

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:
- 1.67.
 - 1.00.
 - 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:
- 56.60.
 - 86.70.
 - 114.70.
9. Assume the price is not given, the demand function and the inverse demand function are:
- $Q_{DB} = 100.70 - 0.7(P_B)$; $P_B = 100.70 - 0.7Q_{DB}$.
 - $Q_{DB} = 143.85 - 1.43(P_B)$; $P_B = 143.85 - 1.43Q_{DB}$.
 - $Q_{DB} = 100.70 - 0.7(P_B)$; $P_B = 143.85 - 1.43Q_{DB}$.
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?
- $Q_{DB} = 100 - 2.5P_B + 1.5P_P - 0.5I + 3C_{PT}$
 - $Q_{DB} = 100 - 2.5P_B - 1.5P_P + 0.5I + 3C_{PT}$
 - $Q_{DB} = 100 - 2.5P_B + 1.5P_P + 0.5I - 3C_{PT}$
11. The slope of a demand curve is *most* often:
- zero.
 - negative.
 - 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*:
- equal to average revenue.
 - less than average revenue.
 - 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:
- marginal fixed cost.
 - average fixed cost.
 - quasi-fixed cost.
39. When MC intersects ATC and AVC:
- ATC and AVC start decreasing.
 - ATC and AVC do not change.
 - 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:

- 5.0.
- 6.0.
- 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 2: 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 *closest* 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 = $(15 - 10)/10 \div (7 - 10)/10 = -1.67$. 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
$Q_{DB} = 91.70 - 0.7 (P_B) + 0.3 (I)$	$Q_{DB} = 100.70 - 0.7 (P_B)$
$Q_{DB} = 91.70 - 0.7 (P_B) + (0.3) (30)$	$0.7 (P_B) = 100.70 - Q_{DB}$
$Q_{DB} = 100.70 - 0.7 (P_B)$	$P_B = 143.85 - 1.43 Q_{DB}$

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
= \$84,000
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. 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 = $\frac{800,000}{250} = \text{GBP } 3200$.
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 firm will be matched by a 15% increase in revenue.
36. B is correct. 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. $AR = MR = \text{Price}$.
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 $= \Delta TC / \Delta Q$
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 perfect 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. $\text{Marginal product} = \frac{\text{change in total product}}{\text{change in labor}}$. 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, $10 * \text{PKR } 3,000 = \text{PKR } 30,000$.
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.