment per year is S$2.4, which of the following is most likely to be the yield to maturity?
    A. 0.679%.
    B. 0.775%.
    C. 0.787%.

19. A zero coupon bond priced at 80 per 100 of par value issued today will mature in 4 years. Given that the periodicity is 12, which of the following is most likely to be the yield to maturity of the bond?
    A. 4.98%.
    B. 5.53%.
    C. 5.59%.

20. Which of the following statements is least likely to be correct?
    A. Current yield is a common yield measure for fixed income bonds and is also known as income yield.
    B. Street convention refers to a yield measure that neglects weekends and holidays.
    C. The true yield is mostly higher than the street convention because of weekends and holidays.

21. Which of the following statements is most likely to be correct?

A. The highest of the sequence of yields-to-call and yields-to-maturity is known as the yield-to-worst.
B. The option adjusted yield is the required market discount whereby the price is adjusted for the value of the embedded option.
C. The value of an embedded call option is subtracted from the flat price of bond to get the option-adjusted price.

22. Which of the following statements is least likely to be correct about the relationships between bond price and bond characteristics?
Statement I: The bond price is inversely related to the market discount rate.
Statement II: For the same coupon rate, a shorter-term bond has a greater percentage price change than a longer-term bond if the market discount rates change by the same amount.
Statement III: For the same time-to-maturity, a higher coupon bond has a greater percentage price change than a lower coupon bond when market discount rates change by the same amount.
A. Statement II only.
B. Statements I and III.
C. Statements II and III.

23. Bond A has a greater yield to maturity than Bond B. Which of the following is least likely to be the reason for this?
A. Bond A has a non-investment grade rating while Bond B has an investment grade rating.
B. Bond A has greater liquidity than Bond B.
C. Bond A is denominated in a currency with a higher expected rate of inflation than the currency in which Bond B is denominated.

24. A bond with a coupon rate of 5% paid annually maturing in 30 years has a face value of $10,000 and is currently trading at $12,523. The yield to maturity for this bond at current market prices is *closest* to:
A. 3.61%.
B. 4.23%.
C. 3.52%.

25. Statement 1: The percentage decrease in the price of a bond for a given increase in yield is smaller than the percentage increase in the price of a bond when yield decreases by same amount.
Statement 2: The percentage decrease in the price of a bond for a given increase in yield is larger than the percentage increase in the price of a bond when yield decreases by same amount.
Which statement is *most likely* correct?
A. Statement 1.
B. Statement 2.
C. Neither of them.

26. Suppose a bond's price is expected to decrease by 2% if its market discount rate increases by 100 basis points. If the bond's market discount rate decreases by 100 basis points, the bond price is *most likely* to change by:
    A. 2%.
    B. less than 2%.
    C. more than 2%.

27. Analyst 1: Constant-yield price trajectory states that the bond price converges to par value as it reaches maturity, if the yield to maturity is constant.
    Analyst 2: Constant-yield price trajectory states that the bond price converges to par value as it reaches maturity. Yield to maturity does not affect the change in prices.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

28. Consider a $1,000 par value bond with a 5% coupon paid annually and 10 years to maturity. At a discount rate of 4.5%, the value of the bond today is $1,039.56. One day later, the discount rate increases to 6.5%. Assuming the discount rate remains at 6.5% over the remaining life of the bond, what is *most likely* to occur to the price of the bond between today and maturity?
    A. Increase and then decrease.
    B. Decrease and then increase.
    C. Decrease and then remain unchanged.

29. Consider a $1,000 par value bond with a 5% coupon paid annually and 10 years to maturity. At a discount rate of 6.5%, the value of the bond today is $892.17. One day later, the discount rate decreases to 4.5%. Assuming the discount rate remains at 4.5% over the remaining life of the bond, what is *most likely* to occur to the price of the bond between today and maturity?
    A. Increase and then decrease.
    B. Decrease and then increase.
    C. Decrease and then remain unchanged.

**LO.c: Define spot rates and calculate the price of a bond using spot rates.**

30. The following information is given for a bond LMN.
    Par value: $100
    Tenor: 3 years
    Coupon rate: 4%
    Coupon frequency: Annual
    Spot rates: 4.5% in year 1, 4.3% in year 2, 4.25% in year 3.
    Which of the following statements is most likely to be correct about the bond LMN?
    A. The price of the bond is equivalent to $98.7.
    B. The price of the bond is equivalent to $101.7.
    C. The yield to maturity is equivalent to 4.25%.

31. The following table consists of the spot rates for a 2 year bond issued by Jackal Enterprises.

| Time-to Maturity | Spot Rate |
|---|---|
| 1 year | 2.5% |
| 2 years | 3.5% |

Assume that the coupon rate of the bond is 4.5% and interest is paid annually. The price of this bond is most likely to be closest to:
A. $101.5.
B. $101.9.
C. $103.4.

**The following information relates to Questions 32-34.**
A bond named Galaxy has 4 years remaining till its maturity and is currently trading at US $102. Interest on the bond is paid on a semiannual basis based on a coupon rate of 5%. The bond is first callable in 2 years and on coupon dates after that date in accordance to the given table below.

| End of Year | Call Price |
|---|---|
| 2 | 101.5 |
| 3 | 101.0 |
| 4 | 100.0 |

32. Which of the following is most likely to be the bond's annual yield to maturity?
A. 2.22%.
B. 4.44%.
C. 6.66%.

33. Which of the following is most likely to be the bond's annual yield to first call?
A. 4.42%.
B. 4.66%.
C. 4.78%.

34. Which of the following is most likely to be the bond's annual yield to second call?
A. 4.26%.
B. 4.38%.
C. 4.59%.

35. An investor considers the purchase of a 2-year bond with a 6% coupon paid annually. Assuming the following spot rates, the price of the bond is *closest* to:
Spot rates:
1 year: 2%
2 years: 3%
A. $103.85.
B. $105.79.
C. $101.97.

**The following information related to Questions 36-37**

A 5 year bond with a par value of $1,000 offers a 7% coupon paid annually. The sequence of spot rates is given below:

1-year: 5%
2-year: 6%
3-year: 7%
4-year: 8%
5-year: 9%

36. Based on the given sequence of spot rates, the price of the bond is *closest* to:
    A. 932.99.
    B. 931.99.
    C. 933.99.

37. Based on the information, the yield to maturity of this bond is *closest* to:
    A. 8.51%.
    B. 9.51%.
    C. 8.71%.

38. Using the following US Treasury spot rates, the value of a 2-year, semi-annual pay, $100 par value Treasury bond with a 6% coupon rate is *closest* to:

| **Time Period** | **Spot Rate** | **Years** |
|---|---|---|
| 1 | 1.0% | 0.5 |
| 2 | 1.5% | 1.0 |
| 3 | 2.0% | 1.5 |
| 4 | 2.0% | 2.0 |

    A. $100.00.
    B. $108.50.
    C. $107.83.

39. Analyst 1: The arbitrage-free approach uses a single interest rate to discount all of a bond's cash flows. It views all cash flows of a bond as the same, regardless of the timing of the cash flows.
    Analyst 2: The arbitrage-free approach values a bond as a package of cash flows, with each cash flow viewed as a zero-coupon bond and each cash flow discounted at its own unique discount rate.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

40. Using the following US Treasury spot rates, the arbitrage-free value of a three-year $100 par value Treasury bond with a 6% semi-annual coupon rate is *closest* to:

| **Time Period** | **Spot Rate** | **Years** |
|---|---|---|

| | | |
|---|---|---|
| 1 | 1% | 0.5 |
| 2 | 1.5% | 1 |
| 3 | 2% | 1.5 |
| 4 | 2.25% | 2 |
| 5 | 2.75% | 2.5 |
| 6 | 3.5% | 3 |

A. $100.
B. $104.61.
C. $107.34

**LO.d: Describe and calculate the flat price, accrued interest, and the full price of a bond. Based on the information given below answer question 41–43:**

A 6% corporate bond is priced for settlement on 15 September 2015. The bond matures on 30 June 2018 and makes semiannual coupon payments on 30th June and 31st December. The bond is currently trading at 7.0% yield to maturity.

41. Based on the above information, the full price of the bond on the settlement date is *closest* to:
    A. 973.36.
    B. 987.47.
    C. 975.52.

42. Based on above information, the accrued interest on the settlement date is *closest* to:
    A. 12.55.
    B. 22.55.
    C. 15.55.

43. Based on the above information, the flat price of the bond on settlement date is *closest* to:
    A. 973.36.
    B. 974.92.
    C. 972.52.

44. Which of the following is least likely to be equal to the clean price?
    A. full price.
    B. flat price.
    C. quoted price.

**The following information relates to Questions 45 and 46.**
A Swiss 2-year corporate bond matures on 30 December 2015. The coupon rate is 5% paid semiannually on June 30 and December 30. The annual yield to maturity on 30 September 2014 is 4.25%. This bond uses the 30/360 convention.

45. Which of the following is most likely to be the full price of this bond on September 30, 2014?
    A. CHF 102.15.

B. CHF 101.08.
C. CHF 103.89.

46. Which of the following is most likely to be the flat price of this bond on September 30, 2014?
A. CHF 100.90.
B. CHF 102.15.
C. CHF 100.00.

47. Bond dealers *most* often quote the:
A. flat price.
B. full price.
C. full price plus accrued interest.

48. Analyst 1: To calculate the full price, we must add accrued interest to the present value of the bond at the last coupon payment date.
Analyst 2: To calculate full price, we cannot add accrued interest to the present value of the bond at the last coupon date.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither of them.

**LO.e: Describe matrix pricing.**

49. The method to estimate the required yield to maturity of bonds that have low liquidity or that are not traded is *most likely* called:
A. mix pricing.
B. matrix pricing.
C. average pricing.

50. Jonathan, an analyst, has to find the value of an illiquid bond with tenor 3 years and an annual coupon rate of 3%. The following two bonds with similar credit quality have been identified.

| Bond | Tenor | Annual coupon rate | Price |
|---|---|---|---|
| A | 2 years | 3.5% | $106.25 |
| B | 4 years | 3.0% | $104.50 |

Assuming matrix pricing was used for valuation, the estimated price of the illiquid bond is most likely to be closest to:
A. $104.8.
B. $105.4.
C. $105.6.

51. Matrix pricing is most likely to be used for:
A. bonds which are not actively traded.
B. bonds with varying credit quality.

C. bonds with varying coupon rates.

52. Which of the following statements is *least accurate*?
    A. Matrix pricing is used for instruments that have low liquidity.
    B. Matrix pricing enable us to calculate precise trade prices by interpolating values of similar instruments arranged in a matrix format.
    C. Matrix pricing represents an educated guess and not an actual offer or trade price.

53. Current yield in market are as follows:
    4- year, U.S. treasury bond, YTM 2.5%
    4-year, A rated corporate bond, YTM 3.5%
    6-year, U.S. treasury bond, YTM 3.00%
    6-year, A rated corporate bond, YTM 4.75%
    5-year, U.S. treasury bond, YTM 2.75%
    Using matrix pricing, the yield on a 5 year A rated corporate bond is *closest* to:
    A. 3.125.
    B. 4.125.
    C. 5.125.

**LO.f: Calculate and interpret yield measures for fixed-rate bonds, floating-rate notes, and money market instruments.**

54. A firm has issued a bond with YTM of 6% on a semiannual basis. What yield should be used to compare it with an annual pay bond and a quarterly pay bond?
    A. For annual pay bond – 6.09%, for quarterly pay bond – 5.96%.
    B. For annual pay bond – 6.15%, for quarterly pay bond – 5.90%.
    C. For annual pay bond – 615%, for quarterly pay bond – 6.20%.

55. Statement 1: When interest is not paid on the due date and it is paid on the day after the due date, the yield is called true yield and it is generally lower than the street convention yields.
    Statement 2: When interest is not paid on the due date and it is paid before that date, the yield is called true yield and it is generally higher than the street convention yield.
    Which statement is *most likely* correct?
    A. Statement 1.
    B. Statement 2.
    C. Neither of them.

56. A three year floating-rate note pays six-month LIBOR plus 1.80%. It is priced at 98 per 100 of par value. Given that the six month LIBOR is constant at 3.4%, the interest payment each period per 100 of par value is most likely to be:
    A. 2.60.
    B. 1.69.
    C. 2.73.

57. Which of the following is least likely to be a difference in yield measures between money market and the bond market?

A. Bond yield to maturities are annualized and compounded; money market yield measures are annualized but not compounded.
B. Bond yield to maturities usually are stated for a common periodicity for all times to maturity; money market instruments have different periodicities for annual rate.
C. Bond yield to maturity can be calculated using formulae programmed in financial calculator; money market yields can be calculated using standard time value of money analysis.

58. Which of the following is most likely to be the price of a 96-day T-Bill with a face value of USD 1 million quoted at a discount rate of 2.75%? Assume a 360 day year.
A. $992,667.
B. $992,720.
C. $992,791.

59. The following information is available for a banker's acceptance.
PV = CHF1, 000,000
FV = CHF1, 250,000
Number of days between settlement and maturity = 182
Total number of days in the year = 365.
Which of the following is most likely to be the add-on-rate stated as an annual percentage rate?
A. 40.2%.
B. 50.1%.
C. 56.4%.

60. The following table gives details of three 180-day money market instruments.

| Instrument | Quotation Basis | Number of days in a year | Quoted Rate |
|---|---|---|---|
| A | Add-on Rate | 360 | 5.44% |
| B | Discount Rate | 360 | 5.45% |
| C | Discount Rate | 365 | 5.46% |

Which of the following money market instruments is most likely to offer the highest rate of return? Assume that the credit risk is same.
A. Instrument A.
B. Instrument B.
C. Instrument C.

61. Maxtax Inc. has issued semiannual $1,000 par value Floating Rate Note with 4 years to maturity, the reference rate is 180-day LIBOR and the quoted margin is 75 basis points. 180-day LIBOR is currently quoted at 5% and the margin for discount is 91 basis points. What is the *most likely* value of this FRN?
A. 994.37.
B. 995.39.
C. 991.37.

62. A negotiable certificate of deposit with 90 days to maturity is quoted with an add-on yield of 1.6% based on 365 days a year. Face value of this CD is $5 million. The bond equivalent yield and the amount payable on maturity for this certificate of deposit is *closest* to:
    A. BEY = 1.6% and maturity value is $50,19,725.
    B. BEY = 2.01% and maturity value is $50,20,952.
    C. BEY = 1.8% and maturity value is $50,15,563.

**LO.g: Define and compare the spot curve, yield curve on coupon bonds, par curve, and forward curve.**

63. The *most* common type of yield curve shape is the:
    A. upward sloping yield curve.
    B. downward sloping yield curve.
    C. flat yield curve.

64. Which of the following curves is least likely to be constructed from numerous yield to maturity of zero coupon bonds?
    A. Par curve.
    B. Strip curve.
    C. Spot curve.

65. The yield curve constructed from a sequence of yields-to-maturities on zero coupon bonds is *least likely* the:
    A. strip curve.
    B. zero curve.
    C. par curve.

66. A sequence of yield to maturities such that each bond is priced at par value is the:
    A. spot curve.
    B. zero curve.
    C. par curve.

67. Analyst 1: A forward curve is a series of forward rates, each having the same time frame.
    Analyst 2: A forward curve is a series of forward rates, each having incremental time frames.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

**LO.h: Define forward rates and calculate spot rates from forward rates, forward rates from spot rates, and the price of a bond using forward rates.**

68. What does the notation 5y3y *most likely* represent?
    A. 3 year loan to be made after 5 years.
    B. 5 year loan to be made after 3 years.
    C. 5 year loan to be made at 3 year yield.

69. Which of the following statements is *most accurate*?
    A. Implied spot rates can be calculated as arithmetic average of forward rates.
    B. Implied spot rates can be calculated as geometric average of forward rates.
    C. Implied forward rates can be calculated as geometric average of spot rates.

70. An analyst wants to find out 1 year forward rate 2 years from now. Currently the 1 year spot rate is 3% and the spot rate for 2 years is 5% while 3 year spot rate is 9%. The 1 year forward rate 2 years from now is *closet* to:
    A. 15.46%.
    B. 19.46%.
    C. 17.46%.

71. John wants to value an annual coupon pay bond with 3 years maturity and 7% coupon. The bond has a par value of $1,000. Current spot rate is 5%, 1 year forward rate 1 year from now is 6% and 1 year forward rate 2 years from now is 7%. The value of this annual coupon pay bond is *closest* to:
    A. $1025.04.
    B. $1018.34.
    C. $1028.34.

72. Assume the following annual forward rates were calculated from the yield curve.

| **Time Period** | **Forward Rate** |
|---|---|
| 0y1y | 0.50% |
| 1y1y | 0.75% |
| 2y1y | 1.00% |
| 3y1y | 1.25% |
| 4y1y | 1.75% |

The four-year spot rate is *closest* to:
    A. 0.88%.
    B. 1.05%.
    C. 1.75%.

**LO.i: Compare, calculate, and interpret yield spread measures.**

73. What is the *most likely* basis for calculating I-spread?
    A. Interest rate swap in the same currency and same tenure as the bond.
    B. Interest rate on comparable corporate bond with same tenure and same credit rating.
    C. Interest rate on highest rated bonds in the industry with same tenure.

74. The yield spread in basis points over an actual or interpolated government bond is known as the:
    A. I-spread.
    B. G-spread.
    C. Z-spread.

75. Which of the following is least likely to effect the spread component of a specific bond's yield-to-maturity?
    A. The expected inflation.
    B. The quality of credit rating.
    C. The tax status.

76. The constant spread added to each spot rate such that the present value of the cash flows matches the price of the bond is known as the:
    A. I-spread.
    B. G-spread.
    C. Z-spread.

77. In case of callable bonds, the:
    A. OAS < Z-spread.
    B. OAS = Z-spread.
    C. OAS > Z-spread.

78. In case of putable bonds, the:
    A. OAS < Z-spread.
    B. OAS = Z-spread.
    C. OAS > Z-spread.

79. The z-spread and the option adjusted spread for a bond will be the same if the:
    A. bond has a call option.
    B. bond has a put option.
    C. bond does not have an embedded option.

## Solutions

1. B is correct. Using a financial calculator, compute the present value as:
   N = 5, I/Y = 9%, PMT = $9, FV = $100, CPT PV = ($100).
   Since the coupon rate is equal to the market discount rate, the bond is priced at par.

2. A is correct. Using a financial calculator, compute the present value as:
   N = 4 * 2 = 8, I/Y = 12/2 = 6%, PMT = $10/2 = 5 and FV = $100, CPT PV = ($93.79).
   Since the coupon rate is lower than the market rate, the bond is priced at discount.

3. C is correct.
   $$\text{Price of bond } = \frac{6}{(1.04)^1} + \frac{6}{(1.04)^2} + \frac{6}{(1.04)^3} + \frac{106}{(1.04)^4} \approx 107.3$$

4. C is correct. PMT = 3, FV = 100, r = 2%, N = 12, CPT, PV = $ 110.5

5. C is correct. Using a financial calculator, compute the present value as:
   N = 3 * 4 = 12, I/Y = 5/4 = 1.25%, PMT = $6/4 = 1.5, and FV = $100, CPT PV = ($102.76).
   Since the coupon rate is higher than the market rate, the bond is trading at a premium.

6. B is correct. $\text{Value of zero} - \text{coupon bond } = \text{Face value}/(1 + \text{coupon rate})^{\text{N}}$
   $= 500/(1.05)^{10} = \$306.96$

7. C is correct. FV = 100; PMT = 0; 1/Y = 15/2 = 7.5; N = 20 * 2 = 40; CPT PV = $5.54.

8. A is correct. A bond is priced at premium when the coupon rate is greater than the market discount rate. A bond is priced at discount when the coupon rate is less than the market discount rate.

9. B is correct. If coupon rate is equal to market discount rate, the bond is priced at par. If coupon rate is more than the market discount rate, the bond is priced at a premium. If coupon rate is less than the market discount rate, the bond is priced at discount.

10. B is correct. The price-yield relationship for an option-free bond is a convex relationship.

11. C is correct. When the coupon rate is greater than the market discount rate, the bond is priced at a premium above par value.

12. A is correct. Assuming that the discount rate does not change, a bond's value:
    - decreases over time if the bond is selling at a premium.
    - increases over time if the bond is selling at a discount.
    - is unchanged if the bond is selling at par value.

13. B is correct. All else equal, the longer the term to maturity the greater the price volatility.

14. B is correct. All else equal, the lower the coupon rate, the greater the price volatility.

15. A is correct. The yield to maturity is known as implied market discount rate, and not implied coupon rate. It can also be called yield to redemption or the internal rate of return.

16. A is correct.

    $$\text{Price of zero coupon bond} = \frac{100}{(1+\mathrm{r})^{\mathrm{N}}} = \frac{100}{(1+0.035)^{12}} = \$66.2$$

17. B is correct. According to coupon effect, a higher coupon bond has a smaller percentage price change than a lower coupon bond when the market discount rates change by the same amount. According to the maturity effect, a shorter term bond generally has a smaller percentage price change than a longer term bond when the market discount rates change by the same amount. Therefore, Bond B will experience a smaller change than Bond A (coupon effect) and a smaller change than Bond C (maturity effect).

18. B is correct.
    FV = S$100, PV = -S$104.8, PMT = S$2.4, N = 3, CPT 1/Y. I/Y = 0.775%

19. C is correct.

    $$\mathrm{PV} = \frac{\mathrm{FV}}{(1+\mathrm{r})^{\mathrm{N}}} = \frac{100}{(1+\mathrm{r})^{12*4}}$$

    $$80 = \frac{100}{(1+\mathrm{r})^{12*4}}$$

    r = 1.00466 - 1 = 0.00466
    Annual r = 0.00466 * 12 = 5.59%

20. C is correct. The true yield is lower than the street convention because weekends and holidays delay the time to payment.

21. B is correct. A is incorrect because the lowest of the sequence of yields-to-call and yields-to maturity is known as the yield-to-worst. C is incorrect because the value of an embedded call option is added to the flat price of bond to get the option-adjusted price.

22. C is correct. Statement I is correct. Statement II is incorrect because for the same coupon rate, a longer term bond has a greater percentage price change than a shorter term bond if the market discount rates change by the same amount. Statement III is incorrect because for the same time-to-maturity, a lower coupon bond has a greater percentage price change than a higher coupon bond when market discount rates change by the same amount.

23. B is correct. For a greater yield to maturity for Bond A, it should be illiquid in comparison to Bond B.

24. A is correct. Using a financial calculator, calculate YTM as:

    N = 30, PV = ($12,523), PMT = $500, FV = $10,000, CPT I/Y = 3.61%.

25. A is correct. Statement 1 is correct. The percentage decrease in the price of a bond for a given increase in yield is smaller than the percentage increase in the price of a bond when yield decreases by same amount.

26. C is correct. The relationship between bond prices and market discount rate is not linear. The percentage price change is greater in absolute value when the market discount rate goes down than when it goes up by the same amount (the convexity effect). If a 100 basis point increase in the market discount rate will cause the price of the bond to decrease by 2%, then a 100 basis point decrease in the market discount rate will cause the price of the bond to increase by an amount more than 2%.

27. A is correct. Analyst 1 is correct. Constant-yield price trajectory states that the bond price converges to par value as it reaches maturity, if the yield to maturity is constant.

28. B is correct. If the discount rate increases to 6.5% from 4.5%, the price of a bond decreases. At a discount rate of 6.5%, (more than the coupon rate of 5%) the bond sells at a discount to face value. As a discount bond approaches maturity, it will increase in price over time until it reaches par at maturity.

29. A is correct. If the discount rate decreases to 4.5% from 6.5%, the price of a bond increases. At a discount rate of 4.5% (less than the coupon rate of 5%) the bond sells at a premium to face value. As a premium bond approaches maturity, it will decrease in price over time until it reaches par at maturity.

30. C is correct.

$$\text{Price of bond } = \frac{4}{(1.045)^1} + \frac{4}{(1.043)^2} + \frac{104}{(1.0425)^3} \approx \$99.3$$

FV = $100, PV = -$99.3, PMT = $4, N = 3, YTM ≈ 4.25%

31. B is correct.

$$\text{Price} = \frac{4.5}{(1+0.025)^1} + \frac{(104.5)}{(1+0.035)^2} = 4.39 + 97.55 = 101.94$$

32. B is correct.
PV = 102, FV = 100, PMT = 2.5, N = 8 thus 1/Y = 2.22%. Annualized 4.44%

33. B is correct.
PV = 102, FV = 101.5, PMT = 2.5, N = 4, thus 1/Y = 2.33%. Annualized 4.66%

34. C is correct.
PV = 102, FV = 101, PMT = 2.5, N = 6, thus 1/Y = 2.296%. Annualized 4.59%

35. B is correct.

$$\frac{6}{1.02} + \frac{106}{1.03^2} = 105.79$$

36. A is correct.
$$\frac{70}{(1.05)}+\frac{70}{(1.06)^2}+\frac{70}{(1.07)^3}+\frac{70}{(1.08)^4}+\frac{1070}{(1.09)^5}$$
= 66.67 + 62.30 + 57.14 + 51.45 + 695.43
= 932.99

37. C is correct. We first compute the PV of this bond as shown in the question above. Using this information we can calculate the YTM for this bond.
N = 5, PV = ($932.99), PMT = $70, FV = $1000, CPT I/Y = 8.71%

38. C is correct. Note that we have a coupon payment of 3 at end of each period. The final payment at the end of year two is 103 (coupon + par value). Each payment needs to be discounted at the relevant spot rate:
The value of the bond is: $\frac{3}{1+\frac{0.01}{2}}+\frac{3}{\left(1+\frac{.015}{2}\right)^2}+\frac{3}{\left(1+\frac{0.02}{2}\right)^3}+\frac{103}{\left(1+\frac{0.02}{2}\right)^4}$
= 107.83

39. B is correct. Analyst 2 is correct. The approach described by analyst 1 is the traditional approach, not the arbitrage-free approach.

40. C is correct. The value of the bond is:
$$\frac{3}{\left(1+\frac{.01}{2}\right)^1}+\frac{3}{\left(1+\frac{.015}{2}\right)^2}+\frac{3}{\left(1+\frac{.02}{2}\right)^3}+\frac{3}{\left(1+\frac{.0225}{2}\right)^4}+\frac{3}{\left(1+\frac{.0275}{2}\right)^5}+\frac{103}{\left(1+\frac{.035}{2}\right)^6} = 107.34$$

41. B is correct. We first calculate the PV of the bond as of the last coupon payment date and then take its future value on settlement date.
N = 6, I/Y = 3.5%, PMT = 30, FV = $1,000, CPT PV = 973.36
Days between 30th June and 31st December = 184 days
Days between 30th June and 15th September = 77 days
Full price = 973.36 * $(1.035)^{77/184}$ = $987.47

42. A is correct. Based on the given data accrued interest = 30 * (77/184) = $12.55

43. B is correct. Flat price = Full price – accrued interest
= 987.47 – 12.55 = $974.92

44. A is correct. The clean price of a bond is equal to the quoted price as well as flat price.

45. A is correct.
Step 1: Calculate PV on previous coupon date
FV = CHF100, PMT = 2.5, N = 3, I/Y = 4.25/2, therefore PV = CHF101.08
Step 2: Compound forward based on number of days.
PVFull = $101.08 * (1.02125)^{\frac{90}{180}}$ = CHF102.15

46. A is correct.
Step 1:

Calculate Accrued Interest
AI = $\frac{90}{180} *$ 2.5 = CHF1.25
Step 2:
Calculate PVFlat
PVFlat= PVFull – AI = 102.15 – 1.25 = 100.90

47. A is correct. Bond dealers usually quote the flat price to avoid misleading investors about the market price trend for the bond. If the full price were to be quoted by dealers, investors would see the price rise day after day even if the yield-to-maturity did not change. That is because the amount of accrued interest increases each day. Then after the coupon payment is made the quoted price would drop dramatically. Using the flat price for quotation avoids that misrepresentation.

48. B is correct. Accrued interest is not a discounted value it will give us a wrong value of full price if added to the present value.

49. B is correct. Matrix pricing is the method used to estimate the yield to maturity of thinly traded or not traded bonds.

50. C is correct.
    Step 1:
    Calculate YTM on Bonds A and B.
    FV = 100, PV = -106.25, PMT = 3.5, N = 2, CPT I/Y; I/Y = 0.36%
    FV = 100, PV = -104.50, PMT = 3, N = 4, thus 1/Y = 1.82%
    Step 2:
    Calculate average YTM
    Average YTM = $\frac{0.36 + 1.82}{2}$ = 1.09%
    Step 3: Calculate estimated price of illiquid bond
    FV = 100, PMT = 3, N = 3, 1/Y = 1.09%, PV = \$105.6

51. A is correct. Matrix pricing is used to estimate the price of illiquid bonds or bonds that are not traded actively.

52. B is correct. Matrix pricing does not give us precise values; it represents an educated guess.

53. B is correct.

    The spread on 4 year bonds = 3.5 – 2.5 = 1.00%
    The spread on 6 year bonds = 4.75 – 3.00 = 1.75%
    The average spread = $\frac{1.00 + 1.75}{2}$ = 1.375%
    Adding this spread to 5-year U.S. Treasury bond yield
    = 2.75 + 1.375 = 4.125%

54. A is correct. For annual pay bond: (1.03)^2 – 1 = 6.09%
    For quarterly pay bond:

$(1.03)^{0.5} - 1$ = 1.49% and for quarterly basis 1.49 * 4 = 5.96%

55. A is correct. Statement 1 is correct. When interest is not paid on the due date and it is paid on the day after the due date, the yield is called true yield and it is generally lower than the street convention yields.

56. A is correct.

$$\text{Interest payment each period} = \frac{\left((\text{Index} + \text{QM}) * \text{FV}\right)}{\text{m}} = \frac{(0.018 + 0.034) * 100}{2} = 2.603$$

57. C is correct. Money market instruments often are quoted using nonstandard interest rates and require different pricing equations than those used for bonds.

58. A is correct.

$$\text{PV} = \text{FV} * \left[1 - \left(\frac{\text{Days}}{\text{Days in Year}}\right) * \text{Discount Rate}\right]$$

$$\text{PV} = 1{,}000{,}000 * \left[1 - \left(\frac{96}{360}\right) * 0.0275\right] = \$992{,}667$$

59. B is correct.

$$\text{PV} = \frac{\text{FV}}{\left(1 + \frac{\text{Days}}{\text{Year}} * \text{AOR}\right)}$$

$$1{,}000{,}000 = \frac{1{,}250{,}000}{\left(1 + \frac{182}{365} * \text{AOR}\right)}$$

$$\text{AOR} = 50.1\%$$

60. B is correct.

We solve this problem by calculating the bond equivalent yield for each instrument. This is also called the AOR with a 365 day year.

For A, we have the AOR but this is for 360 days. We need the rate assuming a 365 day year. This can be done using a 2-step process:

Step 1: Determine redemption amount

PV = 100, Days = 180, Year = 360, AOR = 0.0544.

$$\text{FV} = 100 + \left[100 * \frac{180}{360}\ 0.0544\right] = 102.72$$

Step 2: Determine bond equivalent yield

$$\text{AOR} = \left(\frac{365}{180}\right) * \left(\frac{102.72 - 100}{100}\right) = 5.52\%$$

For B, we have the discount rate assuming a 360 day year. Convert to AOR with 365 days:

Step 1: Determine price per 100 par value

FV = 100, Days = 180, Year = 360, DR = 0.0545

$$\text{PV} = 100 * \left[1 - \left(\frac{180}{360}\right) * 0.0545\right] = 97.275$$

Step 2: Determine bond equivalent yield

$$AOR = \left(\frac{365}{180}\right) * \left(\frac{100 - 97.275}{97.275}\right) = 5.68\%$$

For C, we have the discount rate assuming a 365 day rate. Convert to AOR with 365 days:

Step 1: Determine price per 100 par value

FV = 100, Days = 180, Year = 365, DR = 0.0546

$$PV = 100 * \left[1 - \left(\frac{180}{365}\right) * 0.0546\right] = 97.31$$

Step 2: Determine bond equivalent yield

$$AOR = \left(\frac{365}{180}\right) * \left(\frac{100 - 97.31}{97.31}\right) = 5.61\%$$

Thus, the highest bond equivalent yield is for Instrument B.

61. A is correct. Coupon rate for this FRN = $\frac{180\text{−day LIBOR + quoted margin}}{2}$
$= \frac{5 + 0.75}{2} = \frac{5.75}{2} = 2.88\%$
Discount rate = $\frac{180\text{−day LIBOR + margin for discount}}{2}$
$= \frac{5 + 0.91}{2} = \frac{5.91}{2} = 2.96\%$
Value of Fixed Rate Note
N = 8, PMT = 28.8, I/Y = 2.96%, FV = $1,000, CPT PV = 994.37

62. A is correct. The add-on interest for 90 day CD is $1.6 * \frac{90}{365}$ = 0.3945%
Maturity value = $5 million $* (1 + 0.003945)$ = $50,19,725.
The BEY is the same as quoted yield as this is quoted on the basis of 365 day a year.

63. A is correct. The most common type of yield curve is the upward sloping yield curve. The longer maturity issues have higher yields than shorter maturity issues.

64. A is correct. The spot zero, or strip curve is a sequence of yields to maturity on zero coupon bonds. However, a par curve is a sequence of yields to maturity such that each bond is priced at par value.

65. C is correct. A spot curve also called a strip curve or zero curve is a yield curve constructed from a sequence of yields-to-maturities on zero coupon bonds.

66. C is correct. A sequence of yields-to maturities such that each bond is priced at par value is called the par curve.

67. A is correct. A forward curve is a series of forward rates, each having the same time frame.

68. A is correct. The forward quote of 5y3y indicates the rate of 3 year loan to be made after 5 years.

69. B is correct. Implied spot rates are geometric average of forward rates.

70. C is correct. 1 year forward rate 2 years from now:

$$(1 + 2y1y) = \frac{(1.09)^3}{(1.05)^2}$$

$$\frac{1.2950}{1.1025} - 1$$

= 17.46%

71. C is correct. Value of the bond:

$$\frac{70}{(1.05)} + \frac{70}{(1.06)(1.05)} + \frac{1070}{(1.05)(1.06)(1.07)}$$

= 66.67 + 62.8931 + 898.4726

= 1028.34

72. A is correct. The four-year spot rate can be computed as:

$Z_4 = [(1.005) * (1.0075) * (1.01) * (1.0125)]^{1/4} – 1 = 0.8746\%$

73. A is correct. I-spread uses interest rate swaps in the same currency and with the same tenure as benchmark.

74. B is correct. The yield spread in basis points over an actual or interpolated government bond is known as the G-spread.

75. A is correct. The spread is affected by micro economic factors. Therefore macroeconomic factors like expected inflation are least likely to effect the spread component of the bond's yield to maturity.

76. C is correct. The constant spread added to each spot rate such that the present value of the cash flows matches the price of the bond is known as the Z-spread.

77. A is correct. OAS = Z-spread – Option value. The option value is positive since the options are a detriment to bondholders.

78. C is correct. OAS = Z-spread – Option value. The option value is negative since the options are a benefit to bondholders.

79. C is correct. Z-spread and option adjusted spread will be one and the same when the bonds do not have any embedded option.

**LO.a: Explain benefits of securitization for economies and financial markets.**

1. Which of the following statements is *most likely* correct?
   Statement 1: Securitization is beneficial for banks because it allows banks to maintain ownership of their securitized assets.
   Statement 2: Securitization is beneficial for banks because it increases the funds available for banks to lend.
   A. Statement 1.
   B. Statement 2.
   C. Neither of them.

2. Securitization is beneficial for investors because it:
   A. provides direct access to mortgages and portfolios of receivables that would be otherwise unattainable.
   B. repackages bank loans into simpler structure.
   C. allows them to choose which borrowers to lend to.

3. Which of the following is *least likely* a benefit of securitization for banks?
   A. It transfers credit risk.
   B. It increases market capital requirements.
   C. It increases funding availability without increasing reserve requirements.

4. Which of the following statements about securitization is least accurate? Due to securitization:
   A. the risk adjusted returns to the ultimate investors can be enhanced.
   B. the profitability of banks can be improved.
   C. the costs paid by borrowers are effectively higher.

**LO.b: Describe securitization, including the parties involved in the process and the roles they play.**

5. In a securitization, the loan servicer is *least likely* responsible for the:
   A. issuance of the asset-backed securities.
   B. collection of payments from the borrowers.
   C. recovery of underlying assets for delinquent loans.

6. In a securitization, the seller of the collateral is called the:
   A. special purpose vehicle (SPV).
   B. originator.
   C. guarantor.

7. A special purpose vehicle (SPV) *most likely*:
   A. sells accounts receivable.
   B. sells asset backed securities.
   C. collects payments from borrowers.

8. Analyst 1: An SPV makes it possible for the asset-backed securities to have a higher credit rating than the parent company.
   Analyst 2: If bankruptcy occurs, SPV can shield its assets from the parent company's creditors.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Both.

**LO.c: Describe typical structures of securitizations, including credit tranching and time tranching.**

9. Analyst 1: Credit tranching allows investors to choose between extension risk and contraction risk.
   Analyst 2: Time tranching allows investors to choose between extension risk and contraction risk.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Neither of them.

10. Credit tranching refers to creating a multi-layered capital structure that has:
    A. fully amortizing and partially amortizing tranches.
    B. recourse and non-recourse tranches.
    C. senior and subordinate tranches.

11. Time tranching helps investors to choose between:
    A. extension risk and credit risk.
    B. contraction risk and credit risk.
    C. extension risk and contraction risk.

**LO.d: Describe types and characteristics of residential mortgage loans that are typically securitized.**

12. Frank Smith obtains a recourse mortgage loan for $300,000. One year later, when the outstanding balance of the mortgage is $290,000, Frank cannot make his mortgage payments and defaults on the loan. The lender forecloses the loan and sells the house for $250,000. What amount is the lender entitled to claim from Frank?
    A. $0.
    B. $40,000.
    C. $50,000.

13. Sean obtains a 10 million GBP mortgage loan from Barclays Bank. Two years later, the principal on the loan is 8 million GBP and Sean defaults on the loan. Barclays Bank forecloses the loan, sells the property for 6 million GBP, and is entitled to collect the shortfall, 2 million GBP, from Sean. Sean *most likely* had a:

A. recourse loan.
B. unsecured loan.
C. non-recourse loan.

14. Maria obtains a non-recourse mortgage loan for PKR 8,000,000. Three year later, when the outstanding balance of the mortgage is PKR 5,000,000, Maria cannot make her mortgage payments and defaults on the loan. The lender forecloses and sells the house for PKR 3,750,000. What amount is the lender entitled to claim from Maria?
A. PKR 0.
B. PKR 1,250,000.
C. PKR 5,000,000.

15. Ali reviews the status of his home mortgage schedule for the month of December 2013:

| **Date** | **Item** | **Balance (GBP)** |
|---|---|---|
| 01 December | Outstanding mortgage loan balance | 700,000 |
| 31 December | Total monthly required payment | 15,000 |
| 31 December | Interest component of total monthly required payment | 3,000 |

On 31 December 2013, Ali makes a payment of GBP 20,000 rather than GBP 15,000. What will be outstanding mortgage loan balance immediately after the payment is made?
A. GBP 680,000.
B. GBP 683,000.
C. GBP 688,000.

16. Taha is an analyst for Adamjee Insurance that invests in residential mortgage pass-through securities. Taha reviews the monthly cash flow of one underlying mortgage pool to determine the cash flow to be passed through to investors:

| | |
|---|---|
| Total principal paid including prepayment | $2,445,000 |
| Scheduled principal to be paid before prepayment | $445,000 |
| Gross coupon interest paid | $3,555,000 |
| Servicing fees | $145,000 |
| Other fees for guaranteeing the issue | $55,000 |

Based on Taha's table, the total cash flow to be passed through to the investors is *closest* to:
A. $5,800,000.
B. $5,855,000.
C. $6,000,000.

17. Charles Dent obtains a non-recourse loan for $200,000. A year later the principal on the loan is $180,000 and Charles defaults on the loan. The lender forecloses and sells the house for $150,000. What amount is the lender entitled to claim from Charles?
A. $0.
B. $30,000.
C. $50,000.

18. A mortgage starts out with a fixed rate and then becomes an adjustable rate after a specified initial term. The mortgage is *most likely* a:

A. rollover mortgage.
B. renegotiable mortgage.
C. hybrid mortgage.

19. Which of the following statements about convertible mortgages is *most accurate*?
    A. The mortgage rate is initially a fixed rate. At some point, the borrower has the option to convert into an adjustable rate for the remainder of the mortgage's life.
    B. The mortgage rate is initially an adjustable rate. At some point, the borrower has the option to convert into a fixed rate for the remainder of the mortgage's life.
    C. The mortgage rate is initially either a fixed rate or an adjustable rate. At some point, the borrower has the option to convert into a fixed rate or an adjustable rate for the remainder of the mortgage's life.

20. Which of the following statements about LTV is *least accurate*?
    A. LTV is the ratio of the property's purchase price to the amount of the mortgage.
    B. Lower the LTV, the more likely the borrower is to default.
    C. Lower the LTV, the more protection the lender has for recovering the amount loaned if the borrower defaults.

**LO.e: Describe types and characteristics of residential mortgage-backed securities, including mortgage pass-through securities and collateralized mortgage obligations, and explain the cash flows and risks for each type.**

21. Analyst 1: Non-agency residential mortgage backed securities consists of a pool of conforming mortgages as collateral.
    Analyst 2: Non-agency residential mortgage backed securities are guaranteed by the appropriate government sponsored enterprise.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

22. Which of the following is an important consideration of non-agency residential mortgage-backed security (RMBS) as compared to an agency RMBS?
    A. Credit risk.
    B. Extension risk.
    C. Contraction risk.

23. Suppose there are three mortgages with respective balances of \$100,000, \$200,000, and \$300,000. The mortgage rates are 6%, 7%, and 8% respectively. The WAC is closest to:
    A. 6.33.
    B. 7.33.
    C. 8.

24. Which of the following is *least likely* an external credit enhancement for an asset backed security?

A. Bond insurance.
B. Letter of credit.
C. Reserve account.

25. Which of the following is not a form of credit enhancement of auto loan-backed securities?
    A. Reserve account.
    B. Overcollateralization.
    C. Under-collateralization.

26. Which of the following statements is correct?
    A. Collateral for auto loan-backed securities are non-amortizing loans.
    B. Collateral for credit card receivable-backed securities are amortizing loans.
    C. Auto loan-backed securities' principal is typically distributed across different bond classes each month.

27. An investor who is willing to accept significant prepayment risk if compensated with a relatively high expected return will *most likely* invest in:
    A. A PAC tranche.
    B. A latter-paying tranche in sequential structure.
    C. Support tranche.

28. Which of the following is *least likely* an internal credit enhancement for an asset backed security?
    A. Excess spread.
    B. Corporate guarantee.
    C. Overcollateralization.

29. Consider a CMO structure with one planned amortization class and one support tranche. The initial PAC collar was 100-250 PSA. If the actual prepayment speed is 50 PSA, the average life of the PAC tranche will:
    A. contract.
    B. extend.
    C. remain the same.

30. Which of the following is *least likely* a feature of a non-agency residential mortgage-backed security (RMBS)?
    A. Overcollateralization.
    B. A pool of conforming mortgages as collateral.
    C. Senior/subordinated structure.

31. Which of the following statements about the planned amortization class (PAC) structure is *least accurate*?
    A. Support tranches are exposed to high levels of credit risk.
    B. Support tranches provide prepayment protection to the PAC tranches.
    C. If prepayments are too low to maintain the PAC schedule, the shortfall is provided by the support tranche.

32. Consider a CMO with three sequential pay tranches A, B, and C. The average lives for the tranches are 4.6, 10.3, and 15.0 years respectively under a 150 PSA assumption. An investor concerned about extension risk is *most likely* to invest in:
    A. tranche A.
    B. tranche B.
    C. tranche C.

33. Consider a CMO structure with one planned amortization class and one support tranche. The initial PAC collar was 150-250 PSA. If the actual prepayment speed is 100 PSA, the average life of the PAC tranche will:
    A. contract.
    B. extend.
    C. remain the same.

34. Analyst 1: Although the collateral pays a fixed rate, it is possible to create a CMO with a floating rate tranche.
    Analyst 2: We can create a CMO with a floating rate tranche, only with collateral that pays floating rate.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

35. Consider a CMO with three sequential pay tranches A, B and C. The average lives for the tranches are 4.6, 10.3, and 15.0 years respectively under a 150 PSA assumption. An investor concerned about contraction risk is *most likely* to invest in:
    A. tranche A.
    B. tranche B.
    C. tranche C.

**LO.f: Define prepayment risk and describe the prepayment risk of mortgage-backed securities.**

36. A conditional prepayment rate (CPR) of 6% means that approximately 6% of the outstanding mortgage pool balance at the beginning of this year will be prepaid:
    A. in the current month.
    B. by the end of the year.
    C. over the life of the mortgages.

37. In the context of mortgage-backed securities, a conditional prepayment rate of 10% means that approximately 10% of an outstanding mortgage pool balance at the beginning of the year will be prepaid:
    A. by the end of the year.
    B. by the end of the month.
    C. over the life of the mortgage.

38. A PSA assumption of 150 PSA means that:
    A. prepayments are slower than the benchmark.
    B. prepayments are faster than the benchmark.
    C. prepayments are equal to the benchmark.

39. Which of the following statements best describes the relationship between CPR and SMM?
    A. SMM deals with the expected prepayment rate while CPR is a measure for the actual prepayment rate.
    B. SMM is a measure of prepayment risk while CPR is a measure of credit risk.
    C. CPR is an annualized version of SMM.

40. Which of the following statements about contraction and extension risks is *most accurate*?
    A. Contraction risk increases when interest rates fall and extension risk increases when interest rates rise.
    B. Contraction risk increases when interest rates rise and extension risk increases when interest rates fall.
    C. Contraction risk decreases when interest rate fall and extension risk decreases when interest rates rise.

41. The principal balance of a pool is $10 million and $100,000 is scheduled to be repaid in a given month. The SMM is 0.93%. The forecasted prepayment amount for the month is *closest* to:
    A. $930.
    B. $92,070.
    C. $93,000.

42. The average life of a MBS is more relevant than the security's final maturity because it represents the average time to receipt of:
    A. scheduled principal payments.
    B. expected prepayments.
    C. both expected prepayments and scheduled principal payments.

**LO.g: Describe characteristics and risks of commercial mortgage-backed securities.**

43. Analyst 1: Commercial mortgage-backed security (CMBS) loans typically have greater call protection than residential MBS loans because they are usually smaller-dollar sized loans and hence are not refinanced when interest rates fall.
    Analyst 2: Commercial mortgage-backed security (CMBS) loans typically have greater call protection than residential MBS loans because commercial mortgages may have yield maintenance charges.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

44. In the United States a commercial loan is usually a:
    A. recourse loan.
    B. non-recourse loan.
    C. credit risk-free loan.

45. In a mortgage pass-through security, which of the following has a direct relation with interest rates?
    A. Credit risk.
    B. Extension risk.
    C. Liquidity risk.

46. Which of the following is *least likely* a key indicator of potential credit performance of a commercial mortgage-backed security (CMBS)?
    A. Loan-to-value ratio.
    B. Debt-to-service-coverage.
    C. Value-to-service-coverage.

47. The balloon risk in a CMBS can be best described as a type of:
    A. extension risk.
    B. contraction risk.
    C. interest rate risk.

48. Under the defeasance mechanism of a commercial mortgage, a borrower:
    A. is prohibited from making prepayments during a specified period of time.
    B. is required to pay a 'make-whole charge' penalty if he refinances the loan to get a lower mortgage rate.
    C. provides sufficient funds for the servicer to invest in a portfolio of government securities that replicates the cash flows that would exist in the absence of prepayments.

**LO.h: Describe types and characteristics of non-mortgage asset-backed securities, including the cash flows and risks of each type.**

49. If a credit card receivables asset backed security (ABS) has a lock-out feature:
    A. no investors may sell the ABS for a certain period of time.
    B. no payments are made to the ABS investor for a certain period of time.
    C. no principal payments are made to the ABS investor for a certain period of time.

50. In a credit card receivable asset backed securities (ABS) cash flows paid to security holders is based on:
    A. finance charges collected and fees.
    B. finance charges collected only.
    C. fees only.

51. Jane Smith is seeking to purchase an ABS backed by automobile loans. However, Jane is extremely concerned about prepayment risk. Which of the following factors should *least concern* Jane?

A. Insurance payoffs.
B. Loan refinancing.
C. Trade-ins.

**LO.i: Describe collateralized debt obligations, including their cash flows and risks.**

52. In an arbitrage CDO structure, is the collateral manager required to actively manage the debt obligations?
    A. Yes.
    B. No.
    C. It depends on what type of CDO structure we are creating.

53. Interest rate swaps are required in CDOs because:
    A. cash flows are mismatched.
    B. the subordinated tranche investors have credit risk.
    C. the equity tranche investors have credit risk.

54. A CDO be *best* described as:
    A. a security backed by a specific type of debt obligation.
    B. a security backed by debt and equity instruments.
    C. a security backed by a pool of one or more debt obligations.

## Solutions

1. B is correct. Securitization allows banks to remove assets from their balance sheet, therefore increasing the pool of available capital that can be loaned out.

2. A is correct. Securitization is beneficial for investors because it provides direct access to mortgages and portfolios of receivables that would be otherwise unattainable.

3. B is correct. The benefits of securitization include transfer of credit risk, increased funding availability without increasing reserve requirements, and automatically decreased market capital requirements.

4. C is correct. Because of securitization, the costs paid by borrowers can be effectively reduced.

5. A is correct. In a securitization, the special purpose vehicle (SPV) is responsible for the issuance of the asset backed securities.

6. B is correct. In a securitization, the seller of the collateral is called the originator.

7. B is correct. Special purpose vehicles (SPV) sell asset backed securities. The originator sells assets (receivables) to the SPV for cash. The servicer is responsible for the collection of payments from the borrowers.

8. C is correct. Both statements are correct.

9. B is correct. Time tranching or prepayment tranching allows investors to choose between extension risk and contraction risk.

10. C is correct. Credit tranching refers to creating a multi-layered capital structure that has senior and subordinate tranches.

11. C is correct. Time tranching helps investors in choosing between extension risk and contraction risk.

12. B is correct. In a recourse loan, the lender is entitled to claim the shortfall between the mortgage balance outstanding and the proceeds received from the sale of the property. i.e. 290,000 – 250,000 = 40,000.

13. A is correct. Barclays Bank has a claim against Sean for the shortfall between the amount of the mortgage balance outstanding and the proceeds received from the sale of the property. This indicates that the mortgage loan is a recourse loan. If Sean had a non-recourse loan, the bank would have only been entitled to the proceeds from the sale of the underlying property.

14. A is correct. For a non-recourse loan, the bank can only look to the underlying property to recover the outstanding mortgage balance and has no further claim against the borrower. The bank is simply entitled to foreclose on the home and sell it.

15. B is correct. The difference between the GBP 15,000 monthly mortgage payment and the GBP 3,000 portion of the payment that represents interest equals GBP 12,000, which is the amount of the total required payment applied to reduce the outstanding mortgage balance. In addition, a payment made in excess of the monthly mortgage payment is called a prepayment. The prepayment of GBP 5,000 is a partial pay down of the mortgage balance. The outstanding mortgage balance after the GBP 20,000 payment is the mortgage balance of GBP 700,000 – GBP 12,000 – GBP 5,000 = $683,000.

16. A is correct. The total cash flow to be received by the investors is as follows:

    Total principal + gross coupon interest - less servicing and other fees = $2,445,000 + $3,555,000 – $145,000 – $55,000 = $5,800,000.

17. A is correct. In a non-recourse loan, the lender can only look to the underlying property to recover the outstanding mortgage balance and has no further claim against the borrower.

18. C is correct. When the mortgage starts out with a fixed rate and then becomes an adjustable rate after a specified initial term, the mortgage is referred to as a hybrid mortgage. If the mortgage rate is fixed for some initial period and is then adjusted to a new fixed rate, the mortgage is referred to as a rollover or renegotiable mortgage.

19. C is correct. In a convertible mortgage, the mortgage rate is initially either a fixed rate or an adjustable rate. At some point, the borrower has the option to convert into a fixed rate or an adjustable rate for the remainder of the mortgage’s life.

20. B is correct. Lower the LTV, the less likely the borrower is to default.

21. C is correct. Agency residential mortgage backed securities consists of a pool of conforming mortgages as collateral. Agency residential mortgage backed securities are guaranteed by the appropriate government sponsored enterprise.

22. A is correct. Credit risk is an important consideration of non-agency residential mortgage-backed security (RMBS) as compared to an agency RMBS.

23. B is correct. Weighted average coupon = $\frac{100}{600} * 6\% + \frac{200}{600} * 7\% + \frac{300}{600} * 8\%$ = 7.33.

24. C is correct. A reserve account is an internal credit enhancement.

25. C is correct. Under-collateralization is not a form of credit enhancement of auto loan-backed securities.

26. C is correct. The collateral for credit card receivable-backed securities are non-amortizing loans, whereas the collateral for auto loan-backed securities are amortizing loans. Auto loan-backed securities' principal is typically distributed across different bond classes each month.

27. C is correct. The prepayment risk is first absorbed by the support tranche before affecting the PAC tranche. For this reason, a support tranche has high prepayment risk and therefore a higher expected rate of return.

28. B is correct. Corporate guarantee is an external credit enhancement.

29. B is correct. If the actual PSA rate is slower than the lower collar of the PAC, the average life of the PAC tranche will extend.

30. B is correct. Conforming mortgages are used as collateral for agency mortgage pass-through securities. Non-agency RMBS are credit enhanced, either internally or externally, to attract investors. The most common forms of internal credit enhancements are senior/subordinated structures and overcollateralization.

31. A is correct. Support tranches are exposed to high levels of prepayment risk not credit risk.

32. A is correct. In this structure tranches B and C provide protection against extension risk to Tranche A.

33. B is correct. If the actual PSA rate is lower than the lower collar of the PAC, the average life of the PAC tranche will extend.

34. A is correct. Although the collateral pays a fixed rate, it is possible to create a CMO with a floating rate tranche. This is done by constructing a floater and an inverse floater combination.

35. C is correct. In this structure tranches A and B provide protection against contraction risk to Tranche C.

36. B is correct. The CPR is an annual prepayment rate.

37. A is correct. A conditional prepayment rate (CPR) is an annualized rate which indicates the percentage of the mortgage balance at the beginning of the year which is expected to be prepaid by the end of the year.

38. B is correct. The benchmark is said to be 100 PSA, anything over 100 PSA means that prepayments are assumed to be faster than the benchmark.

39. C is correct. CPR is an annualized version of SMM. The other statements are incorrect.

40. A is correct. Contraction risk increases when interest rates fall and extension risk increases when interest rates rise.

41. B is correct. Prepayment = SMM * (Beginning balance – Scheduled principal repayment) = 0.93% * (10,000,000 – 100,000) = 92,070.

42. C is correct. The average life of a MBS is more relevant than the security's final maturity because it represents the average time to receipt of both expected prepayments and scheduled principal payments.

43. B is correct. The call protection in CMBS at the loan level is achieved through four mechanisms: prepayment lockouts, prepayment penalty points, yield maintenance charges, and defeasance. CMBS are not typically smaller sized loans.

44. B is correct. In the United States and other countries, commercial mortgage loans are usually non-recourse loans.

45. B is correct. When interest rate increases, extension risk increases because there will be fewer prepayments. This shows that interest rate has a direct relation with extension risk.

46. C is correct. Two measures that have been found to be key indicators of potential credit performance of a commercial mortgage-backed security (CMBS) are the loan-to-value ratio (LTV), and the debt-to-service-coverage (DSC) ratio.

47. A is correct. Balloon risk refers to the risk that a borrower will not be able to make the balloon payment when due. Since the term of the loan will be extended by the lender during the workout period, balloon risk is a type of extension risk.

48. C is correct. Under the defeasance mechanism of a commercial mortgage a borrower provides sufficient funds for the servicer to invest in a portfolio of government securities that replicates the cash flows that would exist in the absence of prepayments.

49. C is correct. If a credit card receivables asset backed security (ABS) has a lock-out feature no principal payments are made to the investor, instead the principal repayments are reinvested in new receivables.

50. A is correct. The cash flow is paid from finance charges collected and fees.

51. B is correct. Refinancing of automobile loans is a low probability event due to the short maturity of the loans.

52. A is correct. In an arbitrage CDO, a CDO manager buys and sells debt obligations in order to pay off the holders of the bond classes and to generate an attractive return for the equity tranche and for the manager.

53. A is correct. Interest rate swaps are required because the cash inflows from floating or fixed rate assets are mismatched with the cash outflows to floating rate tranches.

54. C is correct. A CDO is a security backed by a diversified pool of one or more debt obligations.

**LO.a: Calculate and interpret the sources of return from investing in a fixed-rate bond.**

1. Mr. Harris is a buy-and-hold investor who mainly deals in fixed income securities. What will be the *most likely* impact on the returns of his fixed income portfolio, if the market interest rates are lower in future?
   A. Returns will not change.
   B. Returns will be higher.
   C. Returns will be lower.

2. Which of the following is *least likely* to be an assumption for the concept that the yield to maturity at the time of purchase measures the investor's rate of return?
   A. The investor holds the bond to maturity.
   B. The investor does not default.
   C. The investor reinvests the coupon interest payments at varying interest rates.

3. If a bond, bought at a discount, is held to maturity; which of the following is *least likely* to be incorporated for the total return calculation?
   A. Capital gains earned.
   B. Coupon payments reinvested.
   C. Principal repaid.

4. A & B are two identical bonds except for their coupon rates. The bond that will have the lowest interest rate risk *most likely* has the:
   A. lowest coupon rate.
   B. highest coupon rate.
   C. coupon rate significantly different from YTM.

5. An investor purchased 9% annual pay bond with maturity of 3 years and face value of $1,000 at the current market price of $1,025.78. The investor plans to hold the bond till maturity. What is the expected annualized holding period return? What is the future value of reinvested coupons?
   A. 7%, 290.45.
   B. 8%, 292.18.
   C. 10%, 291.45.

6. A horizon yield is the internal rate of return between the total return and the:
   A. purchase price of the bond.
   B. redemption price of the bond.
   C. capital gain on the bond.

7. Bond A has a maturity of 8 years. Bond B has a maturity of 4 years. All else equal:
   A. bond A will have higher reinvestment risk.
   B. bond B will have higher reinvestment risk.
   C. both bonds will have the same reinvestment risk.

8. Bond A has a coupon rate of 10%. Bond B has a coupon rate of 5%. All else equal:

A. bond A will have higher reinvestment risk.
B. bond B will have higher reinvestment risk.
C. both bonds will have the same reinvestment risk.

9. Holding all other characteristics the same, the bond exposed to the lowest level of reinvestment risk is *most likely* the one selling at:
   A. par.
   B. premium.
   C. discount.

10. Analyst 1: If the investment horizon is short, reinvestment risk will dominate the market price risk.
    Analyst 2: If the investment horizon is short, market price risk will dominate the reinvestment risk.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

11. Investor A is a long-term bond investor. Investor B is a short-term bond investor. If the market interest rates are lower in future:
    A. investor A will gain the most.
    B. investor B will gain the most.
    C. both investors will have similar gains.

12. Miss Williamson is long term investor. She recently purchased a 10-year, 8% annual coupon payment bond and plans to hold it till maturity. What will be the *most likely* impact on the returns of this bond, if the market interest rates are higher in future?
    A. Return will be lower.
    B. Return will not change.
    C. Return will be higher.

**LO.b: Define, calculate, and interpret Macaulay, modified, and effective durations.**

13. A fixed-income security's current price is $102.50. The manager estimates that the price will rise to $104.25 if interest rates decrease by 0.50% or fall to $101.25 if interest rates increase by 0.5%. The security's effective duration is *closest* to:
    A. 2.93%.
    B. 3.00%.
    C. 29.3%.

14. A bond with a par value of $1,000 matures in 12 years with a coupon of 12% paid semiannually; it is priced to yield 13% and has a modified duration of 8.50. If the yield of the bond declines by 0.5%, the approximate percentage price change for the bond is *closest* to:
    A. -4.25%.
    B. 4.25%.

C. 8.50%.

15. Consider a 7% coupon bond with annual payments and a maturity of 4 years. The face value of the bond is $1,000 and the current market yield is 6%. The Macaulay duration for this bond is *closest* to:
    A. 3.1563.
    B. 3.7954.
    C. 3.6314.

16. Which of the following is *most likely* to be incorrect about investment horizon, Macaulay duration, and interest rate risk?
    A. When the investment horizon is greater than the Macaulay duration of a bond, coupon reinvestment risk dominates the market price risk.
    B. When the investment horizon is less than the Macaulay duration of a bond, the investor's risk is to lower interest rates.
    C. When the investment horizon risk is equal to the Macaulay duration of a bond, the coupon reinvestment risk offsets market price risk.

17. Which of the following is *least likely* to be a type of bond duration?
    A. Curve.
    B. Spot.
    C. Yield.

18. Given that the Macaulay duration of an 8% annual payment bond with a 7% yield is 6.5, which of the following is *most likely* to be the modified duration?
    A. 6.02.
    B. 6.07.
    C. 7.00.

19. Owing to a yield change of 50 bps, the price of the bond increases and decreases to $102.86 and $101.31. Given that the current price of the bond is $102.00, which of the following is *most likely* to be the approximate modified duration?
    A. 1.02.
    B. 1.52.
    C. 3.04.

20. Which of the following is *least likely* to be used for the calculation of effective duration?
    A. Change in bond's yield to maturity.
    B. Change in benchmark yield curve.
    C. Original price of the bond.

21. An investor wants to see how bond prices move with small changes in yield. The measure he will *most likely* use is:

A. Macaulay duration.
B. modified duration.
C. accelerated duration.

22. A bond is purchased at a price above par value. The carrying value of this bond will *most likely* be equivalent to the purchase price:
A. minus the amortized amount of the premium.
B. plus the amortized amount of the premium.
C. minus the amortized amount of the discount.

23. A 10 year bond with face value of $10,000 and 6% annual coupon is currently trading at par. If the yield decreased by 20 basis points the price would increase to $10,148.61. If the yield increased by 20 basis points the price would decrease to $9,854.18. What is the approximate modified duration of this bond?
A. 6.36.
B. 7.36.
C. 8.36.

24. Analyst 1: Yield duration statistics measure the sensitivity of a bond's full price to the bond's own yield to maturity.
Analyst 2: Curve duration statistics measure the sensitivity of a bond's full price to the benchmark yield curve.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Both.

25. A bond with a Macaulay duration of 10 years, a yield to maturity of 8% and semiannual payments will have a modified duration of:
A. 8.45 years.
B. 9.62 years.
C. 10 years.

26. Which of the following statements about duration is incorrect? A bond's:
A. effective duration is a measure of curve duration.
B. modified duration is a measure of yield duration.
C. Macaulay duration cannot be larger than its modified duration.

27. Analyst 1: Modified duration is useful and accurate for small changes in yield but it is not useful and accurate for larger changes in yield.
Analyst 2: Modified duration is useful and accurate for large changes in yield but it is not useful and accurate for small changes in yield.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither of them.

**LO.c: Explain why effective duration is the most appropriate measure of interest rate risk for bonds with embedded options.**

28. A measure that is *most* appropriate to price bonds with embedded options is:
    A. modified duration.
    B. Macaulay duration.
    C. effective duration.

29. Analyst 1: In general, the modified duration and effective duration of a traditional option-free bond are identical.
    Analyst 2: In general, the modified duration and effective duration of a traditional option free bond are not identical.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

30. Which of the following statements is *least accurate*?
    A. Effective duration is the appropriate duration measure for a callable bond.
    B. The duration of a callable bond is the sensitivity of the bond price to change in the yield-to-worst.
    C. A callable bond does not have a well-defined internal rate of return, hence modified and Macaulay duration cannot be used.

**LO.d: Define key rate duration and describe the key use of key rate durations in measuring the sensitivity of bonds to changes in the shape of the benchmark yield curve.**

31. Analyst 1: The interest rate risk is the sensitivity of a bond to parallel shifts of the yield curve. The yield curve risk is a bond's sensitivity to changes in the shape of the yield curve.
    Analyst 2: The yield curve risk is the sensitivity of a bond to parallel shifts of the yield curve. The interest rate risk is a bond's sensitivity to changes in the shape of the yield curve.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

32. A bond duration is a measure of the sensitivity of:
    A. a bond's full price excluding accrued interest to a change in interest rate.
    B. a bond's full price including accrued interest to a change in interest rate.
    C. a bond's full price to a change in time to maturity.

33. The sensitivity of bond to changes in a single spot rate, holding all other spot rates constant is:
    A. effective duration.
    B. modified duration.

C. key rate duration.

**LO.e: Explain how a bond's maturity, coupon, and yield level affect its interest rate risk.**

34. A zero coupon bond with a time to maturity of 5 years has an YTM of 8%. Its Macaulay duration is:
    A. 5 years.
    B. 8 years.
    C. cannot be determined.

35. As interest rates go up, the future value of reinvested coupon payments:
    A. decreases.
    B. increases.
    C. remains unchanged.

36. Which of the following is *most likely* to reduce a duration measure? Assume that a premium bond is being considered.
    A. Lower coupon rate.
    B. Lower yield to maturity.
    C. Shorter time to maturity.

37. For a single coupon bond with constant yield as time passes during the coupon period,:
    A. Macaulay duration rises steadily until a coupon payment results in a downwards jump.
    B. Macaulay duration declines steadily until a coupon payment results in an upwards jump.
    C. Macaulay duration is a flat line.

38. The plot of Macaulay duration against time of a perpetual bond:
    A. is upward sloping.
    B. is downward sloping.
    C. is flat.

39. Bond A has a coupon rate of 8%. Bond B has a coupon rate of 5%. All else equal:
    A. bond A will have the higher Macaulay duration.
    B. bond B will have the higher Macaulay duration.
    C. both bonds will have the same Macaulay duration.

40. Bond A has a yield to maturity of 5%. Bond B has a yield to maturity of 7%. All else equal:
    A. bond A will have the higher Macaulay duration.
    B. bond B will have the higher Macaulay duration.
    C. both bonds will have the same Macaulay duration.

41. Analyst 1: Time-to-maturity and Macaulay duration are usually positively related.
    Analyst 2: Time-to-maturity and Macaulay duration are usually negatively related.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.

C. Neither of them.

**LO.f: Calculate the duration of a portfolio and explain the limitations of portfolio duration.**

42. Which of the following is *not* a limitation of weighted average duration as a measure of portfolio interest rate risk? Duration:
    A. changes over time.
    B. is just an approximation.
    C. assumes a non-parallel shift in the yield curve.

43. A portfolio manager holds the following three bonds, which are option free and have the indicated durations.

| Bond | Par Value Owned | Market Value Owned | Duration |
|---|---|---|---|
| 1 | ₹ 4,000,000 | ₹ 6,000,000 | 3 |
| 2 | ₹ 3,000,000 | ₹ 2,000,000 | 5 |
| 3 | ₹ 2,000,000 | ₹ 4,000,000 | 7 |

The portfolio's duration is *closest* to:
    A. 3.5.
    B. 4.6.
    C. 6.5.

44. An investor has three bonds in his portfolio. Bond A has a market value of $250,000 and duration of 9. Bond B has market value of $190,000 and duration of 10. Bond C has market value of $300,500 and duration of 7. The portfolio duration for this investor is *closest* to:
    A. 8.445.
    B. 7.445.
    C. 9.445.

45. Which of the following is *not* a way to calculate the duration of a bond portfolio?
    A. Weighted average of the time to receipt of the aggregate cash flows.
    B. Weighted average of the time to maturity of the individual bonds.
    C. Weighted average of the durations of the individual bonds.

46. Analyst 1: The 'weighted average of the durations of individual bonds' method to calculate portfolio duration is simple to use and quite accurate when the yield curve is flat.
    Analyst 2: The main limitation of the 'weighted average of the durations of individual bonds' method to calculate portfolio duration is that it assumes a parallel shift in the yield curve.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

47. The following table provides information about a portfolio of three bonds:

| Bond | Par Value | Price | Maturity | Duration |
|---|---|---|---|---|
| A | PKR 320 million | PKR 105 | 15 | 10 |

| | | | | |
|---|---|---|---|---|
| B | PKR 160 million | PKR 103 | 12 | 8 |
| C | PKR 180 million | PKR 98 | 10 | 7 |

Based on this information, the duration of the portfolio is *closest* to:
A. 9.69.
B. 8.73.
C. 12.97.

48. Which of the following is *not* a limitation of the 'weighted average of the time to receipt of aggregate cash flow' approach to calculate portfolio duration?
A. This method cannot be used for bonds with embedded options.
B. The change in cash flow yield is not necessarily the same as the change in the yields to maturity on the individual bonds.
C. Interest rate risk is usually expressed as a change in the cash flow yield.

**LO.g: Calculate and interpret the money duration of a bond and price value of a basis point (PVBP).**

49. The price value of a basis point is an estimate of a change in the full price of the bond given a:
A. 1 bp change in the coupon rate.
B. 1 bp change in the price of the bond.
C. 1 bp change in the yield to maturity.

50. A bond has a coupon of 7%, market value of $3.5 million, maturity of 8 years, modified duration of 6.3, and a full price of $103.25, per $100 of face value. The money duration of the bond is *closest* to:
A. $650.47.
B. $50.4.
C. $722.75.

51. The following table shows details for a bond.

| Par | PVFlat | PVFull | ModDur | EffDur |
|---|---|---|---|---|
| $100 | $101 | $104 | 7.44 | 7.39 |

Which of the following is *most likely* to be the approximate money duration (MoneyDur) of the bond?
A. 751.
B. 769.
C. 774.

52. The money duration of a bond is $200,000. If the yield increases by 20 basis points, the change in price of the bond will be *closest* to:
A. -$40,000.
B. -$400.
C. -$4,000.

53. A bond with exactly six years remaining until maturity offers a 2% coupon rate with annual coupons. The bond, with a yield to maturity of 4% is priced at $89.5157 per 100 of par value. The estimated price value of a basis point for the bond is *closest* to:
    A. 0.142.
    B. 0.086.
    C. 0.049.

**LO.h: Calculate and interpret approximate convexity and distinguish between approximate and effective convexity.**

54. If we ignore convexity and estimate bond prices considering duration only, we will get an estimated value:
    A. higher than actual prices.
    B. lower than actual prices.
    C. equal to actual prices.

55. A bond is currently trading for £104.50 per £100 of par value. If the bond's yield to maturity falls by 50 bps, the bond's full price is expected to rise to £106.50. If the bond's yield to maturity rises by 50 bps, the bond's full price is expected to fall to £103.25. The bond's approximate convexity is *closest* to:
    A. 2.87.
    B. 28.70.
    C. 287.08.

56. A bond is trading at 134.6722. If the bond’s YTM falls by 20 basis points he bond’s full price is expected to rise to 137.5888. If the bond’s YTM rises by 20 basis points the bond’s full price is expected to fall to 131.8439. The approximate convexity of the bond is *closest* to:
    A. 69.05.
    B. 163.92.
    C. 187.58.

57. Owing to a yield change of 50 bps, the price of the bond increases and decreases to $102.86 and $101.31. Given that the current price of the bond is $102.00, which of the following is *most likely* to be the approximate convexity?
    A. 61.
    B. 67.
    C. 72.

58. Which of the following factors is considered an additional factor that effects the convexity but not the duration of a bond?
    A. Coupon rate volatility.
    B. Dispersion of cash flows.
    C. Time to maturity.

59. Which of the following bonds is *least likely* to have negative convexity?

A. All bonds with embedded options.
B. Only callable bonds.
C. Only putable bonds.

60. An analyst wants to find convexity of bonds with call and put options. The *most* appropriate measure to use for this purpose is:
A. modified convexity.
B. Macaulay convexity.
C. effective convexity.

61. Analyst 1: The first order effect on a bond's percentage price change given a change in yield-to-maturity can be best described as convexity.
Analyst 2: The second order effect on a bond's percentage price change given a change in yield-to-maturity can be best described as duration.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither of them.

**LO.i: Estimate the percentage price change of a bond for a specified change in yield, given the bond's approximate duration and convexity.**

62. The duration and convexity of an option-free bond priced at $95.50 are 7.50 and 98, respectively. If yields increase by 150 bps, the percentage change of the price is *closest* to:
A. -9.04%.
B. -10.14%.
C. -12.75%.

63. A bond has an annual modified duration of 6.12 and annual convexity of 88.910. If the bond's yield to maturity increase by 50 basis points, the expected percentage price change is *closest* to:
A. -3.06%.
B. -2.94%.
C. -2.78%.

64. If the annual modified duration is 6.883 and annual convexity is 56.290, which of the following is *most likely* to be the expected percentage price change if the bond's yield to maturity is expected to increase by 50 basis points?
A. – 3.44%
B. – 3.37%
C. – 1.07%

65. A bond has an annual modified duration of 6.12 and annual convexity of 88.910. If the bond's yield to maturity decreases by 20 basis points, the expected percentage price change is *closest* to:
A. 1.22%.

B. 1.78%.
C. 1.24%.

66. A bond is currently trading at 1030. The coupon rate is 7% and the YTM is 6%. The duration of bond is 7.59 and the convexity of the bond is 55.63. The percentage change in price of bond considering 20 basis points increase in YTM is *closest* to:
A. -1.5069 %.
B. 2.50669 %.
C. -1.2563 %.

67. Analyst 1: Convexity improves the estimate of change in price of bonds with negative convexity. However, it has little value for bonds with positive convexity.
Analyst 2: Convexity improves the estimate of a change in price of bonds with positive convexity. However it has little value for bonds with negative convexity.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither of them.

**LO.j: Describe how the term structure of yield volatility affects the interest rate risk of a bond.**

68. Analyst 1: Volatility of a bond's price depends on the volatility of bond's yield and the volatility of the currency rates.
Analyst 2: Volatility of bond's price depends on the sensitivity of the bond's price to a given change in yield and the volatility of the bond's yield.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither of them.

69. If the term structure of yield volatility is upward sloping then:
A. long term rates are higher than short-term rates.
B. short-term yields are more stable than long-term yields.
C. long term bonds will always experience greater price fluctuation than short term bonds.

**LO.k: Describe the relationships among a bond's holding period return, its duration, and the investment horizon.**

70. When an investor's horizon is equal to Macaulay duration of the bond he owns:
A. the investor is hedged against interest rate risk.
B. reinvestment risk dominates, and the investor is at risk of lower rates.
C. market price risk dominates and the investor is at risk of higher rates.

71. An investor purchases an annual coupon bond with a 5% coupon rate and 10 years remaining until maturity. The investor's investment horizon is three years. The Macaulay duration of the bond is 7.52 years. The duration gap at the time of purchase is *closest* to:
    A. -4.52 years.
    B. 4.52 years.
    C. 0 years.

72. Which of the following statements is *most accurate*?
    A. A positive duration gap results in exposure to market price risk. The investor risk is to higher interest rates.
    B. A positive duration gap results in exposure to reinvestment risk. The investor risk is to lower interest rates.
    C. A positive duration gap results in exposure to market price risk. The investor risk is to lower interest rates.

**LO.l: Explain how changes in credit spread and liquidity affect yield-to-maturity of a bond and how duration and convexity can be used to estimate the price effect of the changes.**

73. What are the two major components of a bond's spread over the benchmark curve?
    A. Premium for credit risk and premium for market price risk.
    B. Premium for market price risk and premium for reinvestment risk.
    C. Premium for credit risk and premium for liquidity risk.

74. Due to downgrading of ratings, a fixed rate corporate bond's flat price decreases from 93.75 to 92.85 per 100 of par value. Assuming that the annual modified duration of this bond is 6.45, and that benchmark yields are unchanged, the *closest* estimated change in credit spread on the corporate bond is:
    A. 15 bps.
    B. 55 bps.
    C. 96 bps.

75. A pharmaceutical company receives a rating downgrade and the price of its fixed-rate bond decreases. The price decrease was *most likely* caused by a(n):
    A. decrease in the bond's liquidity spread.
    B. decrease in the bond's underlying benchmark rate.
    C. increase in the bond's credit spread.

## Solutions

1. C is correct. In a buy-and-hold strategy if the market interest rates are lower in the future, the returns will decrease because the reinvestment income will decrease.

2. C is correct. The investor reinvests the coupon interest payments at the same interest rate.

3. A is correct. When a bond is held to maturity, there is no capital gain or loss because the carrying value of the bond at maturity is the same as the redemption amount.

4. B is correct. A higher coupon rate means that more of the bond's value comes from coupon and less from the market interest rate.

5. B is correct. Annualized holding period return is the IRR of the investment:
   N = 3, PV = -1,025.78, PMT = 90, FV = $1,000, CPT I/Y. I/Y = 8%.
   The total portion of coupon payments and reinvestment return
   $90(1.08)^2 + 90(1.08)^1 + 90 = \$292.18.$

6. A is correct. A horizon yield is the internal rate of return between the total return (i.e. the sum of reinvested coupon payments and sale price) and the purchase price of the bond.

7. A is correct. The longer the maturity, the higher the reinvestment risk.

8. A is correct. The higher the coupon rate, the higher the reinvestment risk.

9. C is correct. A bond selling at a discount has a lower coupon rate. All else being equal, bonds with lower coupon rates have lower reinvestment risk. The reason is that the lower the coupon rate, the less dependent the bond's total dollar return will be on the reinvestment of the coupon payments in order to produce the yield to maturity at the time of purchase.

10. B is correct. If the investment horizon is short, market price risk will dominate the reinvestment risk.

11. B is correct. A decrease in market interest rates, benefits short term investors more than the long term investors. This is because in the short term, market price risk dominates the reinvestment risk.

12. C is correct. In a buy-and-hold strategy if the market interest rates are higher in the future, the returns will increase because the reinvestment income will increase.

13. A is correct. Effective Duration = $\frac{[(PV-) - (PV+)]}{[2\ (\Delta Yield) * PV0]}$
    Effective Duration = $\frac{[104.25 - 101.25]}{[2\ (0.005) * 102.50]}$ = 2.93%

14. B is correct. Approximate percentage price change = $\%\Delta PV^{Full} \approx -AnnModDur \times \Delta Yield$ = -8.50 (- 0.005) = 4.25%

15. C is correct. Macaulay duration is the weighted average sum of the present values of the bond discounted at the YTM.
The present values of the cash flows are:
$70/(1.06) = 66.038; 70/(1.06)^2 = 62.29; 70/(1.06)^3 = 58.77; 1070/(1.06)^4 = 847.54$
The weights are:
= 66.038/1034.64 = 0.0638(1) = 0.0638
= 62.29/1034.64 = 0.06020(2) = 0.1204
= 58.77/1034.64 = 0.0568(3) = 0.1704
= 847.54/1034.64 = 0.8192(4) = 3.2768
Macaulay duration = 0.0638 + 0.1204 + 0.1704 + 3.2768 = 3.6314

16. B is correct. When the investment horizon is less than the Macaulay duration of a bond, the investor's risk is to higher interest rates.

17. B is correct. There is no bond duration known as spot duration.

18. B is correct.
$$\text{ModDur} = \frac{\text{MacDur}}{1+r} = \frac{6.5}{1.07} = 6.07.$$

19. B is correct.
$$\text{Approx ModDur} = \frac{(PV_{-} - PV_{+})}{2 * \Delta\text{Yield} * PV_0} = \frac{102.86 - 101.31}{2 * 0.005 * 102} \approx 1.52$$

20. A is correct. Unlike the modified duration, effective duration is a curve duration statistic that measures interest rate risk in terms of a change in the benchmark yield curve. Thus, the change in the bond's own yield to maturity is not used for calculation.

21. B is correct. Modified duration states the change in price of a bond as a result of change in yield for specific basis points/percentage. Macaulay duration states the weighted average time period until each payment due on a bond is expected to be paid off. Accelerated duration is an incorrect term.

22. A is correct. The carrying value of a bond purchased at a price above the par is the purchase price minus the amortized amount of the premium.

23. B is correct.
$$\text{Approximate modified duration} = \frac{V_{-} - V+}{2 * V_0 * \Delta\text{YTM}}$$
$$= \frac{10148.61 - 9854.18}{2 * 10000 * 0.0020}$$

= 7.36.
The bond price is expected to change by 7.36% when the yield changes by 0.2%.

24. C is correct. Yield duration statistics measure the sensitivity of a bond's full price to the bond's own yield to maturity. Curve duration statistics measure the sensitivity of a bond's full price to the benchmark yield curve

25. B is correct. Modified duration = $\frac{\text{Macaulay Duration}}{1 + \text{r}}$
= $\frac{10}{1+\frac{0.08}{2}}$ = 9.62 years

26. C is incorrect. Modified duration = $\frac{\text{Macaulay Duration}}{1 + \text{r}}$. Therefore a bonds Macaulay duration is typically more than its modified duration.

27. A is correct. Modified duration is useful and accurate for small changes in yield but it is not useful and accurate for larger changes in yield.

28. C is correct. Effective duration is used to value bonds with embedded options. This duration considers changes in a benchmark yield curve and not the bond's current YTM.

29. B is correct. The modified duration and effective duration of an option free bond are identical only in the rare circumstance of an absolutely flat yield curve.

30. B is correct. The yield to worst is the lowest of the yield to maturity, yield to first call, yield to second call and so forth. The duration of a callable bond is *not* the sensitivity of the bond price to change in the yield-to-worst.

31. A is correct. The interest rate risk is the sensitivity of a bond to parallel shifts of the yield curve. The yield curve risk is a bond's sensitivity to changes in the shape of the yield curve.

32. B is correct. A bond's duration is a measure of the sensitivity of a bond's full price including accrued interest to a change in interest rate.

33. C is correct. The key rate duration is the sensitivity of bond to changes in a single spot rate, holding all other spot rates constant.

34. A is correct. The Macaulay duration of a zero-coupon bond is its time to maturity.

35. B is correct. As interest rates go up, the future value of reinvested coupon payments increases.

36. C is correct. The duration measure reduces due to higher coupon rate, higher yield to maturity, and shorter time to maturity.

37. B is correct. As time passes during the coupon period, the Macaulay duration declines smoothly and then jumps upward after the coupon is paid.

38. C is correct. The Macaulay duration of a perpetual bond is a flat straight line. The value is $\frac{1+r}{r}$.

39. B is correct. Coupon rate is inversely related to Macaulay duration.

40. A is correct. YTM is inversely related to Macaulay duration. The lower the yield-to-maturity, the higher its Macaulay duration.

41. A is correct. Time-to-maturity and Macaulay duration are usually positively related. The exception is long-term, low coupon bonds, on which it is possible to have a lower duration than on an otherwise comparable short term bond.

42. C is correct. Both A & B are limitations of duration. Duration changes over time and it is just an approximation. Option C is not a limitation of the duration. It does not assume a non-parallel shift.

43. B is correct. The portfolio's duration is a weighted average of the durations of the individual holdings, computed as:
    D = $\left(\frac{6}{12}\right) * (3) + \left(\frac{2}{12}\right) * (5) + \left(\frac{4}{12}\right) * (7)$= 4.667

44. A is correct.
    Total market value of bonds = 250,000 + 190,000 + 300,500 = 740,500.
    The respective weights of the bonds are:
    $\frac{250{,}000}{740{,}500}$ = 0.3376
    $\frac{190{,}000}{740{,}500}$ = 0.2566
    $\frac{300{,}500}{740{,}500}$ = 0.4058
    Portfolio duration = 0.3376*9 + 0.2566*10 + 0.4058*7 = 8.445

45. B is correct. The two ways to calculate the duration of a bond portfolio are: weighted average of the time to receipt of the aggregate cash flows and weighted average of the durations of the individual bonds.

46. C is correct. The 'weighted average of the durations of individual bonds' method is simple to use and quite accurate when the yield curve is flat. However, its main limitation is that it assumes a parallel shift in the yield curve.

47. B is correct.
    First, calculate the market value of each bond.

    Market value of the bond =$\frac{\text{Price}*(\text{Par Value})}{100}$

Market value of the bond A = PKR 320 $* \frac{105}{100}$ = PKR 336 million
Market value of the bond B = PKR 160 $* \frac{103}{100}$ = PKR 164.8 million
Market value of the bond C = PKR 180 $* \frac{98}{100}$ = PKR 176.4 million
Total value of the portfolio = PKR 677.2 million.
Duration of the portfolio = $\left(\frac{336}{677.2}\right) * 10 + \left(\frac{164.8}{677.2}\right) * 8 + \left(\frac{176.4}{677.2}\right) * 7$ = 8.73

48. C is correct. Interest rate risk is not usually expressed as a change in the cash flow yield.

49. C is correct. The price value of a basis point is an estimate of a change in the full price of the bond given a 1 bp change in the yield to maturity.

50. A is correct.
Money duration = Annual modified duration * Full price = 6.3 * 103.25 = $650.47

51. C is correct.
$\text{MoneyDur} = \text{ModDur} * \text{PV}^{\text{Full}} = 7.44 * 104 \approx 774$

52. B is correct. Change in price of bond = $200,000 * 0.0020 = $400
The increase of 20 basis points in yield will result in decrease in bond price by $400.

53. C is correct.
Price value of a basis point is calculated as PVBP = $\frac{PV\_ - PV_+}{2}$
where PV_ = Full price calculated by lowering the yield-to-maturity by one basis point.
N = 6, I/Y = 3.99, PMT=2, FV = 100. CPT PV = $89.5647
$PV_+$ = Full price calculated by raising the yield to maturity by one basis point
N = 6, I/Y = 4.01, PMT=2, FV = 100. CPT PV = $89.4667
PVBP = $\frac{\$89.5647 - \$89.4667}{2}$ = 0.049.

54. B is correct. If we ignore convexity then duration alone always gives an estimated value lower than actual prices.

55. C is correct. $\text{ApproxCon} = \frac{[(PV_-) + (PV_+) - 2PV_0]}{[(\Delta \text{Yield})^2 * PV_0]}$
ApproxCon = $\frac{[106.50 + 103.25 - 2\,(104.50)]}{[(.0050)^2 * 104.50]}$
ApproxCon = 287.08.

56. B is correct.
$$\text{Approximate convexity} = \frac{PV_- + PV_+ - 2 * PV_0}{(\Delta\text{Yield})^2 * PV_0} = \frac{131.8439 + 137.5888 - 2 * 134.6722}{0.002^2 * 134.6722} = 163.92$$

57. B is correct.

$$\text{Approx Convexity} = \frac{(\text{PV}_{-} + \text{PV}_{+}) - (2 * \text{PV}_0)}{(\Delta\text{Yield})^2 * \text{PV}_0} = \frac{(102.86 + 101.31) - (2 * 102)}{0.005^2 * 102} = 67$$

58. B is correct. A factor that effects convexity but is not considered for duration is the dispersion of cash flows.

59. C is correct. Putable bonds always have positive convexity.

60. C is correct. In case of bonds with embedded options the effective convexity is the most appropriate measure.

61. C is correct. The first order effect on a bond's percentage price change given a change in yield-to-maturity can be best described as duration. The second order effect can be best described as convexity.

62. B is correct.
    Total percentage change in the price is the sum of duration effect and convexity effect.
    $\%\text{ change in price} = [-\text{AnnModDur} * \Delta\text{Yield}] + [0.5 * \text{AnnConvexity} * (\Delta\text{Yield})^2]$
    Duration effect = - 7.50(.015) = - 0.1125
    Convexity effect = $0.5 * 98(.015)^2$ = 0.011025
    Total percentage change in the price = - 0.1125 + 0.011025 = -0.1014 = -10.14%.

63. B is correct.
    $\%\text{ change in price} = [-\text{AnnModDur} * \Delta\text{Yield}] + [0.5 * \text{AnnConvexity} * (\Delta\text{Yield})^2]$
    $= [-6.12 * (0.0050)] + [0.5 * 88.910 * (0.0050)^2]$
    $= -0.0294$ or -2.94%

64. B is correct.
    $\%\Delta\text{PV}^{\text{Full}} = [-\text{AnnModDur} * \Delta\text{Yield}] + [0.5 * \text{AnnConvexity} * (\Delta\text{Yield})^2]$
    $\%\Delta\text{PV}^{\text{Full}} = [-6.883 * 0.005] + [0.5 * 56.290 * (0.005)^2] = -0.034415 + 0.0007036$
    $= -0.0337$

65. C is correct.
    % change in price = [-AnnModDur * ΔYield] + [0.5 * AnnConvexity * $(\Delta\text{Yield})^2$ ]
    $= [-6.12 * (-0.0020)] + [0.5 * 88.910 * (-0.0020)^2]$
    = 0.01241 or 1.24%

66. A is correct. Duration effect = -7.59 * 0.002 = -0.01518
    Convexity effect = 0.5 * 55.63 * $(0.002)^2$ = 0.00011
    % change in price = [-AnnModDur * ΔYield] + [0.5 * AnnConvexity * $(\Delta\text{Yield})^2$ ]
    = (-0.01518 + 0.00011)
    = -1.5069%

67. C is correct. Convexity improves the estimate of change in price of bonds with both positive as well as negative convexity.

68. B is correct. Volatility of bond's price depends on the sensitivity of the bond's price to a given change in yield and the volatility of the bond's yield.

69. B is correct. If the term structure of yield volatility is upward sloping, then long term yields have more volatility than short term yields. Therefore short-term yields will be more stable. The other two statements are not necessarily true.

70. A is correct. When the investment horizon is equal to the Macaulay duration of the bond, coupon reinvestment risk offsets price risk. The investor is hedged against interest rate risk.

71. B is correct. $\text{Duration gap} = \text{Macaulay duration} - \text{Investment horizon}$
= 7.52 – 3 = 4.52 years.

72. A is correct. When the investment horizon is less than the Macaulay duration of the bond, the duration gap is positive and the price risk dominates coupon reinvestment risk. The investor's risk is to higher interest rates.

73. C is correct. A bond's spread over the benchmark curve is made up of two major components: premium for credit risk and premium for liquidity risk.

74. A is correct.

$$\text{Percentage price change} = \frac{93.75 - 92.85}{93.75} = 0.0096 \text{ or } 0.96\%$$

$$\text{Change in Yield} = \frac{-0.0096}{-6.45} = 0.00148$$

75. C is correct. The change was most likely caused by an increase in the bond's credit spread. The increase in credit risk results in a larger credit spread.

**LO.a: Describe credit risk and credit-related risks affecting corporate bonds.**

1. A rating agency has downgraded the rating of Standz Inc. As a result, the price of its bonds went down. This risk is *best* described as:
   A. credit mitigation risk.
   B. credit spread risk.
   C. credit migration risk.

2. An investor has bonds of Meck Inc. worth $500,000. He wants to sell these bonds in the market. However, he has difficulties selling the bonds and may have to sell them at lower than the market value. This can be *best* described as:
   A. bid-ask spread risk.
   B. market liquidity risk.
   C. price risk.

3. Company A is identical to company B, except that B has less publically traded debt outstanding than A. Hence, B is *most likely* to have:
   A. no market liquidity risk.
   B. lower market liquidity risk.
   C. higher market liquidity risk.

4. An analyst is studying a portfolio's credit risk. Which of the following is the analyst *least likely* to consider as a credit-related risk?
   A. Currency risk.
   B. Market liquidity risk.
   C. Spread risk.

5. Analyst I: Bond price changes due to general interest rate movements are not considered credit risk
   Analyst II: Bond price changes due to general interest rate movements are considered credit risk.
   Which analyst's statement is *most likely* correct?
   A. Analyst I.
   B. Analyst II.
   C. Neither of them.

6. Which of the following industries is *most likely* to have the greatest risk?
   A. The airline industry reliant upon a few aircraft manufacturers.
   B. The beverages industry having a huge customer base.
   C. The pharmaceutical industry having high entry barriers.

7. The following table gives the nature and level of debt for three industries.

| **Industry** | **Nature** | **Level of debt** |
|---|---|---|
| Tobacco | Non-cyclical | Moderate |
| Sugar | Non-cyclical | Low |
| Steel | Cyclical | High |

Which of the following industries is *most likely* to exhibit the highest credit risk?
A. Tobacco.
B. Sugar.
C. Steel.

**LO.b: Describe default probability and loss severity as components of credit risk.**

8. Expected loss is *best* calculated as:
   A. the product of loss severity and default probability.
   B. the sum of loss severity and default probability.
   C. the product of recovery rate and default probability.

9. Which of the following is *least likely* to be a component of credit risk?
   A. Default probability.
   B. Loss severity.
   C. Price trajectory.

10. Which of the following statements is *most accurate?* The best measure of credit risk is:
    A. expected loss.
    B. severity of loss.
    C. probability of default.

**LO.c: Describe seniority rankings of corporate debt and explain the potential violation of the priority of claims in a bankruptcy proceeding.**

11. Which of the following would *most likely* have the lowest priority of claims in a bankruptcy proceeding?
    A. Senior unsecured debt.
    B. Senior subordinated debt.
    C. Senior secured debt.

12. An organization issued the following categories of option free bonds. The bond with the highest yield *most likely* is:
    A. first lien loan.
    B. subordinated debt.
    C. junior subordinated debt.

13. Which of the following is *most likely* to be a category of secured debt?
    A. Debentures.
    B. Second lien debt.
    C. Subordinated debt.

14. Which of the following is *least likely* to be a reason for issuance of subordinated debt?
    A. It is less expensive than issuing equity and does not dilute existing shareholders.
    B. Investors are willing to buy it because the yield being offered is adequate compensation for the risk perceived.

C. It is ranked higher in the priority of claims and thus investors feel secure.

15. Analyst 1: In practice during bankruptcy the claims on assets are going to be paid off as per the seniority ranking. Hence, secured bond holders should be 100% assured that their claims will be paid off before any other bond holders.
Analyst 2: In practice during bankruptcy the claims on assets are likely to be paid off as per the seniority ranking. However, in some cases the claims might be paid off in a way which is not in line with seniority ranking. Hence, secured bond holders also face some risk.
Which analyst's statement is *most likely* correct?
A. Analyst I.
B. Analyst II.
C. Neither of them.

16. A subordinated bondholder recovered some value in a bankruptcy without a senior creditor getting paid in full. The *most likely* explanation is:
A. absolute priority rules was enforced.
B. the various classes of claimants agreed to it.
C. the company was liquidated rather than reorganized.

17. A company has two types of senior secured bonds outstanding- A and B. Bond A has a remaining maturity of 10 years and bond B has a remaining maturity of 1 year. In case of a default:
A. bond A will be paid first.
B. bond B will be paid first.
C. both bonds will receive the same treatment.

**LO.d: Distinguish between corporate issuer credit ratings and issue credit ratings and describe the rating agency practice of "notching."**

18. The corporate family rating *most likely* applies to:
A. senior secured.
B. senior unsecured.
C. senior subordinated.

19. An investor wants to buy bonds with investment grade rating. Which of the following bonds will he *most likely* consider?
A. BB+.
B. BBB-.
C. Ba1.

20. A company has various types of bonds outstanding. However, when it missed an interest payment on one bond a default was triggered on all bonds. This provision is *most likely* called:
A. indenture default provision.
B. bond default provision.
C. cross default provision.

21. Using the Moody's ratings scale, investment grade bonds carry which of the following ratings?
    A. Aaa to Baa3.
    B. A1 to B3.
    C. AAA to BBB–.

22. According to the S&P and Moody's ratings, an investment grade bond is *least likely* to be rated:
    A. BBB-/Baa3.
    B. BBB+/Baa1.
    C. CCC+/B3.

23. According to the S&P and Moody's ratings, a speculative grade bond is *most likely* to be rated:
    A. BB+/Ba1.
    B. BBB+/Baa1.
    C. A+/A1.

24. Which of the following statements is *most accurate*?
    A. The issuer rating applies to all of an issuer's bonds, whereas the issue rating considers a bond's seniority ranking.
    B. The issuer rating is an assessment of an issuer's overall creditworthiness, whereas the issue rating is always higher than the issuer rating.
    C. The issuer rating is an assessment of an issuer's overall creditworthiness whereas the issue rating considers a bond's seniority ranking.

25. Based on the practice of notching by the rating agencies, a subordinated bond from a company with an issuer rating of BBB would likely carry what rating?
    A. BB.
    B. B-.
    C. BBB–.

**LO.e: Explain risks in relying on ratings from credit rating agencies.**

26. An investor buys AAA rated bond and wants to hold it to maturity. He expects that since the bond is AAA rated the bond will continue to have the lowest probability of default till maturity. Is the investor correct?
    A. Investor is correct.
    B. Investor is incorrect because rating agencies may review and change rating at any time before maturity.
    C. Investor is incorrect because AAA rated bonds have greater chances of default as compared to A+ rated bonds.

27. Which of the following is *least likely* a risk of relying on rating from credit rating agencies?
    A. Credit ratings are dynamic.

B. Default risk is difficult to assess.
C. Event risk is difficult to assess.

28. Which of the following is *least likely* to be a limitation of a credit rating agency's ratings?
    A. Credit ratings are relatively stable over time even though the actual credit risk might have changed.
    B. It is not easy to use credit ratings to compare bonds across different industries.
    C. Credit ratings tend to lag market pricing of credit.

29. An analyst observed that the market price of a bond changed faster than the credit rating of that bond. The limitation of credit agency ratings witnessed here is *most likely*:
    A. credit ratings lag market pricing.
    B. rating agencies are not infallible.
    C. event risk is difficult to capture in ratings.

30. A bond's price did not fall when it was downgraded by Moody's. Which of the following is the *most likely* explanation?
    A. Bond prices never react to rating changes.
    B. The bond doesn't trade often so the price has not adjusted to the rating change yet.
    C. The market was expecting the rating change, and so it was already "priced in" to the bond.

31. Company A and Company B, each have bonds outstanding with similar coupons and maturity dates. Both bonds are rated B1, B+, and B+ by Moody's, S&P, and Fitch, respectively. The bonds, however, trade at very different prices — Company A bond trades at $78, whereas the Company B bond trades at $62. What is the *most likely* explanation of the price difference?
    A. Company B's credit ratings are lagging the market's assessment of the company's credit deterioration.
    B. The bonds have similar risks of default (as reflected in the ratings), but the market believes the Company A bond has a higher expected loss in the event of default.
    C. The bonds have similar risks of default (as reflected in the ratings), but the market believes the Company B bond has a higher expected recovery rate in the event of default.

32. Analyst 1: Bonds with the same credit rating have comparable probability of default and comparable severity of loss given default.
    Analyst 2: Bonds with the same credit rating have comparable probability of default but the severity of loss is not necessarily comparable.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

**LO.f: Explain the four Cs (Capacity, Collateral, Covenants, and Character) of traditional credit analysis.**

33. An analyst is analyzing industry structure, industry fundamentals, and company fundamentals while rating a particular corporate bond. Which component of credit analysis is he currently analyzing?
    A. Capacity.
    B. Covenants.
    C. Collateral.

34. Which of the following assets is *not* included in the value of collateral while analyzing the collateral for a debt issue?
    A. Patent.
    B. Goodwill.
    C. Machinery.

35. The quality and value of the assets supporting the issuer's indebtedness is called:
    A. capacity.
    B. collateral.
    C. character.

36. ABC Corp. manufactures a commodity product in a highly competitive industry in which no company has significant market share and where there are low barriers to entry. Which of the following *best* describes ABC's ability to take on substantial debt?
    A. Its ability is very limited because companies in industries with those characteristics generally cannot support high debt loads.
    B. Its ability is strong because companies in industries with those characteristics generally have high margins and cash flows that can support significant debt.
    C. The information is insufficient to comment on the company's debt-taking ability.

37. Which of the following is *least likely* a bond covenant?
    A. The issuer must pay taxes on time.
    B. The company can buy back as much stock as it likes.
    C. If the company offers security to any creditors, it must offer security to this bond issue.

38. Which of the following is *least likely* to be a covenant?
    A. Prohibition on frequent change of auditors.
    B. Prohibition on payment of large dividends.
    C. Prohibition on issuing more debt.

39. A company will not pay more than 10% of its earnings as profits. This is *least likely* an example of:
    A. negative covenant.
    B. affirmative covenant.
    C. restrictive covenant.

40. Which of the following is *least likely* a component of the "Four Cs of Credit Analysis" framework?
    A. Capacity.

B. Character.
C. Conditions.

41. Which of the following is the *least likely* factor to be considered under the category of "character" in the “Four Cs of Credit Analysis" framework?
    A. Significant off-balance sheet financing.
    B. Delinquent accounts.
    C. Track record of business profit.

**LO.g: Calculate and interpret financial ratios used in credit analysis.**

42. Consider a company whose assets have high depreciation relative to capital expenditure and its stock trading below the book value. What do these two measures *most likely* indicate about the quality of the company’s assets?
    A. Both indicate low quality of assets.
    B. Both indicate high quality of assets.
    C. One indicates high quality of assets, while the other indicates low quality of assets.

43. Financial ratios are examined to understand company fundamentals. Which of the following ratios is *least likely* to be categorized as a leverage ratio?
    A. Funds from operations (FFO).
    B. Funds from operations (FFO)/Debt.
    C. Debt/capital.

44. Company A has total outstanding bonds worth $500,000 and total bank loans of about $500,000. The earning before tax is $75,000. Interest expenses are $30,000. Depreciation is $15,000 and amortization is $5,000. What is debt/EBITDA for this company?
    If this ratio for another company “B” is 10, which company has lower credit risk assuming everything else is equal?
    A. 6, company A has lower credit risk.
    B. 12, company B has lower credit risk.
    C. 8, company A has lower credit risk.

45. An analyst was trying to calculate debt/capital ratio for a company. He noticed that the financial statements show a high value of goodwill. What is the *most appropriate* step he should take?
    A. He should not make adjustments related to goodwill.
    B. He should estimate the average goodwill used by comparable companies and adjust the ratio by using this amount rather than the book value of goodwill.
    C. He should adjust the ratio by writing down the goodwill’s after tax value.

46. Which of the following is generally deducted from the net income when calculating free cash flow before dividends?
    A. Depreciation.
    B. Amortization.
    C. Increase in working capital.

47. Why should credit analysts be concerned if a company's stock trades below book value?
    A. It means the company is probably going bankrupt.
    B. It means the company will probably incur lots of debt to buy back its undervalued stock.
    C. It is a signal that the company's asset value on its balance sheet may be impaired and have to be written down, suggesting less collateral protection for creditors.

**LO.h: Evaluate the credit quality of a corporate bond issuer and a bond of that issuer, given key financial ratios of the issuer and the industry.**

48. A company is in the business of watches. The company is making good profits year on year and has good amount of reserves on books. However, the debt in the capital structure is very high compared to the industry standards. The notching for rating of the company as compared to the industry will *most likely* be:
    A. one notch below industry.
    B. one notch above industry.
    C. equal to industry.

49. A company set up a special purpose entity specifically to transfer and service debt. Is it possible that the SPE's rating is higher than the company itself?
    A. No, it is not possible because SPE is always considered subsidiary of the company and not an independent company.
    B. Yes, it is possible.
    C. No, it is not possible because the same debt will be transferred from the company's books to the SPE's books.

**LO.i: Describe factors that influence the level and volatility of yield spreads.**

50. Which of the following is *not* one of the factors that influence the level and volatility of yield spreads?
    A. Credit cycle.
    B. Broker-dealer capital.
    C. Sovereign ratings.

51. What is the *most likely* effect on credit spreads in a country when the credit cycle improves and financial markets perform strongly?
    A. Credit spread is unaffected.
    B. Credit spread widens.
    C. Credit spread narrows.

52. Consider two scenarios: periods when the supply of bond is high relative to demand and periods when the brokers and dealers are unable to provide sufficient capital for market. What is the *most likely* effect on yield spreads under these conditions? The yield spread:
    A. is unaffected.
    B. widens.
    C. narrows down.

53. As compared to higher quality bonds, lower quality bonds exhibit:
    A. greater spread volatility.
    B. less spread volatility.
    C. same spread volatility.

54. Investors become increasingly worried about the economy. The *most likely* impact on credit spreads is:
    A. there will be no change to credit spreads.
    B. narrower spreads will occur.
    C. wider spreads will occur.

**LO.j: Explain special considerations when evaluating the credit of high yield, sovereign, and municipal debt issuers and issues.**

55. An analyst is considering an investment in high-yield bonds. What is the *most important* factor that the analyst should pay attention to while investing in such bonds?
    A. Debt structure.
    B. Covenants.
    C. Loss severity.

56. Which of the following is *most likely* true about a company whose bonds are categorized as 'high-yield' bonds?
    A. High debt/equity ratio.
    B. High sales growth rate.
    C. High free cash flow.

57. Which of the following is *most likely* to be correct?
    A. The general obligation bonds issued by local government are unsecured bonds supported by the taxing authority of the issuer.
    B. A local government's balance sheet will adequately reflect pensions and other post-retirement obligations.
    C. The general obligation bonds have a higher degree of risk compared to revenue bonds.

58. A state government has issued municipal bonds with maturity of 20 years offering semi-annual coupon payments with 9% coupon rate. The cash-flow for payment of the bonds is structured in a way which makes it highly dependent on variable tax income that is subject to economic cycle. The *most likely* impact on credit risk is:
    A. credit risk increases.
    B. credit risk decreases.
    C. this won't affect credit risk of a municipal bond as they are fully backed by the government.

## Solutions

1. C is correct. The change in yield spread and hence the price of the bond due to changes in credit rating can be described as credit migration risk.

2. B is correct. When the security has to be sold below its market value, the risk is called market liquidity risk.

3. C is correct. Market liquidity risk is increased by less debt outstanding.

4. A is correct. Currency risk is not a credit-related risk.

5. A is correct. Bond price changes due to general interest rate movements are not considered credit risk.

6. A is correct. The airline industry relies upon a few aircraft manufacturers; therefore the bargaining power of suppliers is great making this a risky industry. The beverages industry relying upon a huge customer base has a regular stream of cash flows and the negotiating power does not lie with the customers. Therefore this is less risky. The pharmaceutical industry having high entry barriers is less risky because competition is not fierce and pricing power is significant.

7. C is correct. The steel industry is highly leveraged and is cyclic. Both factors increase credit risk.

8. A is correct. Expected loss = Default probability * Loss severity.

9. C is correct. The two components of credit risk are default probability and loss severity.

10. A is correct. Credit risk is best measured by expected loss which is the product of probability of default and the severity of loss in the event of default. Neither component alone completely reflects the risk.

11. B is correct. Among the listed for priority of claims senior secured debt comes first, followed by senior unsecured debt followed by senior subordinated debt.

12. C is correct. Based on seniority ranking junior subordinated bonds has last right among the listed bonds. Hence, they have the highest credit risk than the other two options. Hence, these would offer highest yield.

13. B is correct. Second lien debt is a category of secured debt. Debentures and subordinated debt are categories of unsecured debt.

14. C is correct. Subordinated debt is a form of unsecured debt and is not ranked higher in the priority of claims.

15. B is correct. Analyst 2 is correct. In case of bankruptcy the claims on assets are likely to be paid off as per the seniority ranking. However, in some cases the claims might be paid off in a way which is not in line with seniority ranking. Hence, secured bond holders also face some risk.

16. B is correct. All impaired classes get to vote on the reorganization plan. Negotiation and compromise are often preferable to incurring huge legal and accounting fees in a protracted bankruptcy process that would otherwise reduce the value of the estate for all claimants. This process may allow junior creditors (e.g., subordinated bondholders) recover some value even though more senior creditors do not get paid in full.

17. C is correct. All claims at the same level of the capital structure are pari passu (on an equal footing).

18. B is correct. Rating which is for the overall credit worthiness of the organization is called corporate family rating or issuer rating and it usually applies to the senior unsecured debt of the company.

19. B is correct. Among the listed ratings bonds with BBB- will be considered investment grade bond. The other two bonds will be considered non-investment grade bonds.

20. C is correct. Under a cross default provision, events of default such as non-payment of interest on one bond triggers default on all outstanding debt.

21. A is correct. For Moody's all bonds above Baa3 are considered investment grade.

22. C is correct. A bond rated investment grade has a rating BBB/Baa3 or better.

23. A is correct. A bond rate speculative grade is BB+/Ba1 or lower.

24. C is correct. The issuer rating is an assessment of an issuer's overall credit worthiness whereas the issue rating considers a bond's seniority ranking.

25. C is correct. The subordinated bond would have its rating notched lower than the company's BBB rating by one notch.

26. B is correct. Investor is incorrect because rating agencies may review and change rating at any time before maturity. If the rating is downgraded in the future, it reflects greater probability of default.

27. B is correct. Among the mentioned list the "default risk is difficult to assess" is not the risk of relying on ratings from the credit rating agencies.

28. B is correct. Options A and C are true statements and represent limitations of credit ratings. Option B does not represent a limitation. Credit ratings can be used to compare bonds across different industries.

29. A is correct. The mentioned limitation is that credit ratings lag market pricing.

30. C is correct. The market was anticipating the rating downgrade and had already priced it in. Bond prices often do react to rating changes, particularly multi-notch ones. Even if bonds don’t trade, their prices adjust based on dealer quotations given to bond pricing services.

31. A is correct. Company B’s credit ratings are probably lagging behind the market’s assessment of its deteriorating creditworthiness. Answers B and C both state the situation backwards. If the market believed that the Company A bond had a higher expected loss given default, then that bond would be trading at a lower, not a higher, price. Similarly, if the market believed that the Company B bond had a higher expected recovery rate in the event of default, then that bond would be trading at a higher, not a lower, price.

32. B is correct. Credit ratings primarily reflect the probability of default, but not necessarily the severity of loss given default.

33. A is correct. Analyzing industry structure, industry fundamentals, and company fundamentals, come under the capacity category of traditional credit analysis.

34. B is correct. Goodwill is not included in the value of collateral while analyzing collateral for any issue. Goodwill is generally written down when the company performance is poor.

35. B is correct. Collateral refers to the quality and value of the assets supporting the issuer’s indebtedness.

36. A is correct. Companies in industries with those characteristics typically have low margins and limited cash flow and thus cannot support high debt levels.

37. B is correct. Covenants describe what the borrower is (1) obligated to do or (2) limited in doing. It is the absence of covenants that would permit a company to buy back as much stock as it likes. A requirement that the company offer security to this bond issue if it offers security to other creditors (option C) is referred to as a “negative pledge.”

38. A is correct. Frequent change of auditors is a behavior that concerns the character of a corporate borrower and is not a covenant.

39. B is correct. Covenants that limit the activities of the borrower are called negative covenants or restrictive covenants.

40. C is correct. The "Four Cs of Credit Analysis" framework includes capacity, collateral, covenants, and character.

41. C is correct. Track record of business profits comes under capacity.

42. A is correct. Both listed measures indicate a low quality of assets.

43. A is correct. Funds from operations (FFO) is a profitability and cash measure and not a leverage ratio.

44. C is correct. EBITDA = 75,000 + 30,000 + 15,000 + 5,000 = 125,000
Total debt = 500,000 + 500,000 = 1,000,000
Debt/EBITDA = $\frac{1,000,000}{125,000}$ = 8.
This ratio is better when it is lower. Hence, it is better for company A and the credit risk is lower for this company.

45. C is correct. The analyst should adjust the ratio by writing down the goodwill's after tax value. This way he will be able to have a more reliable ratio.

46. C is correct. Generally, an increase in working capital is deducted from net income when calculating free cash flow before dividends. Depreciation and amortization are added to net income when calculating free cash flows.

47. C is correct. It is a signal that the company's asset value on its balance sheet may be impaired and have to be written down, suggesting less collateral protection for creditors.

48. A is correct. Though everything else is comparable or better than industry, a very high debt on books in comparison to the industry will attract rating one notch below the industry standard ratings.

49. B is correct. SPEs are considered a separate entity from the company itself. Hence, it is possible that the SPE has a higher rating than the company itself.

50. C is correct. Sovereign rating does not directly affect the level and volatility of yield spread.

51. C is correct. When the credit cycle improves and financial markets perform strongly, the credit spread generally narrows.

52. B is correct. In the conditions mentioned above the yield spread generally widens.

53. A is correct. Lower quality bonds exhibit greater volatility compared to higher quality bonds.

54. C is correct. Investors will require higher yields as compensation for the greater credit losses that are likely to occur in a weakening economy.

55. C is correct. In case of high-yield bonds, the analyst should pay special attention to loss severity. Debt structure and covenants are factors that are considered equally important while analyzing all bonds or bond issues.

56. A is correct. A high debt/equity ratio implies that the company is risky and might justify a 'high-yield' rating. Options B and C are positive attributes and point towards a good credit rating.

57. A is correct. B is incorrect because the municipality balance sheet typically does not reveal a realistic picture of pensions and other post retirement obligations. C is incorrect because revenue bonds have a greater degree of risk.

58. A is correct. The bonds are dependent on a single source of revenue which is variable; this increases credit risk of municipal bonds.

**LO.a: Define a derivative, and distinguish between exchange-traded and over-the-counter derivatives.**

1. Which of the following is *not* a derivative?
   A. A contract to purchase shares of Infosys, a technology company, at a fixed price.
   B. An asset backed security.
   C. A global equity mutual fund.

2. Which of the following statements is *most likely* to be correct about derivatives?
   A. A derivative is a financial instrument that derives its value based on the performance of the underlying.
   B. Derivatives are standardized financial instruments and cannot be customized.
   C. The performance of a derivative is derived by replicating the performance of the underlying.

3. Which of the following statements about derivatives is *least accurate*?
   A. They derive their value from an underlying.
   B. They have low degrees of leverage.
   C. They involve two parties – a buyer and a seller.

4. Which of the following statements about derivatives is *not* true?
   A. They are used for risk management.
   B. They are created in the form of legal contracts.
   C. They are created in the spot market.

5. Which of the following statements about exchange-traded derivatives is *least accurate*?
   A. They are more transparent than over-the-counter derivatives.
   B. All terms of the contract except the price are standardized.
   C. They have more credit risk than over-the-counter derivatives.

6. Which of the following *least likely* describes over-the-counter (OTC) derivatives relative to exchange-traded derivatives? OTC derivatives are:
   A. more customized.
   B. less liquid.
   C. less transparent.

7. Which of the following *best* describes a characteristic of exchange-traded derivatives?
   A. They are customized financial instruments.
   B. A clearing house effectively guarantees against default risk.
   C. They are characterized by a low degree of regulation.

8. Which of the following statements about over-the-counter derivatives is *least accurate*?
   A. They are less liquid than exchange-traded derivatives.
   B. They are less regulated than exchange-traded derivatives.
   C. They offer more flexibility than exchange-traded derivatives.

9. Analyst 1: Market makers earn a profit in both exchange and over-the-counter derivatives markets by charging a commission on each trade.
   Analyst 2: Market makers earn a profit in both exchange and over-the-counter derivatives markets by buying at one price, selling at a higher price, and hedging any risk.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Neither of them.

10. As compared to exchange-traded derivatives, over-the-counter derivatives are *more likely* to have:
    A. lower credit risk.
    B. customized contract terms.
    C. lower risk management uses.

11. As compared to over-the-counter options, futures contract:
    A. are private, customized transactions.
    B. represent a right rather than a commitment.
    C. are not exposed to default risk.

**LO.b: Contrast forward commitments with contingent claims.**

12. Which of the following statements is *least accurate*?
    A. An asset backed security is a contingent claim.
    B. An interest rate swap is a forward commitment.
    C. A credit default swap is a forward commitment.

13. Which of the following is *not* a forward commitment?
    A. Futures contracts.
    B. Interest rates swaps.
    C. Asset backed securities.

14. Which of the following statements is *least accurate* about contingent claims?
    A. The payoffs are not linearly related to the underlying.
    B. The most the short can gain is the premium paid for the contingent claim.
    C. Either party can default to the other.

15. Which of the following is *best* classified as a forward commitment?
    A. A convertible bond.
    B. A swap agreement.
    C. An asset-backed security.

**LO.c: Define forward contracts, futures contracts, options (calls and puts), swaps, and credit derivatives, and compare their basic characteristics.**

16. Which of the following statements about futures is *least accurate*?

A. They are standardized.
B. They are subject to daily price limits.
C. Their payoffs are received at settlement.

17. Which of the following statements is *most accurate*?
    A. Forwards are customized whereas swaps are standardized.
    B. Forwards are subject to daily price limits whereas swaps are not.
    C. Swaps have multiple payments, whereas forwards have only a single payment.

18. Analyst 1: During daily settlement of futures contract the initial margin deposits are refunded to the two parties.
    Analyst 2: During daily settlement of futures contract losses are charged to one party and gains credited to the other.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

19. Which of the following statements about options is *most accurate*?
    A. An option is the right to buy or the right to sell the underlying.
    B. An option is the right to buy and sell, with the choice made at expiration.
    C. An option is an obligation to buy or sell, which can be converted into the right to buy or sell.

20. Which of the following is a characteristic of a put option on the stock?
    A. A guarantee that the stock price will decrease.
    B. A specified date on which the right to sell expires.
    C. A fixed price at which the put holder can buy the stock.

21. Analyst 1: A credit derivative is a derivative contract in which the seller provides protection to the buyer against the credit risk of a third party.
    Analyst 2: A credit derivative is a derivative contract in which the exchange provides a credit guarantee to both the buyer and the seller.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

22. A corporation has issued 10-year, floating-rate bonds. The treasurer realizes that the interest rates are going to rise and enters into an agreement to receive semi-annual payments based on the 6-month LIBOR and to make semi-annual payments at a fixed rate. This agreement is *best* described as a (an):
    A. option.
    B. futures contract.
    C. swap.

23. While dealing with futures contracts, the maintenance margin requirement *most likely* refers to:
    A. collateral to ensure fulfillment of obligation.
    B. amount sufficient to bring ending account balance back to initial margin.
    C. the minimum account balance a trader must maintain after the trade is initiated.

24. In which of the following contracts would the buyer face the *least* default risk?
    A. Cotton futures.
    B. Currency forwards.
    C. Over-the-counter interest rate options.

25. Microsoft issues 10-year fixed-rate bonds. Its treasurer expects interest rates to increase for all maturities for at least the next 2 years. He enters into a 2-year agreement with SCB to receive semi-annual floating-rates payments benchmarked on 6-month LIBOR and to make payments based on a fixed-rate. This agreement is *best* described as a:
    A. Swap.
    B. Futures contract.
    C. Forward contract.

26. Ali takes a long position in 50 futures contracts on Day 1. The futures have a daily price limit of €10 and closes with a settlement price of €105. On Day 2, the futures trade at €115 and the bid and offer move to €116 and €118, respectively. The futures price remains at these price levels until the market closes. The marked-to-market amount the trader receives in his account at the end of Day 2 is closest to:
    A. €500.
    B. €550.
    C. €650.

27. A market participant has a view regarding the potential movement of a stock. He sells a customized over-the-counter put option on the stock when the stock is trading at $46. The put has an exercise price of $44 and the put seller receives $2.5 in premium. The price of the stock is $43 at expiration. The profit or loss for the put seller at expiration is:
    A. $(1.5).
    B. $1.5.
    C. $2.5.

28. Keene Smith, an investor, aims to invest in derivatives that can be classified as forward commitments. Which of the following is she least likely to consider?
    A. Credit default swaps.
    B. Futures contracts
    C. Interest rate swaps.

29. Which of the following is *most likely* to be correct regarding interest rate swaps?
    A. Interest rate swaps provide the right to buy or sell the underlying asset in the future.
    B. Interest rate swaps provide the promise to provide credit protection in the event of a default.

C. Interest rate swaps involve the obligation to lend or borrow at a given rate in the future at a fixed rate.

30. Tim has a portfolio comprising of derivatives, which provide payoffs that are linearly related to the payoffs of the underlying. Which of the following is least likely to be a part of Tim's portfolio?
    A. Forwards.
    B. Interest-rate swaps.
    C. Options.

31. Which of the following statements is *least likely* correct about interest rate swaps?
    A. Interest rate swaps are derivatives where two parties agree to exchange a series of cash flows.
    B. Interest rate swaps might require one party to make payments based on a fixed rate.
    C. Interest rate swaps give the buyer the right to purchase the underlying from the seller.

32. Which of the following is *least likely* to be subject to default?
    A. Forwards.
    B. Futures.
    C. Interest rate swaps.

33. Klaus, Veronica, and Liam deal in derivatives. Liam and Veronica have a value of zero at the initiation of the contract, while Klaus doesn't. Which of the following correctly describes the derivative that each of these are dealing in?

| | **Klaus** | **Veronica** | **Liam** |
|---|---|---|---|
| A. | Futures | Options | Forwards |
| B. | Forwards | Futures | Options |
| C. | Options | Forwards | Futures |

34. Which of the following accurately describes a credit derivative?
    A. In a credit derivative, the seller provides the buyer with protection against credit risk of a third party.
    B. At the initiation of the contract of a credit derivative, the buyer and seller provide a performance bond.
    C. The buyer and seller of a credit derivative are provided with a credit guarantee by the clearinghouse.

35. Which of the following statements is *most* accurate?
    A. A forward contract is default free, whereas a futures contract is not.
    B. A forward contact allows parties to enter into a customized transaction, whereas a futures contract does not.
    C. A forward contract can easily be offset prior to expiration, whereas it is difficult to offset a futures contract prior to expiration.

36. Joe is a futures trader. If on a given day his balance falls below the maintenance margin, he should add funds so as to meet the:
    A. Initial margin.
    B. Maintenance margin.
    C. Variation margin.

37. One way to describe the margin in a futures market is:
    A. A good faith deposit that covers possible future losses.
    B. A loan to the futures trader.
    C. The difference between the futures price and the spot price.

**LO.d: Describe purposes of, and controversies related to, derivative markets.**

38. Which of the following is an advantage of the derivatives market?
    A. They are less volatile than spot markets.
    B. They make it easier and less costly to transfer risk.
    C. They incur higher transaction costs than spot markets.

39. Which of the following statements about derivatives is *least accurate*?
    A. Options convey the volatility of the underlying.
    B. Swaps convey the price at which uncertainty in the underlying can be eliminated.
    C. Futures convey the most widely used strategy of the underlying.

40. While responding to criticism that derivatives can be destabilizing to the market, an analyst makes the following statements:
    Statement 1: Market crashes and panics have occurred since long before derivatives existed.
    Statement 2: Derivatives are sufficiently regulated that they cannot destabilize the spot market.
    Which statement is *most likely* correct?
    A. Statement 1.
    B. Statement 2.
    C. Both.

41. Which of the following is *most likely* to be greater for derivative markets compared to underlying spot markets?
    A. Capital requirements.
    B. Liquidity.
    C. Transaction costs.

42. Sebastian is planning to invest in derivatives. Which of the following is *least likely* to be an advantage that he should consider?
    A. Effective risk management.
    B. Greater opportunities to go short compared to the spot market.
    C. Similar payoffs to those of underlying.

43. The benefits of derivatives can result in a destabilizing consequence. Which of the following is this *most likely* to be?
    A. Arbitrage activities due to market price swings.
    B. Asymmetric performance as a result of trading strategies created.
    C. Defaults on the part of speculators and creditors.

44. Compared to the underlying spot market, the derivatives market is *least likely* to have:
    A. lower liquidity.
    B. lower transaction costs.
    C. lower capital requirements.

45. Analyst 1: Derivatives can be combined with other derivatives or underlying assets to form hybrids.
    Analyst 2: Derivatives can be issued on weather, electricity, and disaster claims.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

**LO.e: Explain arbitrage and the role it plays in determining prices and promoting market efficiency.**

46. Arbitrage is often referred to as the:
    A. law of one price.
    B. law of similar prices.
    C. law of limited profitability.

47. When an arbitrage opportunity exists, the combined action of all arbitrageurs:
    A. results in a locked-limit situation.
    B. results in sustained profit to all.
    C. forces the prices to converge.

48. Analyst 1: An arbitrage is an opportunity to make a profit at no risk and with the investment of no capital.
    Analyst 2: An arbitrage is an opportunity to earn a return in excess of the return appropriate for the risk assumed.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

49. Which of the following statements about arbitrage is *most accurate*?
    A. Arbitrage imposes penalty on rapid trading.
    B. Arbitrage redistributes risk among market participants.
    C. Arbitrage helps prices to converge to their relative fair values.

50. David is studying the law of one price. Which of the following statements is *most likely* to be correct?
    A. The law of one price explains that two assets producing equal future cash flows would sell for equal prices.
    B. The law of one price describes how a risk-free profit can be earned without capital commitments.
    C. The true fundamental value of the asset can be described by the law of one price.

51. Which of the following *most likely* represents an arbitrage opportunity?
    A. A risk free rate is earned by the combination of the underlying asset and a derivative.
    B. Sale of the shares of a takeover target and purchase of shares of the potential acquirer.
    C. Two identical assets or derivatives are sold for different prices in different markets.

52. Which of the following is *most likely* to be a criticism of the derivatives market?
    A. Derivatives provide price information but only at a cost of increasing transaction costs.
    B. Derivatives are highly speculative instruments and effectively permit legalized gambling.
    C. Default risk exists within all instruments of the derivative market.

**Solutions**

1. C is correct. Mutual funds do not transform the value of a payoff of an underlying asset; they merely pass those payoffs through to their holders. Hence they are not derivatives.

2. A is correct. The value of a derivative is based on the performance of the underlying.

3. B is correct. Derivatives have high degrees of leverage.

4. C is correct. Derivatives are not created in the spot market, which is where the underlying trades.

5. C is correct. Exchange-traded contracts have less credit risk than OTC derivatives.

6. B is correct. Over-the-counter derivatives are customized and less transparent relative to exchange traded derivatives. There is tendency to think that OTC market is less liquid relative to the exchange market, but this is not necessarily true.

7. B is correct. Exchange-traded derivatives are guaranteed by a clearinghouse against default. A is incorrect because the exchange traded derivatives are standardized. C is incorrect because they are characterized by a high degree of regulation.

8. A is correct. Because of the customization of OTC derivatives, there is a tendency to think that the OTC market is less liquid than the exchange market. However, this is not necessarily true. Many OTC instruments can easily be created and then essentially offset by doing the exact opposite transaction, often with the same party.

9. B is correct. Market makers buy at one price (the bid), sell at a higher price (the ask), and hedge whatever risk they otherwise assume. They do not charge a commission.

10. B is correct. Customization of contract terms is a characteristic of over-the-counter derivatives.

11. C is correct. Futures contract are not exposed to default risk.

12. C is correct. A credit default swap is a contingent claim.

13. C is correct. An asset backed security is a contingent claim not a forward commitment.

14. C is correct. Only one party, the short, can default.

15. B is correct. A swap agreement is equivalent to a series of forward agreements, which are described as forward commitments.

16. C is correct. Payoffs for future contracts are received daily.

17. C is correct. A swap is a series of multiple payments at scheduled dates, whereas a forward has only one payment, made at its expiration date.

18. B is correct. During daily settlement losses and gains are collected and distributed to the respective parties.

19. A is correct. An option is strictly the right to buy (a call) or the right to sell (a put). It does not provide both choices. Similarly, the right to convert is an obligation, not a right.

20. B is correct. A put option on a stock provides no guarantee of any change in the stock price. It has an expiration date, and it provides for a fixed price at which the holder can exercise the option, thereby selling the stock.

21. A is correct. A credit derivative is a class of derivative contracts between two parties, a credit protection buyer and a credit protection seller, in which the latter provides protection to the former against a specific credit loss.

22. C is correct. It is a swap because two parties agree to exchange cash flows in the future.

23. C is correct. Futures position holders are required to maintain a minimum level of account balance which is called the maintenance margin requirement. The amount sufficient to bring ending account balance back to initial margin requirement is called the variation margin. Initial margin is the collateral or performance bond that ensures the fulfillment of the obligation.

24. A is correct. While forward contracts and over-the-counter options are customized private contracts between parties with a presence of default risk, futures contracts have the least risk of default because of the presence of a clearinghouse as an intermediary guaranteeing the parties against default through the practice of daily settlement.

25. A is correct. A swap is an agreement between two parties to exchange a series of future cash flows. Microsoft receives floating interest rate payments and makes fixed interest rate payments. The given agreement is a swap.

26. A is correct. Because the future has a daily price limit of €10, the highest possible settlement price on Day 2 is €115. Therefore, the marked to market value would be (€115-€105) * 50 = €500.

27. B is correct. Profit = max (0, premium – value of put at expiration) = max (0, premium-(X-S)) = 2.5 – 1 = 1.5.

28. A is correct. A credit default swap (CDS) is a derivative in which the seller provides credit protection to the buyer against the credit risk of a separate party. It is hence classified as a contingent claim. B and C are incorrect because futures contracts and interest rate swaps are classified as forward commitments.

29. C is correct. Interest rate swaps are forward commitments that require one party to pay a fixed rate and the other party to pay floating rate during the life of the swap. A and B are incorrect because they are characteristics of credit default swaps.

30. C is correct. Options are contingent claims that provide a one-sided payoff.

31. C is correct. Interest rate swaps are derivatives where two parties agree to exchange a series of cash flows. Typically, one set of cash flows is variable and the other set is variable. Option C is a true statement with respect to call options, not swaps.

32. B is correct. Futures are exchange traded contracts with a credit guarantee and a protection against default. Interest rate swaps and forwards are over-the-counter contracts that are privately negotiated and are subject to default.

33. C is correct. Options require the payment of an option premium to the seller of the option at the initiation of the contract. The premium can be thought of as the value of the option contract. Futures and forwards have a value of zero at the initiation of the contract. Futures contracts do require an initial deposit (initial margin) but this can thought of as a down payment or a performance bond. The initial margin does not represent the value of the futures contract.

34. A is correct. A credit derivative is a derivative contract in which the seller provides credit protection to the buyer against the credit risk of a third party. B and C are incorrect because these are characteristics of futures, not credit derivatives.

35. B is correct. Unlike futures contracts, which have standardized features, forward contracts can be customized to suit the needs of the parties involved.

36. A is correct. In the futures markets the investor must top up to the initial margin. In the stock market an investor only needs to top up to the maintenance margin.

37. A is correct. The initial margin can be thought of as a good faith deposit or performance bond. It covers possible future losses.

38. B is correct. Derivatives facilitate risk allocation by making it easier and less costly to transfer risk.

39. C is correct. Derivatives do not convey any information about the use of the underlying in strategies.

40. A is correct. Derivatives regulation is not more and is arguably less than spot market regulation. However, market crashes and panics have a very long history, much longer than that of derivatives.

41. B is correct. Derivative markets have greater liquidity than underlying spot markets with lower capital requirements and lower transaction costs.

42. C is correct. Derivative markets provide for effective risk management and thus result in payoffs different than those of the underlying. Therefore similar payoffs are least likely to be an advantage to consider. An operational advantage of derivative markets is the ease of going short in comparison to the underlying spot market.

43. C is correct. The benefits of derivatives can result in excessive speculative trading and hence cause defaults on the part of creditors and speculators. A is incorrect because arbitrage tends to bring about convergence of prices to the intrinsic value. B is incorrect because asymmetric information is not itself destabilizing.

44. A is correct. Compared to the underlying spot market, the derivatives market will have higher liquidity.

45. C is correct. Derivatives can be combined with other derivatives or underlying assets to form hybrids. Derivatives can be issued on a variety of such diverse underlyings such as weather, electricity, and disaster claims

46. A is correct. Arbitrage forces equivalent assets to have a single price. There is nothing called the law of similar prices or the law of limited profitability.

47. C is correct. Prices converge because of the heavy demand for the cheaper asset and the heavy supply of the more expensive asset.

48. A is correct. Arbitrage is risk free and requires no capital because selling the overpriced asset produces the funds to buy the underpriced asset.

49. C is correct. Arbitrage results in an acceleration of price convergence to fair values relative to instruments with equivalent payoffs.

50. A is correct. The law of one price occurs when participants in the market engage in arbitrage activities so that identical assets sell for the same price in different markets.
    B refers to arbitrage and C does not account for identical assets.

51. C is correct. Arbitrage opportunities exist when the same asset or two equivalent assets, producing the same result, sell for different prices. A and B are incorrect because they do not define arbitrage opportunities.

52. B is correct. The criticism to derivatives is that they are ‘too risky’ especially to investors with limited knowledge of complicated instruments. Derivative markets do provide price information but also lower transaction costs. Moreover, default risk is not existent in all instruments. With exchange traded instruments such as options and futures there is virtually no default risk.

**LO.a: Explain how the concepts of arbitrage, replication, and risk neutrality are used in pricing derivatives.**

1. The spot price of an asset that has no interim costs or benefits will be *least likely* affected by:
   A. the risk aversion of investors.
   B. the time value of money.
   C. the price recently paid by other investors.

2. Which of the following is *least likely* a benefit of holding an asset?
   A. Convenience yield.
   B. Dividends or interest payments.
   C. A positive forecast for the asset.

3. Which of the following statements is *most* accurate?
   A. An arbitrage opportunity is an opportunity to buy an asset at less than its fundamental value.
   B. An arbitrage opportunity is an opportunity to make a profit at no risk with no capital invested.
   C. An arbitrage opportunity is to earn the risk free rate.

4. If an arbitrage opportunity exists the:
   A. prices will adjust to eliminate the opportunity.
   B. risk premiums will increase.
   C. markets will cease operations.

5. An arbitrage opportunity is *most likely* to be exploited when:
   A. the price differential between assets is large.
   B. the price differential between assets is minor.
   C. the investor can only execute a transaction in small volumes.

6. An arbitrageur will *least likely* execute a trade when:
   A. transaction costs are low.
   B. prices reflect the law of one price.
   C. offsetting positions are very liquid.

7. An arbitrage transaction is *most likely* to generate a profit when:
   A. two portfolios produce identical results and sell for the same price.
   B. two portfolios produce identical results but sell for different prices.
   C. two portfolios produce different results and sell for different prices.

8. Which of the following statements regarding pricing of derivatives is *most accurate*?
   A. A hedge portfolio is formed that eliminates arbitrage opportunities.
   B. The payoff of the underlying is adjusted upward by the derivative value.
   C. The expected future payoff of the derivative is discounted at the risk-free rate plus a risk premium.

9. Risk neutral investors:
   A. give away a risk premium because they enjoy taking risk.
   B. expect a risk premium to compensate for the risk.
   C. require no premium to compensate for assuming risk.

10. Which of the following statements is *least accurate*?
   A. Clearinghouses restrict the transactions that can be arbitraged.
   B. Pricing models show what the price of the derivative should be.
   C. It may not always be possible to raise sufficient capital to engage in arbitrage.

11. The interest rate used in the pricing of forward contracts:
   A. increases with the risk aversion of an investor.
   B. decreases with the risk aversion of an investor.
   C. is not impacted by the risk aversion of an investor.

**LO.b: Distinguish between value and price of forward and futures contracts.**

12. Which of the following statements about a forward contract is *most accurate*?
   A. The forward price is fixed at the start, and the value starts at zero and then changes.
   B. The value is fixed at the start, and the forward price starts at zero and then changes.
   C. The price determines the profit to the buyer and the value determines the profit to the seller.

13. Rabia and Saman, two CFA candidates, make the following statements about an asset which neither pays interest nor divided. Also, there are no storage costs associated with the asset.
   Rabia**:** Just before termination, the value of a forward contract on that asset is zero.
   Saman**:** At initiation, the price of a forward contract on that asset is greater than the value of the contract.
   Which of the following is correct?
   A. Only Rabia is correct.
   B. Only Saman is correct.
   C. Both Rabia and Saman are incorrect.

14. Ali, a CFA candidate, makes the following statements:
   Statement I: Price of a forward contract fluctuates due to changes in market conditions
   Statement II: Value of a forward contract fluctuates due to changes in market conditions
   Which of the following is correct?
   A. Only Statement I is correct.
   B. Only Statement II is correct.
   C. Both statements are correct.

**LO.c: Explain how the value and price of a forward contract are determined at expiration, during the life of the contract, and at initiation.**

15. The value of the forward contract at expiration is equal to the:

A. price of the underlying divided by the forward price.
B. price of the underlying minus the forward price.
C. price of the underlying minus the compounded forward price.

16. The price of a forward contract is decided:
    A. at initiation of the contract.
    B. at expiration of the contract.
    C. during the period of the contract.

17. A portfolio manager is required to buy 25,000 shares of Biz Corp. in a month. She fears that the price will rise during the coming month, so she contacts a dealer and enters into an equity forward contract to buy 25,000 shares of Biz Corp. at $20 a share. When the contract expires, the price is $22 per share. At expiration who benefits and by how much?
    A. Portfolio manager benefits by $50,000.
    B. Dealer benefits by $500,000.
    C. Dealer benefits by $50,000.

18. NIT fund manager is required to sell 35,000 shares of NRL in three months. He is concerned the price of NRL shares will decline during the 3-month period, so he enters into a deliverable equity forward contract with HBL to sell 35,000 shares of NRL in three months for PKR 250 per share. When the contract expires, NRL is trading at PKR 200 per share. The fund manager will *most likely*:
    A. Pay PKR 7,000,000 to HBL.
    B. Receive PKR 8,750,000 from HBL.
    C. Receive PKR 1,750,000 from HBL.

19. NIT fund manager is required to sell 35,000 shares of NRL in three months. He is concerned the price of NRL shares will decline during the 3-month period, so he enters into an equity forward contract with HBL to sell 35,000 shares of NRL in three months for PKR 250 per share. When the contract expires, NRL is trading at PKR 200 per share. The fund manager will *most likely*:
    A. Pay PKR 7,000,000 to HBL.
    B. Receive PKR 8,750,000 from HBL.
    C. Receive PKR 1,750,000 from HBL.

20. Analyst 1: The value of a forward prior to expiration is the value of the asset minus the forward price.
    Analyst 2: The value of a forward prior to expiration is the value of the asset minus the present value of the forward price.
    Which analyst's statement is most likely correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

**LO.d: Describe monetary and nonmonetary benefits and costs associated with holding the underlying asset, and explain how they affect the value and price of a forward contract.**

21. The forward price is least likely affected by:
    A. the costs of holding the underlying.
    B. dividends paid by the underlying.
    C. how the investor feels about risk.

22. Which of the following factors increases the forward price of a commodity?
    A. Interest income.
    B. Opportunity cost.
    C. Convenience yield.

23. Which of the following statements about the price of a forward contract is most accurate?
    A. Costs incurred and benefits received by holding the underlying affect the forward price by raising and lowering it, respectively.
    B. Costs incurred and benefits received by holding the underlying affect the forward price by lowering and raising it, respectively.
    C. Costs incurred and benefits received by holding the underlying do not affect the forward price.

24. The short party of a forward contract is *most likely* expecting that the price of the underlying asset will:
    A. increase.
    B. decrease.
    C. not change.

25. Consider a forward contract where the underlying is the Indus Motor stock. The stock does not pay dividends and does not incur carrying costs during the term of the contract. The forward price is found by:
    A. adding the spot price to the risk-free rate over the life of the contract.
    B. discounting the spot price at the risk-free rate over the life of the contract.
    C. compounding the spot price at the risk-free rate over the life of the contract.

26. PSO and NRL stocks are currently priced at PKR 250 per share. Over the next year, PSO stock is expected to pay dividends whereas NRL stock is not expected to pay dividends. There are no carrying costs associated with holding either stock over the next year. Compared with PSO, the one-year forward price of NRL is *most likely*:
    A. lower.
    B. higher.
    C. the same.

27. For a given asset, the spot price is 100, the interest rate is 10%, the storage cost for one year is 5, and the benefit of holding the asset for one year is 2. The one-year forward contract will *most likely* be priced at:
    A. 113.
    B. 115.
    C. 118.

28. If the present value of a convenience yield exceeds the present value of its storage costs, then the commodity's forward price is *most likely*:
    A. less than the spot price discounted at the risk-free rate.
    B. less than the spot price compounded at the risk-free rate.
    C. higher than the spot price compounded at the risk-free rate.

29. Which of the following best describes the price of a forward contract?
    A. Spot price (1 + r) + future value of costs – future value of benefits.
    B. Spot price (1 + r) – future value of costs + future value of benefits.
    C. Spot price (1 + r) + future value of costs.

**LO.e: Define a forward rate agreement and describe its uses.**

30. The forward rate of an FRA is equal to the:
    A. spot rate implied by the term structure.
    B. forward rate implied by the term structure.
    C. rate on a zero-coupon bond of maturity equal to that of the forward contract.

31. Which of the following is *most likely* true about a 30-day FRA on 90-day Libor? The forward rate is calculated based on:
    A. 30-day and 60-day spot rates.
    B. 30-day and 90-day spot rates.
    C. 30-day and 120-day spot rates.

**LO.f: Explain why forward and futures prices differ.**

32. Ignoring the time value of money, the forward contract payoffs will be:
    A. larger than future contract payoffs.
    B. smaller than future contract payoffs.
    C. equal to the future contract payoffs.

33. If future prices are negatively correlated with interest rates:
    A. futures contracts are more desirable to holders of long position than are forwards.
    B. forward contracts are more desirable to holders of long position than are futures.
    C. both forward contracts and future contracts will be equally desirable.

34. If futures prices are positively correlated with interest rates, a long party:
    A. prefers futures contracts.
    B. prefers forward contracts.
    C. is indifferent between futures and forwards.

35. In contrast to a futures contract, a forward contract is:
    A. standardized.
    B. less regulated.
    C. initiated at a zero value.

36. When futures prices are negatively correlated with interest rates, which of the following is correct.
    A. Long prefers futures contracts.
    B. Short prefer forward contracts.
    C. Long prefers forward contracts.

37. The value of a futures contract is the:
    A. futures price minus the spot price.
    B. present value of expected payoff at expiration.
    C. accumulated gain since the previous settlement, which resets to zero upon settlement.

38. A trader takes a short position in 10 futures contracts at the start of Day 1. The futures price at this stage is \$82. The closing price on Day 1 is \$75. What amount is added or taken away from the trader's account?
    A. \$70 added to account.
    B. \$70 taken away from account.
    C. \$75 taken away from account.

39. Which of the following is *most likely* true with respect to forward and futures contracts?
    A. Credit risk is virtually non-existent for both types of contracts.
    B. Both types of contracts can be executed between private parties.
    C. Both forwards and futures can be classified as forward commitments.

40. Which of the following conditions will *most likely* make futures prices and forward prices equivalent?
    A. No correlation between interest rates and forward prices.
    B. No correlation between interest rates and futures prices.
    C. Forward prices and futures prices have the same volatility.

**LO.g: Explain how swap contracts are similar to but different from a series of forward contracts.**

41. Which of the following statements is *most accurate*?
    A. A swap is equivalent to a series of forward contracts, each created at the swap price.
    B. A swap is equivalent to a series of long forward contracts, matched with short future contracts.
    C. A swap is equivalent to a series of forward contracts, each created at their appropriate forward prices.

**LO.h: Distinguish between the value and price of swaps.**

42. If the present value of the payments in a forward contract or swap is not zero, then:
    A. the party receiving the lower present value must compensate the other party with a cash payment at the start.

B. the party receiving the greater present value must compensate the other party with a cash payment at the start.
C. such a contract cannot legally be created.

43. At the initiation of the contract, the value of a swap typically is:
A. zero.
B. positive.
C. negative.

44. At the initiation of the contract, price of a swap typically:
A. is zero.
B. cannot be calculated.
C. is calculated through the principle of replication.

45. The principle of replication states that the valuation of a swap is the present value of the:
A. underlying asset.
B. fixed and floating payments from the swap.
C. all the net cash flow payments from the swap.

46. Which of the following statements is *most likely* correct?
A. For a correctly priced swap the price is the same as value.
B. The price of a swap increases if the price of the underlying increases.
C. The value of swap changes during the life of the swap.

47. Which of the following is *least likely* correct?
A. The value of a swap is typically zero at initiation.
B. The value of a swap is the present value of the fixed payments during the life of the swap.
C. Swaps have multiple settlement dates.

**LO.i: Explain how the value of a European option is determined at expiration.**

48. At expiration, a European call option will be valuable if the exercise price is:
A. less than the underlying price.
B. equal to the underlying price.
C. greater than the underlying price.

**LO.j: Explain the exercise value, time value, and moneyness of an option.**

49. Due to time value decay, as we move closer to expiration:
A. a call option losses value.
B. a put option losses value.
C. both call and put option lose value.

50. Analyst 1: For options, the minimum value is the greater of zero or the difference between the underlying price and the present value of the exercise price, whereas the exercise value is

the maximum of zero and the appropriate difference between the underlying price and the exercise price.
Analyst 2: For options, the exercise value is the greater of zero or the difference between the underlying price and the present value of the exercise price, whereas the minimum value is the maximum of zero and the appropriate difference between the underlying price and the exercise price.
Which analyst's statement is *most likely* correct?
A. Analyst 1.
B. Analyst 2.
C. Neither of them.

51. Which of the following is *most likely* to be the maximum price of a European put option at time, t?
A. The price of the underlying stock at time, t.
B. The present value of the exercise price of the option.
C. The exercise price of the option.

52. Party A is long call options while Party B is long put options for the same underlying stock. These options mature on July 20th and have an exercise price of $15/share. The options are priced at $3 each. Given that the stock price on July 20th was $17.5/share, which of the following *most accurately* describes the moneyness of the two options:

| | **Call options** | **Put options** |
|---|---|---|
| A | Out of the money | Out of the money |
| B | In the money | Out of the money |
| C | Out of the money | In the money |

53. Fred has bought a put option, with an exercise price of $40 and a current stock price of $48. Which of the following *most accurately* gives the exercise value of the option and describes its moneyness?

| | Exercise Value | Moneyness |
|---|---|---|
| A. | $8 | In-the-money |
| B. | $40 | In-the-money |
| C. | $0 | Out-of-the-money |

54. As the expiration date approaches, the time value of an option:
A. Increases.
B. Decreases.
C. Stays the same.

**LO.k: Identify the factors that determine the value of an option, and explain how each factor affects the value of an option.**

55. The value of a European option is *least likely* affected by:
A. the volatility of the underlying.
B. dividends or interest paid by the underlying.
C. the percentage of the investor's assets invested in the option.

56. Which of the following factors will *least likely* reduce the value of a European call option?
    A. Less time to expiration.
    B. A higher stock price relative to the exercise price.
    C. Larger dividends paid by the stock during the life of the option.

57. Analyst 1: A European put may be worth less the longer the time to expiration because the cost of waiting to receive the exercise price is higher.
    Analyst 2: A European put may be worth less the longer the time to expiration because the longer time to expiration means that that the put is more likely to expire out-of-the-money.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

58. The table below shows three European call options on the same underlying:

| | **Time to Expiration** | **Exercise Price** |
|---|---|---|
| Option 1 | 1 month | 50 |
| Option 2 | 2 months | 50 |
| Option 3 | 2 months | 53 |

    The option with highest value is *most likely*:
    A. Option 1.
    B. Option 2.
    C. Option 3.

59. The value of a European put option on a dividend paying asset will *most likely* decrease if there is a:
    A. decrease in dividend payments.
    B. decrease in carrying costs.
    C. decrease in the risk free rate.

60. What is the *most likely* impact on the price of a call option if the risk-free rate increases? The option price will:
    A. increase.
    B. decrease.
    C. stay the same.

61. Assuming everything else constant, which of the following *best* describes changes that result in a decrease in the value of a put option?

| | **Risk Free Rate** | **Volatility** |
|---|---|---|
| A. | Increase | Decrease |
| B. | Decrease | Decrease |
| C. | Decrease | Increase |

62. Which of the following will *most likely* cause a European put option to be worth less?
    A. Decrease in the risk free rate.

B. Decrease in the time to maturity.
C. Decrease in the price of the underlying.

63. American call and put options are written on the same underlying and both options have the same expiration date and exercise price. At expiration, it is possible that both options will have:
    A. the same value.
    B. positive values.
    C. negative values.

64. At expiration, an American call option will be valuable if the underlying price is:
    A. equal to the exercise price.
    B. less than the exercise price.
    C. greater than the exercise price.

**LO.l: Explain put–call parity for European options.**

65. According to put-call parity, which of the following relationships hold?
    A. The put price is always equal to the call price.
    B. The put price minus the underlying price equals the call price minus the present value of the exercise price.
    C. The put price plus the underlying price equals the call price plus the present value of the exercise price.

66. Analyst 1: The combination of a long asset, long put, and short call will result in a risk free position.
    Analyst 2: The combination of a long call, long put, and short asset will result in a risk free position.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Both.

67. Which of the following transactions is the equivalent of a synthetic long put position?
    A. Long call, short bond, long asset.
    B. Short call, short bond, long asset.
    C. Long call, long bond, short asset.

**LO.m: Explain put–call–forward parity for European options.**

68. According to put-call-forward parity, which of the following relationships hold?
    A. The put price plus the value of a risk-free bond with face value equal to the forward price equals the call price plus the value of a risk-free bond with face value equal to the exercise price.
    B. The put price plus the value of a risk-free bond with face value equal to the exercise price equals the call price plus the value of a risk-free bond with face value equal to the forward price.

C. The put price plus the value of a risk-free bond with face value equal to the forward price equals the call price minus the value of a risk-free bond with face value equal to the exercise price.

**LO.n: Explain how the value of an option is determined using a one-period binomial model.**

69. In a binomial model, the volatility of the underlying is directly represented by the:
    A. standard deviation of the underlying.
    B. difference between the up and down factors.
    C. ratio of the underlying value to the exercise price.

70. Which of the following statements is *most accurate*? In a binomial model:
    A. the price of an option will be high if the actual probabilities of the up and down moves are high.
    B. the price of an option will be low if the actual probabilities of the up and down moves are high.
    C. the actual probabilities of the up and down moves are irrelevant to pricing options.

71. Which of the following statements about the binomial option pricing formula is *most accurate*?
    A. The spot price is compounded at the risk-free rate minus the volatility premium.
    B. The expected payoff is discounted at the risk-free rate plus a risk premium.
    C. The expected payoff based on risk-neutral probabilities is discounted at the risk-free rate.

**LO.o: Explain under which circumstances the values of European and American options differ.**

72. American calls should be exercised early if:
    A. the underlying has reached its expected maximum price.
    B. the underlying has a lower expected return than the risk free rate.
    C. there is a dividend or other cash payment on the underlying.

73. All else equal, a stock paying dividends:
    A. discourages early exercise of a put.
    B. encourages early exercise of a put.
    C. has no effect on early exercise of a put.

74. Ali is long an in-the-money American call option on a dividend paying stock. Would he ever exercise this option early?
    A. No.
    B. Yes, if divided is high enough.
    C. Yes, if it’s time value is high enough.

**Solutions**

1. C is correct. The price recently paid by other investors is past information and does not affect the spot price.

2. C is correct. A positive forecast for the asset is not a benefit of holding an asset.

3. B is correct. An arbitrage opportunity is an opportunity to make a profit at no risk with no capital invested.

4. A is correct. When an arbitrage opportunity exists investors will trade quickly and prices will adjust to eliminate the opportunity.

5. A is correct. An arbitrage opportunity is more likely to be exploited when the price differential between assets is large or when large volume transactions can be executed.

6. B is correct. When the prices reflect law of one price, there is no arbitrage opportunity.

7. B is correct. If two portfolios produce identical results but sell for different prices, an arbitrageur can buy the portfolio with the lower price and sell the portfolio with the higher price, generating a net inflow of funds at the start of the holding period.

8. A is correct. A hedge portfolio is formed that eliminates arbitrage opportunities and implies a unique price for the derivative.

9. C is correct. Risk-neutral investors neither give nor receive a risk premium because they have no feelings about risk.

10. A is correct. Clearinghouses do not restrict arbitrage transactions.

11. C is correct. In the pricing of forward contracts the risk free rate is used. Hence the risk aversion of the investor does not matter.

12. A is correct. The forward price is fixed at the start, and the value starts at zero and then changes.

13. B is correct. The value of a forward contract at initiation is zero; therefore, the forward price is greater than the value of the forward contract at initiation. Just before termination, the value of the forward contract will be equal to the spot price minus the forward price.

14. B is correct. Only the value of the forward contract will adjust as market conditions change. The forward price is fixed at initiation of the contract.

15. B is correct. The holder of the forward contract gains the difference between the price of the underlying and the forward price.

16. A is correct. The price of a forward contract is decided at the initiation of the contract.

17. A is correct. Since the portfolio manager takes a long position and the price goes up, she benefits. The benefit is 25,000 * (22 – 20) = 50,000.

18. B is correct. The fund manager entered into a contract to sell the stock to HBL at PKR 250 per share in 3 months' time. 35,000 * PKR 250 = PKR 8,750,000. Option B is correct because it is a deliverable contract. If it was a cash settled contract, then option C would be correct.

19. C is correct. Since it is a cash settled contract, the fund manager will receive 35,000 * PKR 250 - 200 = PKR 1,750,000. Option B is correct only if it is a deliverable contract.

20. B is correct. The value of a forward contract prior to expiration is the value of the asset minus the present value of the forward price.

21. C is correct. How the investor feels about risk is irrelevant, because the forward price is determined by arbitrage.

22. B is correct. The convenience yield and interest income are benefits of holding the asset which are subtracted from the compounded spot price and reduces the commodity's forward price. The opportunity cost is the risk-free rate, which increases the commodity's forward price.

23. A is correct. Costs incurred and benefits received by holding the underlying affect the forward price by raising and lowering it, respectively.

24. B is correct. The short party of a forward contract is most likely expecting that the price will go down. On the other hand, the long party is expecting that the price will go up.

25. C is correct. For a stock that neither receives benefits nor incurs carrying costs during the term of the contract, the forward price is found by compounding the spot price at the risk-free rate over the life of the contract.

26. B is correct. The forward price of each stock is found by compounding the spot price by the risk-free rate for the period and then subtracting the future value of any benefits and adding the future value of any costs. In the absence of any benefits or costs, the one-year forward prices of PSO and NRL should be equal. After subtracting the benefits related to PSO, the one-year forward price of PSO is lower than the one-year forward price of NRL.

27. A is correct. An asset's forward price is spot (1 + r) + costs – benefits = 100 * 1.1 + 5 – 2 = 113.

28. B is correct. If the present value of convenience yield exceeds the present value of its storage costs, then the commodity's forward price is less than the spot price compounded at the risk-free rate.

29. A is correct. Costs increase the forward price and benefits reduce the forward price.

30. B is correct. FRAs are based on Libor, and they represent forward rates, not spot rates.

31. C is correct. This FRA expires in 30-days and is based on a 90-day loan which starts on day 30. The forward rate represents the rate which can be locked in today for a 90-day loan starting 30-days from today. This rate is calculated based on the 30-day spot rate and the 120-day spot rate.

32. C is correct. Forward payoffs occur all at expiration, whereas futures payoffs occur on a day-to-day basis but would equal forward payoffs ignoring interest.

33. B is correct. The reason is because rising prices lead to futures profits that are reinvested in periods of falling interest rates, and falling prices leads to losses that occur in periods of rising interest rates.

34. A is correct. If futures prices are positively correlated with interest rates, futures contracts are more desirable to holders of long positions than are forwards. This is because rising prices lead to future profits that are reinvested in periods of rising interest rates, and falling prices lead to losses that occur in periods of falling interest rates.

35. B is correct. In contrast to a futures contract, a forward contract is less regulated.

36. C is correct. When futures prices are negatively correlated with interest rates, long prefers forward contracts.

37. C is correct. Value accumulates from the previous settlement and goes to zero when distributed.

38. A is correct. The trader has a short position so the fall in price helps him. He will receive: (82 – 75) * 10 = $70.

39. C is correct. Option A is incorrect because credit risk is virtually non-existent only for futures contracts. Option B is incorrect because only forward contracts are executed between private parties. Option C is correct.

40. B is correct. Forward prices and futures prices are equivalent when there is no correlation between futures prices and interest rates.

41. A is correct. Each implicit forward contract is said to be off-market, because it is created at the swap price, not the appropriate forward price, which would be the price created in the forward market.

42. B is correct. Such a contract can legally be created, but the party receiving the greater present value must compensate the other party with a cash payment at the start.

43. A is correct. At the initiation of the contract, typically value of a swap is zero.

44. C is correct. Price of a swap is calculated using principle of replication.

45. C is correct. The principal of replication states that the valuation of a swap is the present value of all the net cash flow payments from the swap.

46. C is correct. The price of a swap is established at the start of the swap and remains fixed. The value of a swap is typically zero at the start of the swap and changes during the life of the swap.

47. B is correct. Options A and C represent correct statements. The value of a swap is the present value of net cash flow payments from the swap.

48. A is correct. A European call option will be valuable at expiration if the exercise price is less than the underlying price.

49. C is correct. Both call and put option have time value that decays as the expiration approaches.

50. A is correct. To calculate minimum value, the exercise price is adjusted for the time value of money.

51. B is correct. The maximum price of a European put option is the present value of the exercise price of the option. The price of the underlying stock at time, t, is the maximum value for a European Call option. The exercise price of the option is the maximum value for an American put option.

52. B is correct. For an option to be in the money:
    Call option condition: Stock price – Exercise price > 0
    17.5 – 15 = 2.5 > 0
    Hence, payoff is $2.5 and the call option is in the money.
    Put option condition: Exercise price – stock price > 0
    15 – 17.5 = -2.5 < 0
    Hence payoff is zero and the put option is out of the money.

53. C is correct. The option has an exercise value of $0 because the stock price exceeds the exercise price and the option shall not be exercised by the investor. Thus, the option is out-of-the-money.

54. B is correct. As the expiration date approaches, the time value decreases and is zero at expiration.

55. C is correct. The investor's exposure to the option is not relevant to the price one should pay to buy or ask to sell the option.

56. B is correct. The higher the stock price and the lower the exercise price, the more valuable is the call.

57. A is correct. Although the longer time benefits the holder of the option, it also has a cost in that exercise of a longer-term put comes much later. Therefore, the receipt of the exercise price is delayed.

58. B is correct. Option 2 will most likely have the highest value because it has a longer time to expiration relative to Option 1 and a lower exercise price relative to Option 3.

59. A is correct. A decrease in dividends reduces the value of a put option. A decrease in carrying costs increases the value of a put option. A decrease in the risk free rate increases the value of a put option.

60. A is correct. If the risk-free rate increases the call option price increases.

61. A is correct. Lower volatility on the underlying decreases the option's value for both puts and calls. Increase in risk free rate increases the value of a call option but reduces the value of a put option.

62. B is correct. A decrease in the risk free rate will cause a put option to be worth more. A decrease in time to maturity will generally cause a put option to be worth less. A decrease in the price of the underlying will cause the put option price to increase. The best option is B.

63. A is correct. If the underlying has a value equal to the exercise price at expiration, both options will have zero value since they both have the same exercise price.

64. C is correct. At expiration, an American call option will be valuable if the underlying price is greater than the exercise price.

65. C is correct. The put and underlying make up a protective put, while the call and present value of the exercise price make up a fiduciary call.

66. A is correct. The combination of a long asset, long put, and short call is risk free because its payoffs produce a known cash flow of the value of the exercise price.

67. C is correct. Put-call parity is given by: long stock + long put = long call + long bond. Hence a synthetic put can be created as follows: long call + long bond – short stock.

68. A is correct. According to put-call-forward parity, the put price plus the value of a risk-free bond with face value equal to the forward price equals the call price plus the value of a risk-free bond with face value equal to the exercise price.

69. B is correct. The up and down factors express how high and how low the underlying can go. Standard deviation does not appear directly in the binomial model, although it is implicit.

70. C is correct. The actual probabilities of the up and down moves are irrelevant to pricing options.

71. C is correct. Risk-neutral probabilities are used, and discounting is at the risk-free rate.

72. C is correct. Cash payments on the underlying are the only reason to exercise American calls early.

73. A is correct. Dividends drive down the stock price when the dividend is paid. This characteristic discourages early exercise, because stock price declines are beneficial to holders of puts.

74. B is correct. A cash flow such as a dividend payment is required for an early exercise. However, a dividend payment does not guarantee early exercise. A dividend needs to be large enough to justify the early exercise.

**LO.a: Determine the value at expiration, the profit, maximum profit, maximum loss, breakeven underlying price at expiration, and payoff graph of the strategies of buying and selling calls and puts and determine the potential outcomes for investors using these strategies.**

1. Consider a call option selling for \$5 in which the exercise price is \$50 and the price of the underlying is \$48. If the price of the underlying at expiration is \$53, the value at expiration and the profit to the buyer is:
   A. \$2 and \$3 respectively.
   B. \$3 and -\$2 respectively.
   C. \$3 and \$2 respectively.

2. Analyst 1: The maximum profit from buying a call is infinite and the maximum loss is the option premium.
   Analyst 2: The maximum profit from buying a put is infinite and the maximum loss is the option premium.
   Which analyst's statement is *most likely* correct?
   A. Analyst 1.
   B. Analyst 2.
   C. Both.

**The following information relates to questions 3-6:**
A call option with an exercise price of \$90 is selling for \$6. The price of the underlying is \$87.

3. The value at expiration for the buyer when the underlying is priced at \$92 is most likely to be:
   A. \$2.
   B. \$3.
   C. \$5.

4. The profit at expiration for the buyer when the underlying is priced at \$94 is most likely to be:
   A. - \$2.
   B. \$0.
   C. \$2.

5. The value at expiration for the seller when the underlying is priced at \$93 is most likely to be:
   A. -\$3.
   B. \$0.
   C. \$3.

6. The value at expiration for the seller when the underlying is priced at \$82 is most likely to be:
   A. -\$3.
   B. \$0.

C. $3.

7. Consider a call option selling for $5 in which the exercise price is $50 and the price of the underlying is $48. If the price of the underlying at expiration is $47, the value at expiration and the profit to the buyer is:
   A. $0 and -$5 respectively.
   B. $3 and $2 respectively.
   C. $0 and -$8 respectively.

8. Consider a call option selling for $5 in which the exercise price is $50 and the price of the underlying is $48. If the price of the underlying at expiration is $41, the value at expiration and the profit to the seller is:
   A. $0 and $2 respectively.
   B. $0 and $9 respectively.
   C. $0 and $5 respectively.

9. Consider a call option selling for $5 in which the exercise price is $50 and the price of the underlying is $48. If the price of the underlying at expiration is $51, the value at expiration and the profit to the seller is:
   A. $0 and $1 respectively.
   B. $1 and -$4 respectively.
   C. -$1 and $4 respectively.

10. Consider a call option selling for $10 in which the exercise price is $100 and the price of the underlying is $96. The maximum profit to the buyer and the maximum profit to the seller is:
    A. ∞ and $10 respectively.
    B. $10 and ∞ respectively.
    C. $96 and $4 respectively.

11. Consider a call option selling for $5 in which the exercise price is $50 and the price of the underlying is $48. The breakeven price of the underlying at expiration is closest to:
    A. $48.
    B. $53.
    C. $55.

12. The exercise price for a call option is $65, the price of the underlying is $70, and the option is selling for $6. Which of the following is most likely to be the breakeven price of the option?
    A. $64.
    B. $71.
    C. $76.

**The following information relates to questions 13-16:**
A put option with an exercise price of $100 is selling for $8. The price of the underlying is $103.

13. The value at expiration for the buyer when the underlying is priced at $98 is most likely to be:
    A. $2.
    B. $3.
    C. $5.

14. The profit at expiration for the buyer when the underlying is priced at $102 is most likely to be:
    A. -$1.
    B. -$2.
    C. -$8.

15. The maximum profit to the seller is most likely to be:
    A. $8.
    B. $100.
    C. $108.

16. The breakeven price of the underlying at expiration is most likely to be:
    A. $92.
    B. $98.
    C. $100.

17. Consider a put option selling for $8 in which the exercise price is $100 and the price of the underlying is $102. If the price of the underlying at expiration is $102, the value at expiration and the profit to a buyer is:
    A. $0 and -$8 respectively.
    B. -$8 and $0 respectively.
    C. $0 and -$2 respectively.

18. Consider a put option selling for $4 in which the exercise price is $50 and the price of the underlying is $51. If the price of the underlying at expiration is $45, the value at expiration and the profit to a buyer is:
    A. $5 and -$1 respectively.
    B. $5 and $1 respectively.
    C. $1 and -$5 respectively.

19. Consider a put option selling for $8 in which the exercise price is $100 and the price of the underlying is $102. If the price of the underlying at expiration is $91, the value at expiration and the profit to a seller is:
    A. $9 and -$1 respectively.
    B. -$9 and $1 respectively.
    C. -$9 and -$1 respectively.

20. Consider a put option selling for $8 in which the exercise price is $100 and the price of the underlying is $102. If the price of the underlying at expiration is $110, the value at expiration and the profit to a seller is:

A. $0 and $8 respectively.
B. $0 and $10 respectively.
C. $10 and $0 respectively.

21. Consider a put option selling for $8 in which the exercise price is $100 and the price of the underlying is $102. The maximum profit to a buyer and the maximum profit to a seller is:
    A. ∞ and $100 respectively.
    B. $100 and $8 respectively.
    C. $92 and $8 respectively.

22. Consider a put option selling for $8 in which the exercise price is $100 and the price of the underlying is $102. The breakeven price of the underlying at expiration is *closest* to:
    A. $92.
    B. $100.
    C. $108.

23. Sam has £40,000 to invest; he believes that Apple's stock price will appreciate by £50 to £500 in three months. The three-month at-the-money put on one share of Apple costs £2.5, while the three-month at-the-money call costs £1.75. In order to profit from his view on Apple stock, he will *most likely*:
    A. buy calls on shares of Apple.
    B. sell calls on shares of Apple.
    C. sell puts on shares of Apple.

**LO.b: Determine the value at expiration, profit, maximum profit, maximum loss, breakeven underlying price at expiration, and payoff graph of a covered call strategy and a protective put strategy, and explain the risk management application of each strategy.**

24. You simultaneously purchase a stock selling at $57 and write a call option on it with an exercise price of $65 selling at $7. This position is commonly called a:
    A. fiduciary call.
    B. covered call.
    C. protective put.

25. An analyst has the following data and wishes to execute the covered call strategy on an option:
    Stock price at t = 0 is $82; strike price = $84; call premium = $3. Which of the following is *most likely* to be the breakeven for this position?
    A. $79.
    B. $81.
    C. $87.

**The following information relates to questions 26-27**
Given that a bond is selling for $97 with a face value of $100 and a call option is selling for $4 with an exercise price of $103.

26. For a covered call and assuming that the price of the bond at expiration is $90, the profit is *most likely* to be:
    A. -$3.
    B. $6.
    C. $10.

27. The breakeven bond price at expiration is *most likely* to be:
    A. $86.
    B. $93.
    C. $99.

**The following information relates to questions 28-30**
A put option, selling for $0.08, has an exercise price of $0.80. A hypothetical currency is selling for $0.75.

28. Given that the price of the currency at expiration is $0.85, for a protective put, the value at expiration is *most likely* to be:
    A. $0.75.
    B. $0.85.
    C. $0.90.

29. Given that the price of the currency at expiration is $0.87, for a protective put, the profit at expiration is *most likely* to be:
    A. $0.04.
    B. $0.08.
    C. $0.10.

30. The maximum loss for the protective put is *most likely* to be:
    A. ∞.
    B. $0.03.
    C. $0.08.

31. You simultaneously purchase a stock selling at $57 and write a call option on it with an exercise price of $65 selling at $7. If the stock price is $70 at expiration, the value at expiration and the profit for your strategy is:
    A. $60 and $10 respectively.
    B. $65 and $15 respectively.
    C. $70 and $20 respectively.

32. What is the maximum profit on a covered call position where the stock price at t = 0 is 50, the option premium is 4 and the exercise price is 51?
    A. 3.
    B. 4.
    C. 5.

33. You simultaneously purchase a stock selling at $95 and write a call option on it with an exercise price of $100 selling at $9. If the stock price is $87 at expiration, the value at expiration and the profit for your strategy is:
    A. $100 and $9 respectively.
    B. $87 and -$1 respectively.
    C. $87 and $1 respectively.

34. You simultaneously purchase a stock selling at $57 and write a call option on it with an exercise price of $65 selling at $7. The maximum profit for your strategy is *closest* to:
    A. $15.
    B. $7.
    C. $8.

35. You simultaneously purchase a stock selling at $57 and write a call option on it with an exercise price of $65 selling at $7. The maximum loss for your strategy is *closest* to:
    A. $65.
    B. $57.
    C. $50.

36. You simultaneously purchase a stock selling at $57 and write a call option on it with an exercise price of $65 selling at $7. The breakeven stock price at expiration for your strategy is:
    A. $65.
    B. $50.
    C. $57.

37. Suppose you simultaneously purchase a stock selling at $98 and buy a put with an exercise price of $100 and selling at $5. This position is commonly called a:
    A. covered put.
    B. protective put.
    C. covered call.

38. What is the maximum loss on a protective put where the stock price at t = 0 is $50, the option premium is 4 and the exercise price is 49?
    A. 3.
    B. 4.
    C. 5.

39. Suppose you simultaneously purchase a stock for $49 and a put for $4 with an exercise price of $50. If the stock price is $60 at expiration, the value at expiration and the profit for your strategy are:
    A. $60 and $7 respectively.
    B. $50 and $4 respectively.
    C. $49 and $11 respectively.

40. Which of the following statements is *least accurate*?

   A. The breakeven underlying price at expiration for a covered call is the original price of the underlying minus the option premium.
   B. The breakeven underlying price at expiration for a protective put is the original price of the underlying plus the option premium.
   C. The maximum profit for a covered call is the exercise price minus the original underlying price minus the option premium.

41. Suppose you simultaneously purchase a stock for $98 and a put for $5 with an exercise price of $100. If the stock price is $90 at expiration, the value at expiration and the profit for your strategy is:
    A. $90 and $5 respectively.
    B. $100 and -$3 respectively.
    C. $90 and -$8 respectively.

42. Suppose you simultaneously purchase a stock selling at $98 and buy a put on it, with an exercise price of $100 and selling at $5. The maximum profit of your strategy is *closest* to:
    A. $100.
    B. $198.
    C. ∞.

43. Suppose you simultaneously purchase a stock selling at $98 and buy a put on it, with an exercise price of $100 and selling at $5. The maximum loss of your strategy is *closest* to:
    A. $3.
    B. $5.
    C. $8.

44. Suppose you simultaneously purchase a stock selling at $98 and buy a put on it, with an exercise price of $100 and selling at $5. The breakeven stock price for your strategy is *closest* to:
    A. $100.
    B. $103.
    C. $105.

45. You write a covered call with a strike price of $40. The call premium is $2. The underlying stock is currently selling for $36. What is the profit range at expiration?
    A. -$36 to $42.
    B. -$34 to $6.
    C. $6 to infinity.

**Solutions**

1. B is correct. Value at expiration = $c_T$ = max (0, $S_T$ – X) = max (0, 53 – 50) = \$3.
   Profit to buyer = $c_T - c_0$ = 3 – 5 = -\$2.

2. A is correct. The maximum profit from buying a put is the exercise price minus the option premium, and the maximum loss is the option premium.

3. A is correct.
   Value at expiration = $c_T = \max(0, S_T - X) = \max(0,92 - 90) = 2$.

4. A is correct.
   Value at expiration = $c_T = \max(0, S_T - X) = \max(0,94 - 90) = 4$.
   Profit = $c_T - c_0 = 4 - 6 = -2$

5. A is correct.
   Value at expiration = $-c_T = -\max(0, S_T - X) = -\max(0,93 - 90) = -3$

6. B is correct.
   Value at expiration = $-c_T = -\max(0, S_T - X) = \max(0, 82 - 90) = 0$.

7. A is correct. Value at expiration = $c_T$ = max (0, $S_T$ – X) = max (0, 47 – 50) = \$0.
   Profit to buyer = $c_T - c_0$ = 0 – 5 = -\$5.

8. C is correct. Value at expiration = - $c_T$ = -max (0, $S_T$ – X) = -max (0, 41 – 50) = \$0.
   Profit to seller = $-c_T + c_0$ = 0 + 5 = \$5.

9. C is correct. Value at expiration = $-c_T$ = -max (0, $S_T$ – X) = -max (0, 51 – 50) = -\$1.
   Profit to seller = $-c_T + c_0$ = -1 + 5 = \$4.

10. A is correct. The maximum profit to the buyer is ∞ and the maximum profit to the seller is the option premium i.e. \$10.

11. C is correct. The breakeven price = X + $C_0$ = 50 + 5 = \$55.

12. B is correct.
    Breakeven price, $S_T* = X + c_0 = 65 + 6 = \$71$.

13. A is correct.
    Value at expiration = $p_T = \max(0, X - S_T) = (0,100 - 98) = 2$.

14. C is correct.
    Value at expiration = $p_T = \max(0, X - S_T) = \max(0,100 - 102) = 0$.
    Profit = $p_T - p_0 = 0 - 8 = -8$.

15. A is correct.
    Maximum profit to the seller = $p_0$= \$8.

16. A is correct.
    $\text{Breakeven price}, S_T * = X - p_0 = 100 - 8 = 92$

17. A is correct. Value at expiration = $p_T$ = max(0, X-$S_T$) = max(0, 100 - 102) = 0.
    Profit to the buyer = $p_T - p_0$ = 0 – 8 = -\$8.

18. B is correct. Value at expiration = $p_T$ = max(0, X-$S_T$) = max(0, 50 - 45) = \$5.
    Profit to the buyer = $p_T - p_0$ = 5 – 4 = \$1.

19. C is correct. Value at expiration = -$p_T$ = -max(0, X-$S_T$) = -max(0, 100 - 91) = -\$9.
    Profit to the seller = -$p_T$ + $p_0$ = -9 + 8 = -\$1.

20. A is correct. Value at expiration = -$p_T$ = -max(0, X-$S_T$) = -max(0, 100 - 110) = \$0.
    Profit to the seller = -$p_T$ + $p_0$ = 0+ 8 = \$8.

21. C is correct. The maximum profit to the buyer is X – $p_0$ = 100 – 8 = \$92.
    The maximum profit to a seller is $p_0$ = \$8.

22. A is correct. The break-even price is X – $p_0$ = \$100 - \$8 = \$92.

23. A is correct. Buying a call gives Sam the right to buy Apple's stock at the exercise price. He predicts that the stock will increase to £500 at the end of three months. He will likely be able to sell his calls for at least £50 and realize a profit.

24. B is correct. This position is commonly called a covered call.

25. A is correct. Break even = Stock price – Call premium
    Therefore, the breakeven for this position equals \$82 - \$3 = \$79.

26. A is correct.
    $V_T = S_T - \max\ (0, S_T - X) = 90 - \max\ (0, 90 - 103) = 90 - 0 = 90$
    $\text{Profit} = V_T - V_0 = V_T - (S_0 - c_0) = 90 - (97 - 4) = -3$

27. B is correct.
    $\text{Breakeven price}, S_T = S_0 - c_0 = 97 - 4 = 93.$

28. B is correct.
    $V_T = S_T + \max\ (0, X - S_T) = 0.85 + \max\ (0, 0.8 - 0.85) = 0.85.$

29. A is correct.
    $V_T = S_T + \max\ (0, X - S_T) = 0.87 + \max\ (0,0.8 - 0.87) = 0.87$

$\text{Profit} = V_T - V_0 = V_T - (S_0 + p_0) = 0.87 - (0.75 + 0.08) = 0.04.$

30. B is correct.
    $\text{Maximum loss} = S_0 + p_0 - X = 0.75 + 0.08 - 0.80 = 0.03.$

31. B is correct. The value at expiration is $V_T = S_T - \max(0, S_T - X) = 70 - \max(0, 70 - 65) = 70 - 5 = 65$.
    The profit on the position is $V_T - V_0 = 65 - (S_0 - c_0) = 65 - (57 - 7) = 65 - 50 = 15$.

32. C is correct. Maximum profit is $X - S_0 + c = 51 - 50 + 4 = 5$.

33. C is correct. The value at expiration is $V_T = S_T - \max(0, S_T - X) = 87 - \max(0, 87 - 100) = 87$
    The profit on the position is $V_T - V_0 = 87 - (S_0 - c_0) = 87 - (95 - 9) = 1$.

34. A is correct. The maximum profit = $X - S_0 + c_0 = 65 - 57 + 7 = 15$.

35. C is correct. The maximum loss = $S_0 - c_0 = 57 - 7 = 50$.

36. B is correct. Breakeven price = $S_0 - c_0 = 57 - 7 = 50$.

37. B is correct. This position is commonly called a protective put.

38. C is correct. Maximum loss is given by $S_0 + p_0 - X = 50 + 4 - 49 = 5$.

39. A is correct.
    Value at expiration = $V_T = S_T + \max(0, X - S_T) = 60 + \max(0, 50 - 60) = 60$. The profit is $V_T - V_0 = 60 - (S_0 + p_0) = 60 - (49 + 4) = 7$.

40. C is correct. The maximum profit for a covered call is the exercise price minus the original underlying price plus the option premium.

41. B is correct. The value at expiration = $V_T = S_T + \max(0, X - S_T) = 90 + \max(0, 100 - 90) = 100$. The profit is $V_T - V_0 = 100 - (S_0 + p_0) = 100 - (98 + 5) = -3$.

42. C is correct. The maximum profit for a protective put is $\infty$.

43. A is correct. The maximum loss for a protective put = $S_0 + p_0 - X = 98 + 5 - 100 = 3$.

44. B is correct. The breakeven price = $S_0 + p_0 = 98 + 5 = 103$.

45. B is correct.
    The maximum loss is \$36 - \$2 = \$34.
    The maximum profit is (\$40- \$36) + \$2 = \$6
    If the price were to fall to zero, the investor would lose \$34.
    If the price rises, the maximum profit of \$6 is earned.

**LO.a: Compare alternative investments with traditional investments.**

1. Alternative investment funds are *most likely* managed:
   A. passively.
   B. to generate positive beta return.
   C. to generate a positive alpha return.

2. Compared with traditional investments, alternative investments are *more likely* to be characterized by higher:
   A. transparency.
   B. liquidity.
   C. expected returns.

3. Relative to traditional investments, alternative investments are *less likely* to be characterized by:
   A. low correlation with traditional investments.
   B. high level of regulation.
   C. unique legal and tax consideration.

4. Which of the following factors is *most likely* to be a characteristic of alternative investments?
   A. Narrow manager specialization.
   B. High regulation.
   C. High transparency.

5. Alternative investments are *least likely* to be characterized by higher:
   A. fees.
   B. illiquidity.
   C. transparency.

**LO.b: Describe categories of alternative investments.**

6. Which of the following is *least likely* to be considered an alternative investment?
   A. Hedge funds.
   B. Real estate.
   C. Long-only stock funds.

7. Which of the following is *most likely* to be correct about return?
   A. Beta, a measure of sensitivity, relative to a particular market index, is a measure of unsystematic risk.
   B. Owing to existing inefficiencies, a positive return can be earned through exploitation and after adjustment of beta risk. This is defined as alpha return.
   C. Alpha returns are correlated with beta returns and are presumably the result of managers' special skills in capturing non-systematic opportunities.

**LO.c: Describe potential benefits of alternative investments in the context of portfolio management.**

8. An investor is *most likely* to consider adding alternative investments to a traditional investment portfolio because of their:
   A. low sharp ratio.
   B. high correlation with traditional investments.
   C. diversifying potential.

**LO.d: Describe hedge funds, private equity, real estate, commodities, and other alternative investments, including, as applicable, strategies, sub-categories, potential benefits and risks, fee structures, and due diligence.**

9. Which of the following is *least likely* to be based on realized profits for a funds' structure?
   A. Incentive fee.
   B. Management fee.
   C. Performance fee.

10. Which of the following is *least likely* to be a characteristic of a hedge fund?
    A. It is an aggressively managed portfolio of investments across asset classes.
    B. Investors may be required to keep their money in the hedge fund for a minimum period known as a lock-up period.
    C. It is an investment opportunity available to the public and requires hefty investment.

11. Which of the following statements is *most likely* to be correct about funds of funds?
    Statement I: Funds of funds are funds that hold a portfolio of hedge funds.
    Statement II: Funds of funds presumably have some expertise in conducting due diligence on hedge funds.
    Statement III: Funds of funds may be able to negotiate better redemption.
    A. Statements I and II.
    B. Statements I and III.
    C. Statements I, II, and III.

12. Which of the following is *least likely* to be a hedge fund strategy?
    A. Event driven.
    B. Micro.
    C. Relative value.

13. A type of private equity fund that invests in established profitable and cash generative companies with solid customer bases, proven products, and high quality management is *most likely* described as a (an):
    A. venture capital.
    B. angel investing.
    C. leveraged buyout.

14. An investor may prefer a fund of funds to a single hedge fund if she:
    A. seeks better redemption terms.
    B. is concerned about extra layer fee structure.
    C. is willing and able to make a large initial investment.

15. Analyst 1: The management fee for a private equity fund is based on assets under management.
    Analyst 2: The management fee for a private equity fund is based on committed capital.
    Which analyst's statement is *most likely* correct?
    A. Analyst 1.
    B. Analyst 2.
    C. Neither of them.

16. Which of the following investments is *most* suitable for an investor looking for competitive long-term total return driven by both income generation and capital appreciation?
    A. Hedge funds.
    B. Real estate.
    C. Commodities.

17. If capital is provided to companies moving towards operations but before commercial production and sales have occurred, then it is *most likely*:
    A. angel investing.
    B. seed-stage financing.
    C. early stage financing.

18. Venture capital entails investing in:
    A. struggling public companies.
    B. well established private companies with stable cash flows.
    C. private companies with high growth potential.

19. Which of the following is *least likely* the characteristic of an attractive target company for a leveraged buyout?
    A. Company is not being run efficiently.
    B. Company's stock is depressed.
    C. Company's cash flow is volatile.

20. Which of the following is the *most accurate* description of contango?
    A. A situation where the spot price exceeds the forward or futures price.
    B. A situation where the forward or futures price exceeds the spot price.
    C. A situation where the forward or futures price is equivalent to the spot price.

21. Which of the following is *least likely* a form of real estate investment?
    A. Mortgage-backed securities.
    B. Real estate limited partnerships.
    C. Leveraged buyouts.

22. Investors are *least likely* to gain exposure to commodities because:
    A. they want to trade in a physical product.
    B. commodity prices have historically been correlated with inflation.
    C. commodity prices are linked to economic growth.

23. Which of the following is *least likely* a method for investing in commodities?
    A. Commodity index futures.
    B. Options contracts on commodities.
    C. Direct investment in commodities.

24. Which of the following is *least likely* a private equity strategy?
    A. Buyout funds.
    B. Venture capital.
    C. Merger arbitrage.

25. If the price of a commodity futures contract is below the spot price, it is *most likely* that the:
    A. roll yield is negative.
    B. convenience yield exceeds the cost of carry.
    C. storage costs exceed convenience yield.

26. Which of the following is the *most* liquid alternative investment?
    A. Hedge funds.
    B. Private equity.
    C. Exchanged traded funds.

27. Which of the following hedge fund strategies is *least likely* categorized as an event-driven strategy?
    A. Distressed debt.
    B. Merger arbitrage.
    C. Fixed income arbitrage.

28. Which of the following characteristics of a target company is *most likely* attractive for a leveraged buyout?
    A. High leverage.
    B. Economic environment.
    C. Strong and sustainable cash flows.

29. The futures price of wheat is higher than the spot price. This is most likely to be referred to as:
    A. backwardation.
    B. arbitrage.
    C. contango.

30. Which of the following is most likely to be correct for commodities?
    A. Investors deal in commodity derivatives because holding commodities in physical form incurs costs for transportation and storage.

B. Commodity derivatives are attractive because of potential profits, but are not effective hedges against inflation.
C. Commodity derivatives can only be traded on exchanges and include obligations.

31. When future prices are higher than the spot price, the commodity forward curve is:
    A. upward sloping and prices are referred to as being in contango.
    B. downward sloping and prices are referred to as being in contango.
    C. downward sloping and prices are referred to as being in backwardation.

32. The difference between the spot price of a commodity and the price specified by its futures contract:
    A. Convenience yield.
    B. Collateral yield.
    C. Roll yield.

33. Which of the following is *least likely* to be a characteristic associated with alternative investments?
    A. Asymmetric risk and return profiles.
    B. Illiquidity.
    C. Unlimited portfolio transparency.

34. Which of the following is *least likely* to be correct about hedge fund valuation?
    A. A common practice is to use the average of bid and ask for market quotes and prices.
    B. Ask prices are used for long and bid prices are used for shorts.
    C. Liquidity discounts are deemed necessary to reflect fair value and are also known as haircuts.

35. A minority equity investment in more mature companies looking to enter new markets is *most likely* to be known as:
    A. Development capital.
    B. Distressed investing.
    C. Venture capital.

36. A company is *least likely* to be attractive as a leverage buyout target if:
    A. the company is inefficient and has the potential to perform better.
    B. the company has low leverage and sustainable cash flows.
    C. the market value of the company exceeds its perceived intrinsic value.

37. Imperial Tiles is a company moving towards operation but has not yet started commercial production. Which of the following financing stages is *most likely* to suit the needs of Imperial Tiles?
    A. Early-stage financing.
    B. Seed-stage financing.
    C. Mezzanine-stage financing.

38. Which of the following is *least likely* to be correct about exit strategies for private equity portfolio managers?
    A. A trade sale can be conducted through an auction process or by private negotiation.
    B. An advantage of an initial public offering is that it can be conducted quickly.
    C. Under recapitalization, the private equity firm maintains control, but allows the private equity investor to extract money from the company.

39. Which of the following is *least likely* to be a key reason for investing in real estate?
    A. Potential to avoid government regulations.
    B. Potential for competitive long term total returns.
    C. Potential to provide an inflation hedge.

40. Collateralized mortgage obligations are *most likely* to be an example of:
    A. private debt.
    B. public debt.
    C. public equity.

41. Which of the following is *least likely* to be a portfolio company valuation approach?
    A. Asset based approach.
    B. Comparable sales approach.
    C. Discounted cash flow approach.

**LO.e: Describe, calculate, and interpret management and incentive fees and net-of-fees returns to hedge funds.**

**The following information is for questions 42 to 46**

Zee Capital, a hedge fund with an initial investment capital of $200 million had a 40% return in its first year. At year end, a 4% management fee is charged based on the assets under management and a 10% incentive fee is charged. The management fee is calculated using end-of-period valuation.

42. Which of the following is *most likely* to be the incentive fees earned?
    A. $8 million.
    B. $20 million.
    C. $28 million.

43. Which of the following is *most likely* to be the effective return for the investor?
    A. 30.4%.
    B. 34.4%.
    C. 36.0%.

44. Given that the incentive fee is calculated based on return net of management fee, which of the following is *most likely* to be the total fees earned by Zee Capital?
    A. $6.88 million.
    B. $18.08 million.
    C. $20.48 million.

45. Assume that the fee structure specifies a hurdle rate of 5% and the incentive fee is based on returns in excess of the hurdle rate. Furthermore, the performance fee is calculated net of the management fee. Which of the following is *most likely* to be the investor's net return given this fee structure?
    A. 26.21%.
    B. 28.51%.
    C. 31.46%.

46. The fund value declines to $250 million in the second year. Assuming the fee structure is the same as given in the information above but is inclusive of a high water mark, which of the following is *most likely* to be the fees earned by Zee Capital in the second year?
    A. $10 million.
    B. $25 million.
    C. $35 million.

47. Cole Hedge Funds had an invested capital of $100 million. It earned a return of 25% in the first year. Given that it follows a 4 and 20 fee structure, and calculates the incentive and management fees independently, the net return for the investors is *closest* to:
    A. 8%.
    B. 15%.
    C. 20%.

48. The management fee for hedge funds is based on:
    A. initial investment.
    B. committed capital.
    C. assets under management.

49. IFT Capital is a hedge fund with PKR 100 million of initial investment capital. IFT charges a 2% management fee based on assets under management at year end and a 20% incentive fee. The hurdle rate is 10% and the incentive fee is based on returns in excess of the hurdle rate. The incentive and management fees are calculated independently. The fund has a return of 30% for the first year. What is an investor's net return given this fee structure?
    A. 28.50%.
    B. 23.40%.
    C. 21.4%.

50. A hedge fund had invested capital of 200 million on which it earned a return of 35% in its first year. It follows a 2 and 20 fee structure and calculates the incentive net of management fees. The total fee for the hedge fund in the first year is *closest* to:
    A. 44.00 million.
    B. 19.40 million.
    C. 18.32 million.

51. BMB Capital is a hedge fund with a portfolio valued at $500,000,000 at the beginning of the year. One year later, the value of assets under management is $555,500,000. The hedge fund

charges a 2% management fee based on the end-of-year portfolio value as well as a 15% incentive fee. If the incentive fee and management fee are calculated independently, the effective return for a hedge fund investor is *closest* to:

A. 7.21%.
B. 7.55%.
C. 11.1%.

52. A hedge fund begins the year with $200 million and earns a 20% return for the year. The fund charges a 1% management fee on end-of-year fund value and a 10% incentive fee on the return, net of the management fees, that is in excess of a 10% fixed hurdle rate. The fund's investors' return for the year, net of fees, is *closest* to:
    A. 16.80%.
    B. 16.92%.
    C. 17.92%.

53. The following information is available about a hedge fund:

| | |
|---|---|
| Initial investment capital | £200 million |
| Return at the end of one year | 15% |
| Management fee based on assets under management | 2% |
| Incentive fee based on the return net of the management fee | 10% |

Assume management fees are calculated using end-of-period valuation. The investor's net return given this fee structure is *closest* to:

A. 11.20%.
B. 11.43%.
C. 13.00%.

54. The following information is available about a hedge fund:

| | |
|---|---|
| Initial fund assets | $200 million |
| Fund assets at the end of the period (before fees) | $225 million |
| Management fee based on assets under management | 1% |
| Incentive fee based on the return | 15% |
| Soft hurdle rate | 12% |

No deposits to the fund or withdrawals from the fund occurred during the year. Management fees are calculated using end-of-period valuation. Management fees and incentive fees are calculated independently. The net-of-fees return of the investor is *closest* to:

A. 9.5%.
B. 9.67%.
C. 11.5%.

55. A hedge fund with an initial value of $200 million has a management fee of 2% and an incentive fee of 20%. Management and incentive fees are calculated independently using

end-of-period valuation. The value must reach the previous high water mark before incentive fees are paid. The table below provides end-of-period fund values over the next three years.

| | Fund Value ($ millions) | |
|---|---|---|
| **Year** | **Before Fees** | **After Fees** |
| 1 | 240 | 227.2 |
| 2 | 220 | 215.6 |
| 3 | 250 | ? |

The total amount of fees earned by the hedge fund in Year 3 is *closest* to:

A. $8.56 million.
B. $9.56 million.
C. $11.00 million.

56. The management fee of a hedge fund that has not yet invested all of its committed capital is *most likely* based on:
    A. invested capital.
    B. remaining capital.
    C. committed capital.

***Use the following information to answer questions 57 to 64***

SHM Capital is a hedge fund with $200 million of initial investment capital. They charge a 3 percent management fee based on assets under management at year-end and a 15 percent incentive fee. In its first year, SHM Capital has a 28 percent return. Assume management fees are calculated using end-of-period valuation.

57. If the incentive and management fees are calculated independently, the fees earned by SHM is *closest* to:
    A. $7.680 million.
    B. $14.928 million.
    C. $16.080 million.

58. What is an investor's effective return if the incentive and management fees are calculated independently?
    A. 18.46%.
    B. 19.96%.
    C. 20.54%.

59. If the incentive fee is calculated based on return net of the management fee, the fees earned by SHM is *closest* to:
    A. $7.68 million.
    B. $14.93 million.
    C. $16.08 million.

60. What is an investor's effective return if the incentive fee is calculated based on return net of the management fee?
    A. 18.46%.
    B. 19.96%.
    C. 20.54%.

61. If the fee structure specifies a hurdle rate of 8% percent and the incentive fee is based on returns in excess of the hurdle rate, what are the fees earned by SHM assuming the performance fee is calculated net of the management fee?
    A. $12.528 million.
    B. $13.680 million.
    C. $14.928 million.

62. If the fee structure specifies a hurdle rate of 8% percent and the incentive fee is based on returns in excess of the hurdle rate, what is an investor's net return?
    A. 20.54%.
    B. 21.16%.
    C. 21.74%.

63. If the fee structure specifies a hurdle rate of 8% percent and the incentive fee is based on returns in excess of the hurdle rate, what are the fees earned by SHM assuming the incentive and management fees are calculated independently?
    A. $12.52 million.
    B. $13.68 million.
    C. $14.92 million.

64. If the fee structure specifies a hurdle rate of 8% percent and the incentive fee is based on returns in excess of the hurdle rate, what is an investor's net return assuming the incentive and management fees are calculated independently?
    A. 20.54%.
    B. 21.16%.
    C. 22.74%.

***Use the following information to answer questions 65 to 72***

SHM Capital is a hedge fund with $200 million of initial investment capital. They charge a 3 percent management fee based on assets under management at year-end and a 15 percent incentive fee. In its first year, SHM Capital has a 28 percent return. Assume management fees are calculated using end-of-period valuation. In the second year, the fund value declines to $225 million. In the third year, the fund value increases to $250 million.

65. If the incentive and management fees are calculated independently, the fees earned by SHM in the second year is *closest* to:
    A. $2.10 million.
    B. $4.65 million.
    C. $6.75 million.

66. If the incentive and management fees are calculated independently, an investor's net return for the second year is *closest* to:
    A. 9.03%.
    B. -9.03%.
    C. -9.47%.

67. If the incentive and management fees are calculated independently and also includes the use of a high water mark, the fees earned by SHM in the third year is *closest* to:
    A. $6.75 million.
    B. $8.838 million.
    C. $9.012 million.

68. If the incentive and management fees are calculated independently and also includes the use of a high water mark, what is an investor's net return for the third year?
    A. 9.03%.
    B. 10.42%.
    C. 11.05%.

69. If the incentive fee is calculated net of the management fee, and also includes the use of a high water mark, the fees earned by SHM in the second year is *closest* to:
    A. $2.10 million.
    B. $4.65 million.
    C. $6.75 million.

70. Given the fee structure in the previous question, the investor's net return for the second year is *closest* to:
    A. 9.03%.
    B. -9.03%.
    C. -9.47%.

71. If the incentive and management fees are calculated independently, and also includes the use of a high water mark, the geometric mean annual return over the three-year period is *closest* to:
    A. 6.14%.
    B. 6.41%.
    C. 6.64%.

72. If the incentive fee is calculated based on return net of the management fee, and also includes the use of a high water mark, the geometric mean annual return over the three-year period is *closest* to:
    A. 6.14%.
    B. 6.31%.
    C. 6.44%.

***Use the following information to answer questions 73 to 75***

An investor is contemplating investing $1000 million in either Giyani Hedge Fund or Beta Fund of Funds. Beta has a “1.25 and 15” fee structure and invests 15 percent of its assets under management in Giyani. Giyani has a standard “3 and 25” fee structure with no hurdle rate. Management fees are calculated on an annual basis on assets under management at the beginning of the year. Management fees and incentive fees are calculated independently. Giyani has a 30 percent return for the year before management and incentive fees.

73. If an investor invests directly in Giyani Hedge Fund, her return is *closest* to:
    A. 18.6%.
    B. 19.5%.
    C. 20.5%.

74. An investor invests in Beta Fund of Funds. The other investments in the Beta portfolio generate the same return before management fees as Giyani Hedge Funds and have the same fee structure as Giyani. Investor’s return is *closest* to:
    A. 15.33%.
    B. 19.50%.
    C. 20.50%.

75. An investor would choose to invest in Beta Funds of Funds instead of Giyani Hedge funds because of:
    A. due diligence expertise.
    B. lower fees structure of “1.25 and 15”.
    C. larger investment can be made in beta funds.

**LO.f: Describe issues in valuing and calculating returns on hedge funds, private equity, real estate, commodities, and infrastructure.**

76. If a quoted market price is available for an emerging market fixed income security, the use of liquidity discounts or “haircuts” is actually:
    A. consistent with valuation guidance under most generally accepted accounting standards.
    B. inconsistent with valuation guidance under most generally accepted accounting standards.
    C. not defined in the valuation guidance under most generally accepted accounting standards.

77. If a commodity’s forward curve is in backwardation, the component of a commodities futures return *most likely* to reflect this is:
    A. high convenience yield.
    B. negative roll yield.
    C. high spot prices.

78. BMA Hedge Fund and AKD Hedge Fund invest in the same asset class using a similar investment strategy. A potential investor has gathered the following data from the hedge funds:

| Characteristic | BMA | AKD |
|---|---|---|
| Annualized returns | 24% | 16% |
| Track Record | 3 years | 7 years |
| Fees | 1.25 and 12 | 1.75 and 18 |
| Sharpe Ratio | 1.5 | 1.8 |

Based on the above information, the investor is *most likely* to:
A. research how the annualized returns are calculated.
B. invest in BMA because of its higher returns and lower fees.
C. invest in AKD because of its longer track record and higher sharp ratio.

79. AKD private equity fund is considering purchasing a firm that had an EBITDA of PKR 400 billion. In the past year, three firms from the same industry were sold for 5x EBITDA, 6x EBITDA, and 7x EBITDA. Based on this information, the maximum value AKD is *most likely* to assign to the firm is:
A. PKR2,000 billion.
B. PKR2,400 billion.
C. PKR2,800 billion.

80. BMA hedge fund restricts its investment universe to KSE, an actively traded stock exchange of Pakistan. Its NAV will be calculated using:
A. average quotes.
B. deal prices adjusted for liquidity.
C. average quotes adjusted for liquidity.

81. Lydia Smith wishes to find an apartment building's worth using the income approach. The gross potential rental income is $1,750,000, and the net operating income is $362,500. Other bits of information available include the following:

| | |
|---|---|
| Financing percentage: | 75% |
| Market capitalization rate: | 8% |
| Cost of equity: | 10% |

Which of the following is *most likely* to be appraisal price of the building?
A. $10,750,000.
B. $3,625,000.
C. $4,531,250.

82. Alpha Hedge Fund uses a market neutral strategy. The fund takes long and short positions in relatively liquid instruments for which bid/ask prices are available. Given that the funds employs a conservative valuation approach, it *most likely* uses:
A. bid prices for long positions and ask prices for short positions.
B. ask prices for long positions and bid prices for short positions.
C. bid prices for both long and short positions.

83. Which of the following is *least likely* a source of return for commodities related investments?
    A. Convenience yield.
    B. Interest yield.
    C. Spot price return.

84. An analyst is using an income based approach to value a REIT. Which of the following will he *least likely* use as a measure of income?
    A. EBITDA.
    B. FFO.
    C. AFFO.

85. A private equity fund is considering purchasing a small software company. Similar software companies have sold 7 x EBITDA, 8 x EBITDA and 9 x EBITDA in the previous 3 months. The target company's EBITDA is $100 million. Based on this information, the *maximum* value of the software company is:
    A. $14.28 million.
    B. $1,000 million.
    C. $900 million.

86. Which of the following is *least likely* a main source of return for commodities futures contracts?
    A. Dividend yield.
    B. Collateral yield.
    C. Convenience yield.

87. If the level of broad inflation indices is largely determined by commodity prices, the average nominal yield on direct commodity investments is *most likely*:
    A. equal to zero.
    B. equal to inflation.
    C. less than inflation.

**LO.g: Describe risk management of alternative investments.**

88. Statement 1: An analyst wanting to assess the downside risk of an alternative investment should use the Sharp ratio.
    Statement 2: An analyst wanting to assess the downside risk of an alternative investment should use the Sortino ratio.
    Which statement is *most likely* correct?
    A. Statement 1.
    B. Statement 2.
    C. Neither of them.

89. Which of the following is *most accurate* for risk-return measures evaluating alternative investments?
    A. Due to illiquid nature of assets, volatility estimates are overstated.
    B. Most alternative investments show positively skewed return distributions.

C. Calculation of value-at-risk using standard deviation leads to an understated figure.

90. The value at risk of an alternative investment is *best* described as the:
A. Fixed amount of loss expected over a given time period at a given probability level.
B. Maximum amount of loss expected over a given time period at a given probability level.
C. Minimum amount of loss expected over a given time period at a given probability level.

**Solutions**

1. C is correct. Most alternative investment funds are actively managed and seek to generate positive alpha returns.

2. C is correct. Alternative investments are typically less transparent and less liquid compared to traditional investments.

3. B is correct. Relative to traditional investments, alternative investments are characterized by low correlation with traditional investments, low level of regulation, and unique legal and tax considerations.

4. A is correct. General characteristics of alternative investments include: illiquidity of underlying investments, narrow manager specialization, low correlation with traditional investments, low level of regulation and less transparency, limited and potentially problematic historical risk and return data, unique legal and tax considerations.

5. C is correct. Alternative investments are often characterized by higher fees and illiquidity.

6. C is correct. Long-only stock funds are typically considered traditional investments and hedge funds and real estate are typically classified as alternative investments.

7. B is correct. A is incorrect because beta is a measure of systematic risk. C is incorrect because alpha returns are not correlated with beta returns.

8. C is correct. A key motivation for investing in alternative investments is their diversifying potential when combined with a traditional portfolio.

9. B is correct. The management fee, also called the base fee, is based on assets under management.

10. C is correct. Hedge funds are set up as a private investment open to a limited number of investors willing and able to make a large initial investment.

11. C is correct. All three statements regarding funds of funds are correct.

12. B is correct. Macro, and not micro, is a hedge fund strategy.

13. C is correct. A type of private equity fund that invests in established profitable and cash generative companies with solid customer bases, proven products, and high quality management is most likely described as a leveraged buyout.

14. A is correct. Funds of funds presumably have some expertise in conducting due diligence on hedge funds and may be able to negotiate more favorable redemption terms than could an individual investor in a single hedge fund.

15. B is correct. The management fee for private equity funds is based on committed capital whereas for hedge funds the management fees are based on assets under management.

16. B is correct. One of the key reasons for investing in real estate is the potential for competitive long-term total returns driven by both income generation and capital appreciation.

17. C is correct. Early stage financing (early stage venture capital) is provided to companies moving toward operation but before commercial production and sales have occurred.

18. C is correct. Venture capital entails investing in private companies with high growth potential.

19. C is correct. Characteristics of an attractive target company for LBOs include: undervalued or depressed stock price, willing management, inefficient companies, strong and sustainable cash flows, low leverage, and significant amount of physical assets.

20. B is correct. Backwardation is a situation where the spot price exceeds the forward or futures price. The opposite is true for contango.

21. C is correct. Leveraged buyouts are highly leveraged transactions where private equity firms establish buyout funds to acquire public companies or established private companies with significant proportion of the purchase price financed through debt. It is a form of private equity investment rather than real estate investment. Securitization of retail and commercial mortgages such as in mortgage-backed securities and real estate limited partnerships are forms of real estate investment.

22. A is correct. Only a small group of investors trades in physical commodities while most investors invest in commodities using commodity derivatives rather than the physical good itself.

23. C is correct. The majority of commodities investing is implemented through derivatives.

24. C is correct. Buyout funds and venture capital (VC) funds are collectively referred to as private equity.

25. B is correct. Since the futures price is less than the spot price, the market is in backwardation. The convenience yield must be more than the cost of carry to arrive at a futures price below the spot price because the futures price is approximately equal to: spot price * (1 + r) + storage cost – convenience yield. The cost of carry is defined as interest cost plus storage cost. When the market is backwardation the roll yield for the long party is positive.

26. C is correct. Exchanged traded funds are publically traded and thus provide liquidity.

27. C is correct. Distressed debt and merger arbitrage are event driven strategies.

28. C is correct. Strong and sustainable cash flow is an attractive feature of a target company in a leveraged buyout.

29. C is correct. Contango is when the futures price of a commodity is above the spot price.

30. A is correct. B is incorrect because commodity derivatives are effective hedges against inflation. C is incorrect because commodity derivatives can be traded over the counter. Furthermore, commodity derivatives include options and swaps.

31. A is correct. A downward sloping curve occurs when the futures prices are lower than the spot price. This condition is called backwardation.

32. C is correct. Roll yield refers to the difference between the spot price of a commodity and the price specified by its futures contract.

33. C is correct. Alternative investments are associated with limited portfolio transparency.

34. B is correct. Bid prices are used for long and ask prices are used for shorts.

35. A is correct. Development capital refers to minority equity investment in more mature companies looking to enter new markets

36. C is correct. A company is an attractive leverage buyout target if the perceived intrinsic value of the company exceeds the market value.

37. A is correct. Early stage financing is provided to companies moving toward operation but before commercial production and sales have occurred.

38. B is correct. A disadvantage of an initial public offering is that the lead times are long.

39. A is correct. A concern for real estate is that it is subject to government regulations affecting what can be done to modify the existing property and how it can be transferred.

40. B is correct. Collateralized mortgage debt is an example of public debt.

41. B is correct. A comparable sales approach is used to value real estate.

42. A is correct. $\text{Incentive Fee} = (200 * 1.4 - 200) * 0.1 = \$8 \text{ million}$

43. A is correct.

$$\text{Effective Return } = \frac{\text{Investment worth} - \text{Initial Capital} - \text{Total fees}}{\text{Initial Capital}}$$

$$\text{Total fees} = \text{Incentive fee} + \text{Management fee} = \$8 + (200 * 1.4 * 0.04) = \$19.2$$

$$\text{Effective Return } = \frac{280-200-19.2}{200} = 30.4\%.$$

44. B is correct.
    Management fee $= \$200 * 1.4 * 0.04 = \$11.2$.
    Incentive fee $= (200 * 1.4 - 200 - 11.2) * 10\% = \$6.88$.
    Total fee $= 11.2 + 6.88 = \$18.08$.

45. C is correct.
    Management fee $= \$200 * 1.4 * 0.04 = \$11.2$
    Hurdle $= \$200 * 5\% = \$10$
    Incentive fee $= (200 * 1.4 - 200 - 10 - 11.2) * 10\% = \$5.88$
    $$\text{Effective Return } = \frac{280 - 200 - 11.2 - 5.88}{200} = 31.46\%$$

46. A is correct.
    Management fee $= \$250 * 0.04 = \$10$. Because the fund declined in value, there will be no incentive fee.

47. B is correct.
    Management fee $= 100 * 1.25 * 0.04 = \$5$ million
    Incentive fee $= (100 * 1.25 - 100) * 0.2 = \$5$ million
    $$\text{Return} = \frac{100 * 1.25 - 100 - 10}{100} = 15\%$$

48. C is correct. The management fee for hedge funds is based on assets under management.

49. B is correct.
    Step 1: Calculate the management fee.
    Value of investment at the end of first year (after return) = 100 million * 1.30 = 130 million.
    Management fee = 130 million * 0.02 = 2.6 million.
    Step 2: Calculate the incentive fee.
    Given a 10% hurdle rate, the amount to consider for the incentive fee = 30 – 10 = 20 million.
    Incentive fee = 20 million * 0.20 = \$4.0 million.
    Total fees earned = 2.6 million + 4.0 million = 6.6 million.
    Investor's net return $= \frac{130.00 - 6.60}{100.00} = \frac{123.40}{100} - 1 = 23.4\%$.

50. C is correct.
    Invested capital = 200,000,000
    Value of fund after a year = 200,000,000 * 1.35 = 270,000,000.
    Management fee = 270,000,000 * 0.02 = 5,400,000.
    Incentive fees = (270,000,000 – 200,000,000 – 5,400,000) * 0.2 = 12,920,000.
    Total fee = 5,400,000 + 12,920,000 = 18,320,000.

51. A is correct.
    Management fee = \$555,500,000 * 0.02 = \$11,110,000.
    Incentive fee = (\$555,500,000 – \$500,000,000) * 0.15 = \$8,325,000.
    Total fees = \$19,435,000.

Return = $\frac{\$555{,}500{,}000 - \$500{,}000{,}000 - \$19{,}435{,}000}{\$500{,}000{,}000}$ = 7.21%.

52. C is correct.
    Value of fund after a year = $200,000,000 * 0.2 = $240 million.
    Management fee = $240,000,000 * 0.01 = $2.4 million.
    Incentive fee net of management fees and in excess of 10% fixed hurdle rate:
    (240,000,000 - 200,000,000 - 2,400,000 – 20,000,000) *0.1 = $1.76 million.
    Investor's return, net of fees = $\frac{240 - 200 - 2.4 - 1.76}{200}$ = 17.92%.

53. B is correct.
    Management fee = 200 * 1.15 * 0.02 = £4.6 million
    Incentive fee = (230 -200 – 4.6 million) * 0.1 = £2.54 million
    Fund value after fees = £230 million – £4.6 million – £2.54 million = £222.86 million
    Investor return = $\frac{222.86 \text{ million}}{200 \text{ million}} - 1$ = 11.43%.

54. A is correct.
    The soft hurdle rate is surpassed, because the return of the fund is 12.50%. For that reason, the full fee, based on the full performance, is due.
    Management fee =225 million * 0.01 = $2.25 million.
    Incentive fee = $25 million * 0.15 = $3.75 million.
    Total fees = $6 million.
    Fund assets at the end of the period after fees = 225 – 6 = $219 million.
    Return for the investor = $\frac{219}{200} - 1$ = 9.5%.

55. B is correct.
    Incentive fee is based on the performance relative to the previous high-water mark after fees.
    Management fee = $250 million * 0.02 = $5 million.
    Incentive fee = ($250 million – $227.2 million) * 0.2 = $4.56 million.
    Total fees = $5 million + $4.56 million = $9.56 million.

56. A is correct. The management fee of hedge funds is based on invested capital until the committed capital is fully drawn down and invested. This approach is in contrast to private equity funds, for which the management fee is based on committed capital.

57. C is correct.
    Value of the fund at the end of year = 200*1.28 = 256
    Management fee = $256 million * 0.03 =$7.68 million.
    Incentive fee = ($256 – $200) million * 0.15 = $8.4 million.
    Total fees to SHM Capital = $16.08 million.

58. B is correct.
    Investor return = $\frac{\$256 - \$200 - \$16.08}{\$200}$ = 19.96%.

59. B is correct.
    Management fee = $256 million * 0.03 = $7.68 million.
    Incentive fee = ($256 – $200 – $7.68) million * 0.15 = $7.24 million.
    Total fees to SHM Capital = $14.928 million.

60. C is correct.
    Investor's return $= \frac{\$256 - \$200 - \$14.928}{\$200} = 20.54\%$.

61. A is correct.
    Management fee = $256 million * 0.03 = $7.68 million.
    Incentive fee = ($256 – $200 – $16 – $7.68) million * 0.15 = $4.848 million.
    Total fees to SHM Capital = $12.528 million.

62. C is correct.
    Investor's return $= \frac{\$256 - \$200 - \$12.528}{\$200} = 21.74\%$.

63. B is correct.
    Management fee = $256 million * 0.03 = $7.68 million.
    Incentive fee = ($256 – $200 – $16) million * 0.15 = $6.00 million.
    Total fees to SHM Capital = $13.68 million.

64. B is correct.
    Investor's return $= \frac{\$256 - \$200 - \$13.68}{\$200} = 21.16\%$.

65. C is correct.
    Management fee = $225 million * 0.03 = $6.75 million.
    No incentive fee because the fund has declined in value.
    Total fees to SHM Capital = $6.75 million.

66. B is correct.
    First, calculate the beginning capital position in the second year.
    Management fee at the end of first year = $200 million * 1.28 *0.03 = $7.68 million.
    Incentive fee = (256 million – 200 million) * 0.15 = $8.4 million
    Beginning capital position at the start of second year = $256 - $7.68 - $8.4 = $239.92 million.
    Ending capital position at the end of the second year = $225 − $6.75 = $218.25 million.
    Investor return $= \frac{\$225 - \$6.75 - \$239.92}{\$239.92} = -9.03\%$.

67. C is correct.
    Management fee = $250 million * 0.03 = $7.5 million.
    $239.92 million represents the high-water mark established at the end of Year 1.
    Incentive fee = ($250 – $239.92) * 0.15 = $1.512 million.
    Total fees to SHM Capital = $7.5 + $1.512 = $9.012 million.

68. B is correct.

Investor return = $\frac{\$250 - \$9.012 - \$218.25}{\$218.25}$ = 10.42%.
The ending capital position at the end of Year 3 is $240.988 million. This is the new high-water mark.

69. C is correct.
Management fee = $225 million * 0.03 = $6.75 million management fee.
No incentive fee because the fund has declined in value.
Total fees to SHM Capital = $6.75 million.

70. C is correct.
Management fee at the end of first year = $200 million * 1.28 *0.03 = $7.68 million.
Incentive fee = (256 million – 200 million – 7.68) * 0.15 = $7.248 million
Beginning capital position in the second year = $256 − $7.68 – $7.248 = $241.072 million. This is new high water mark established at the end of year 1.
Ending capital position at the end of the second year = $225 − $6.75 = $218.25 million. There is no incentive fee in the second year because the fund has declined in value.
Investor return = $\frac{\$225 - \$6.75 - \$241.072}{\$241.072}$ = –9.47%.

71. B is correct. Geometric mean annual return = $\left(\frac{\$240.988}{200}\right)^{\frac{1}{3}} - 1$ = 6.41%

72. C is correct. Geometric mean annual return = $\left(\frac{\$241.161}{200}\right)^{\frac{1}{3}} - 1$ = 6.44%

73. B is correct.
Profit of Giyani Hedge Fund before fees = $1000 million * 0.3 = $300 million.
Management fee = $1000 million *0.03 = $30 million.
Incentive fee = 300 million * 0.25 = $75 million.
Return to the investor = $\frac{300 - 30 - 75}{1000}$ = 19.5%.

74. A is correct.
Return earned by Beta = €1000 million * 0.195 = $195 million.
Management fee = $1000 million * .0125 = $12.5 million.
Incentive fee = $195 million * 0.15 = $29.25 million.
Return to the investor = $\frac{195 - 12.5 - 29.25}{1000}$ = 15.33%.

75. A is correct. Funds of funds presumably have some expertise in conducting due diligence on hedge funds and may be able to negotiate more favorable redemption terms than an individual investor in a single hedge fund.

76. B is correct. If a quoted market price is available for an emerging markets fixed income security, the use of liquidity discounts or "haircuts" is actually inconsistent with valuation guidance under most generally accepted accounting standards. However, many practitioners believe that liquidity discounts are necessary to reflect fair value.

77. A is correct. When futures prices are lower than the spot price, the commodity forward curve is downward sloping, and the prices are referred to as being in backwardation. Backwardation occurs when the convenience yield is high.

78. A is correct. First he should research how returns are calculated and if they are comparable before making any decision.

79. C is correct. The maximum value AKD is most likely to assign is that using the highest multiple (7 × PKR400 billion = PKR2,800 billion).

80. A is correct. BMA is most likely to use average quotes. The securities are actively traded so no liquidity adjustment is required.

81. C is correct.

$$\text{Appraisal price } = \frac{\text{NOI}}{\text{Market capitalization rate}}$$

$$\text{Appraisal price} = \frac{362{,}500}{0.08} = 4{,}531{,}250$$

Note that we divide NOI by the capitalization rate and not by the cost of equity. Financing cost is not considered because the valuation process is independent of financing.

82. A is correct. The conservative and theoretically accurate approach is to use bid prices for long positions and ask prices for short positions. These are the prices at which the positions could be closed.

83. B is correct. The three main sources of return for a commodities investment are collateral yield, roll yield or the convenience yield, and spot price return.

84. A is correct. In REIT valuation, two common measures of income are funds from operations (AFO) and adjusted funds from operations (AFFO).

85. C is correct. The maximum value is simply EBITDA times the highest multiple: $100 \text{ million} * 9$ = 900 million.

86. A is correct. Main sources of return for a commodities futures contract are collateral yield, roll yield (also called convenience yield), and spot price return.

87. B is correct. As the price increases of commodities are mirrored in higher price indices, the nominal return is equal to inflation and the real return is zero.

88. B is correct. Downside risk measures focus on the left side of the return distribution curve where losses occur. Sortino ratio is a measure of downside risk.

89. C is correct. Most alternative investments tend to be leptokurtic and negatively skewed i.e. with fat tails due to positive average returns and long-tails downside due to potential extreme losses. Since their distribution is not close to normal distribution but is negatively skewed, standard deviation is not an appropriate measure for volatility and hence leads to an understated VaR figure. Moreover, since alternative investments are generally illiquid, the use of estimated rather than actual transaction prices result in smoothed out or overstated returns and understated volatility/standard deviation.

90. C is correct. The value at risk of an alternative investment is best described as the minimum amount of loss expected over a given time period at a given probability level.