

Model Question Paper

Economics - I (MSF1A3)

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| <ul style="list-style-type: none">• Answer all 72 questions.• Marks are indicated against each question. |
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Total Marks : 100

- Which of the following statements is/are **not correct**?
 - The rationality on the part of a firm is to maximize utility.
 - The rationality on the part of an investor is to maximize satisfaction.
 - The rationality on the part of the consumer is to maximize revenue.
 - Only (I) above
 - Only (II) above
 - Only (III) above
 - Both (I) and (II) above
 - All (I), (II) and (III) above.

(1 mark)
- Which of the following statements is **not correct** about command economy?
 - Command economy does not determine what type of goods and services to be produced using a hierarchical organizational structure
 - In a command economy, the state owns all the productive resources
 - In a command economy, authoritarian methods are used to determine the use of resources
 - Government enterprise and government ownership of resources are the rule rather than an exception in a command economy
 - Command economy is different from mixed economy.

(1 mark)
- Veblen effect is one of the exceptions to the law of demand. According to this effect the consumers buy more amount of a commodity as the price increases because they feel that
 - The commodity is essential for them
 - The commodity is scarce
 - There is an improvement in the quality of the commodity
 - There will be a further increase in the price of the commodity in future
 - It is a pride to buy a commodity with higher price.

(1 mark)
- Which of the following statements is **not correct**?
 - The demand for a good increases with the increase in the price of its substitute goods
 - If the demand for a good increases the demand for its complementary goods increases
 - Price elasticity of demand is the ratio of percentage change in quantity demanded to percentage change in price
 - If the demand is inelastic, a decrease in price of the commodity increases the quantity demanded for that commodity
 - Elasticity of demand increases as we move down along the demand curve.

(1 mark)
- The demand for a commodity **does not** increase,
 - With the increase in income
 - With the increase in wealth
 - With an increase in the price of substitutes
 - With an increase in the price of complements
 - With the expectation of future increase in the price of the good.

(1 mark)
- If price of a commodity is measured on the Y axis and the quantity demanded is measured on X axis, the middle point of a straight line demand curve represents
 - Perfectly elastic demand
 - Perfectly inelastic demand
 - Relatively elastic demand
 - Relatively inelastic demand
 - Unitary elastic demand.

(1 mark)
- If the absolute value of price elasticity of demand for a commodity is one, then the marginal revenue for that commodity is
 - One
 - Zero
 - Infinity

- (d) Greater than one but less than infinity
(e) Less than one but greater than zero. (1 mark)
8. Which of the following statements is **not true** for the decrease in the supply of a commodity?
(a) An increase in the price of the input required for producing a commodity
(b) A deterioration in technology
(c) A decrease in the number of producers
(d) Contraction of supply is different from decrease in supply
(e) It is represented by the outward shift of the supply curve. (1 mark)
9. The demand for all producer goods is
(a) Autonomous demand
(b) Domestic demand
(c) Induced demand
(d) Replacement demand
(e) Intermediate demand. (1 mark)
10. A consumer who maximizes total utility will buy to that extent where
(a) Marginal utility equals price
(b) Marginal utility is greater than price
(c) Marginal utility is less than price
(d) Marginal utility of the good is zero
(e) Price of the good is zero. (1 mark)
11. Indifference curve shows different combinations of two goods, each combination gives equal level of satisfaction to the consumer. A set of indifference curves is known as
(a) Budget line
(b) Preference map
(c) Income consumption curve
(d) Price consumption curve
(e) Expansion path. (1 mark)
12. Which of the following statements is/are **not true** about the indifference curve?
I. For ordinary goods the indifference curve is L-shaped.
II. For perfect complementary goods the indifference curve is a straight line sloping downward from left to right.
III. For perfect substitute goods the indifference curve is downward sloping from left to right.
(a) Only (I) above
(b) Only (II) above
(c) Only (III) above
(d) Both (I) and (II) above
(e) All (I), (II) and (III) above. (1 mark)
13. The slope of an isoquant at any point is measured by the
(a) Marginal rate of substitution
(b) Marginal rate of technical substitution
(c) Law of diminishing marginal utility
(d) Law of demand
(e) Law of negative returns to scale. (1 mark)
14. The demand and supply functions for a product is as follows:

$$Q_d = 12,000 - 6P$$

$$Q_s = 6,000 + 9P$$
 The Government imposes a sales tax of Rs.40 per unit. The proportion of tax that is borne by the producer is
(a) 20%
(b) 40%
(c) 60%
(d) 80%
(e) 100%. (2marks)
15. On a straight line demand curve, the current price is Rs.10 and quantity demanded is 20 units. If price elasticity of demand at the current price is 4, slope of the demand curve will be
(a) 0.125
(b) 0.250

- (c) 0.325
- (d) 0.224
- (e) 8.000.

(2marks)

16. The demand schedule of products A and B are given below:

Product A		Product B	
Price (Rs.)	Quantity Demanded (Units)	Price (Rs.)	Quantity Demanded (Units)
40	200	80	200
40	160	160	160

The absolute cross elasticity of demand for product A is

- (a) 0.20
- (b) 0.33
- (c) 0.50
- (d) 0.75
- (e) 1.00.

(2marks)

17. A firm supplied 4,000 pens at the rate of Rs.18 per pen to a store in a university in Mumbai. Next month due to a rise in the price of pen to Rs.24 per unit, the supply of the firm increases to 10,500 pens. The arc price elasticity of supply of pen is

- (a) 0.25
- (b) 3.14
- (c) 5.68
- (d) 6.98
- (e) 4.88.

(2marks)

18. If the demand function for a good is $P = 50 - Q$, over what range of price the demand is inelastic?

- (a) 0 to 25
- (b) 10 to 25
- (c) 5 to 50
- (d) 20 to 30
- (e) 50 to 100.

(2marks)

19. A consumer consumes two goods X and Y. The price of good X and Y are given as Rs.10 and Rs.40 respectively and the marginal utility for commodity X is given as 120 utils, marginal utility of commodity Y is

- (a) 120 utils
- (b) 240 utils
- (c) 360 utils
- (d) 480 utils
- (e) 600 utils.

(2marks)

20. The total utility obtained from the consumption of ice cream for a consumer is given by the equation, $TU = X^{1.5}$. How many units of ice cream the consumer consumes to maximize his utility if the price of ice cream is Rs.135 per unit?

- (a) 8,100 units
- (b) 4,500 units
- (c) 6,585 units
- (d) 1,230 units
- (e) 5,000 units.

(2marks)

21. A consumer consumes only two products, A and B. The utility function of the consumer is

$$U = 20A^{0.5}B^{0.5}$$

If the price of the good A is Rs.5 and the price of the good B is Rs.10 per unit, the optimum combination of the goods for the consumer is

- (a) 2 units of good B for every unit of good A
- (b) 2 units of good A for every unit of good B
- (c) 4 units of good B for every unit of good A
- (d) 4 units of good A for every unit of good B
- (e) 8 units of good B for every unit of good A.

(2marks)

22. A consumer has a monthly budget of Rs.8,000. He spends all his income on two goods A and B. The prices of good A and B are Rs.4 and Rs.8 respectively. His marginal utility functions are given as follows:

$$MU_A = \frac{6}{A}$$

$$MU_B = \frac{18}{B}$$

The consumer will consume

- (a) 500 units of A and 750 units of B
- (b) 250 units of A and 450 units of B
- (c) 750 units of A and 600 units of B
- (d) 600 units of A and 750 units of B
- (e) 500 units of B and 750 units of A.

(2marks)

23. Which of the following is defined as an activity that increases consumer usability of goods and services?

- (a) Demand
- (b) Supply
- (c) Consumption
- (d) Production
- (e) Cost.

(1 mark)

24. Which of the following is/are **true** about law of variable proportions?

- I. The state of technology is given.
- II. All factors are variable.
- III. This law is applicable when two factors of production are used in a fixed proportion.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) All (I), (II) and (III) above.

(1 mark)

25. If the law of diminishing marginal product operates, the isoquant will be

- (a) A horizontal straight line
- (b) A vertical straight line
- (c) An upward rising curve
- (d) Convex to origin
- (e) Rectangular hyperbola.

(1 mark)

26. The necessary condition for the maximization of output given the factor price is that

- (a) The isoquant must be a vertical straight line
- (b) The isoquant must be convex to origin
- (c) The isocost line must be tangent to one of the isoquant that is convex to origin
- (d) The isocost line must be tangent to one of the isoquant that is concave to origin
- (e) The isoquant must be a horizontal straight line.

(1 mark)

27. Given the production function $Q = 60K^{0.3}L^{0.5}$ and input prices $r = \text{Rs.}60$ and $w = \text{Rs.}40$, the equation of the expansion path is

(a) $K = \frac{1}{2}L$

(b) $K = \frac{2}{5}L$

(c) $K = \frac{3}{5}L$

(d)

$$K = \frac{4}{5}L$$

(e) $K = \frac{7}{5}L$

(2marks)

28. The production function for a commodity is given as follows:

$$Q = 40K^{0.5}L^{0.5}$$

If the firm is currently using 36 units of capital and 100 units of labor, the level of output is

- (a) 2,400 units
- (b) 2,600 units
- (c) 2,500 units
- (d) 2,800 units
- (e) 1,500 units.

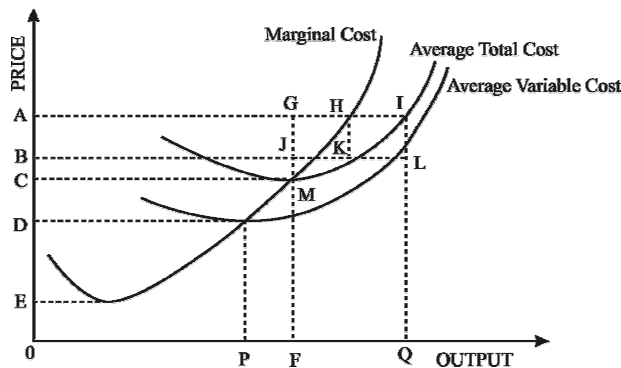
(1 mark)

29. When a market is in equilibrium,

- (a) Marginal cost exceeds marginal utility for the good
- (b) Price tends to rise for the good
- (c) Price tends to fall for the good
- (d) Price neither tends to rise nor fall
- (e) Quantity demanded exceeds quantity supplied.

(1 mark)

30. Refer to the following diagram:



In the short run, the firm will stop production when the price falls below

- (a) OA
- (b) OB
- (c) OC
- (d) OD
- (e) OE.

(1 mark)

31. A firm has the following short run function where the variable input is labor (L):

$$Q = 18L^2 - L^3$$

A rational firm would employ labor between

- (a) $9 < L \leq 12$
- (b) $8 < L \leq 10$
- (c) $4 < L \leq 19$
- (d) $15 < L \leq 20$
- (e) $19 < L \leq 25$.

(2marks)

32. The production function of Kalyan and co. is given as $TP_L = 30L - 1.5L^2$. The number of labor after which marginal production becomes negative is

- (a) 8 units
- (b) 9 units
- (c) 10 units
- (d) 11 units
- (e) 12 units.

(2marks)

33. The production function for a commodity is given as $TP_L = 450L^2 - 30L^3$. The quantity of labor to be employed to maximize output is

- (a) 10 units
- (b) 20 units
- (c) 30 units
- (d) 40 units
- (e) 45 units.

(1 mark)

34. The shape of the average fixed cost curve is

- (a) A horizontal straight line
- (b) A vertical straight line
- (c) A downward sloping straight line from left to right
- (d) Rectangular hyperbola
- (e) Concave to origin.

(1 mark)

35. Technical economies are considered as one of the important type of real economies. This technical economies are associated with

- I. Specialization and indivisibility of capital.
- II. Set-up costs.
- III. Initial fixed costs.
- IV. Reserve capacity requirements.

- (a) Both (I) and (II) above
- (b) Both (II) and (III) above
- (c) Both (III) and (IV) above
- (d) Both (I) and (IV) above
- (e) All (I), (II), (III) and (IV) above.

(1 mark)

36. When marginal product is at its maximum, which of the following costs will be at its minimum?

- (a) Average cost
- (b) Average variable cost
- (c) Average fixed cost
- (d) Marginal cost
- (e) Total fixed cost.

(1 mark)

37. If the cost function for a commodity is given as $TC = 150 + Q^3 + 2Q^2 + 5Q$, the marginal cost at 5 units of output is

- (a) Rs. 30
- (b) Rs. 50
- (c) Rs. 70
- (d) Rs. 80
- (e) Rs.100.

(1 mark)

38. The total variable cost function for a commodity is given as follows:

$$TVC = 300Q - 40Q^2 + 4Q^3$$

The level of output at which average variable cost will be minimum is

- (a) 5 units
- (b) 10 units
- (c) 15 units
- (d) 20 units
- (e) 25 units.

(2marks)

39. The cost function of firm is given as follows:

$$TC = 5,700 + 7Q$$

If the current market price of the good produced by the firm is Rs.10 per unit, the break even output of the firm is

- (a) 1,700 units
- (b) 1,900 units
- (c) 2,100 units
- (d) 2,300 units
- (e) 2,500 units.

(2marks)

40. Cost function of a firm is given as $TC = 1,000 + 20Q - 0.5Q^2$. If the current output is 100 units, average fixed cost is

- (a) Rs.10

- (b) Rs.40
- (c) Rs.60
- (d) Rs.20
- (e) Rs.80.

(1 mark)

41. The cost function of the firm is given as follows:

$$TC = 1,000 + 560Q + 32Q^2 - 4Q^3$$

The level of output at which the firm will shut down its operation is

- (a) 2 units
- (b) 4 units
- (c) 6 units
- (d) 8 units
- (e) 10 units.

(2marks)

42.

$$AC = \frac{1,000}{Q} + 20 + 10Q + 50Q^2$$

If the average cost function of the firm is estimated to be

, the fixed cost of the firm is

- (a) Rs. 250
- (b) Rs. 500
- (c) Rs.1,000
- (d) Rs.2,000
- (e) Rs.3,000.

(1 mark)

43. In a perfectly competitive market, the demand function of a firm is $P = 60 - 6Q$. If the average cost of the firm is given as Rs.12, at what level of output the firm will maximize profit?

- (a) 4 units
- (b) 6 units
- (c) 8 units
- (d) 10 units
- (e) 12 units.

(2marks)

44. Which of the following statements is **not correct** about Perfect Competition?

- (a) There is free flow of information
- (b) The individual buyer or seller is an insignificant player in the market
- (c) The technical characteristics of the products as well as services associated with the sales and delivery are identical
- (d) Free entry and exit of firms
- (e) The firm is a price maker.

(1 mark)

45. Which of the following statements is/are **true** about perfect competition in the long run?

- I. A firm earns normal profit in the long run.
- II. The equilibrium level of output is the optimum level of output.
- III. There exists more than one equilibrium point.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) All (I), (II) and (III) above.

(1 mark)

46. Which of the following statements is/are **true**?

- I. If the industry is constant cost industry, the supply curve will be a horizontal straight line.
- II. If the industry is an increasing cost industry, the supply curve will be downward sloping curve.
- III. If the industry is a decreasing cost industry, the supply curve will be upward sloping curve.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) All (I), (II) and (III) above.

(1 mark)

47. Under perfect competition, the supply of an individual firm becomes zero, if the price is

- (a) Below the average variable cost
- (b) Above the average variable cost
- (c) Above the marginal cost
- (d) Equal to marginal cost

(e) Equal to average variable cost. (1 mark)

48. The total cost function of the firm is $TC = 400 + 8Q + 4Q^2$. The firm is a perfectly competitive firm and is selling its goods at Rs.24 per unit. At equilibrium the total cost of the firm is

- (a) Rs.250
- (b) Rs.145
- (c) Rs.368
- (d) Rs.187
- (e) Rs.432.

(2marks)

49. A firm functioning under monopolistic competition has the following total cost function $TC = 250Q + 5Q^2$. At 5 units of output, the marginal cost of the monopolistic competitive firm is

- (a) Rs.100
- (b) Rs.200
- (c) Rs.300
- (d) Rs.350
- (e) Rs.400.

(2marks)

50. In a perfectly competitive industry, the market demand and supply functions for a commodity are given as follows:

$$Q_d = 27,000 - 20P$$
$$Q_s = 6,000 + 40P$$

An individual firm has the fixed cost of Rs.1,000. The average variable cost function is $AVC = 350 - 36Q + 2Q^2$. The output at which the firm will maximize its profit is

- (a) 10 units
- (b) 12 units
- (c) 14 units
- (d) 16 units
- (e) 18 units.

(2marks)

51. The demand function for a commodity is estimated to be as

$$Q_d = 3,50,000 - 35P$$

The theoretical highest price that can prevail in the market is

- (a) Rs. 9,000
- (b) Rs. 10,000
- (c) Rs. 11,000
- (d) Rs. 12,000
- (e) Rs. 13,000.

(2marks)

52. Which of the following statements is/are **not true** about monopoly?

- I. There is presence of close substitutes for the product.
- II. The monopolist can influence only the price of the product.
- III. The entry of other firms is allowed.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) All (I), (II) and (III) above.

(1 mark)

53. Which of the following reasons is **not** responsible for the creation of the monopoly market?

- (a) The existing firms do not have exclusive knowledge about the production techniques
- (b) Patent rights for a product or for a production process
- (c) Government licensing or the imposition of foreign trade barriers to exclude foreign competitors
- (d) The market cannot support more than one plant of optimal size
- (e) The existing firms adopt the limiting price policy.

(1 mark)

54. In which of the following situations price discrimination is possible?

- I. Discrimination owing to consumer's peculiarities.
- II. Discrimination owing to the nature of the good.
- III. Discrimination owing to the distance and frontier barriers.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) All (I), (II) and (III) above.

(1 mark)

55. Which of the following is **true** about monopoly?

- (a) Price = Marginal Revenue
- (b) Price > Marginal Revenue
- (c) Price < Marginal Revenue
- (d) Price ≥ Marginal Revenue
- (e) Price ≤ Marginal Revenue.

(1 mark)

56. The first order condition for profit maximization for a monopolist firm is

- (a) Marginal revenue > Marginal cost
- (b) Marginal revenue = Marginal cost
- (c) Marginal revenue < Marginal cost
- (d) Marginal revenue ≥ Marginal cost
- (e) Marginal revenue ≤ Marginal cost.

(1 mark)

57. For a monopoly firm, total revenue and total cost functions are given as follows:

$$TR = 600Q - \frac{Q^2}{2}$$

$$TC = 1,000 + 120Q + 2Q^2$$

The profit maximizing price of the firm is

- (a) Rs.552
- (b) Rs.450
- (c) Rs.460
- (d) Rs.350
- (e) Rs.600.

(2marks)

58. The cost and demand functions of the monopolist are given as follows:

$$TC = 1,000 + 40Q^2$$

$$P = 800 - 40Q$$

At profit maximizing output level, the total revenue of the firm is

- (a) Rs.3,000
- (b) Rs.4,000
- (c) Rs.5,000
- (d) Rs.6,000
- (e) Rs.7,000.

(2marks)

59. The cost and profit functions of XYZ Ltd., are given as follows:

$$TC = 400 + 20Q$$

$$\text{Profit} = -10Q^2 + 400Q - 400$$

If the firm is maximizing its profit, the level of output is

- (a) 18 units
- (b) 20 units
- (c) 21 units
- (d) 28 units
- (e) 36 units.

(2marks)

60. The average cost function of a firm is given as follows:

$$AC = \frac{800}{Q} + 80 + 4Q$$

The total cost of the firm at 10 units of output is

- (a) Rs.1,800

- (b) Rs.1,900
- (c) Rs.1,700
- (d) Rs.1,600
- (e) Rs.2,000.

(1 mark)

61. Suppose at 9 units of output the price is Rs.25 per unit and at 10 units of output the price is Rs.24 per unit, the marginal revenue for the additional unit of the sale is

- (a) Rs.10
- (b) Rs.15
- (c) Rs.75
- (d) Rs.80
- (e) Rs.90.

(1 mark)

62. Which of the following features differentiates monopolistic competition from perfect competition?

- (a) Presence of large number of buyers and sellers
- (b) Free entry and free exit of the firms
- (c) The firms do not consider the reaction of the rival firm
- (d) They produce products which are close substitutes but not perfect substitutes
- (e) Perfect knowledge to the buyers about the market.

(1 mark)

63. The demand curve for a monopolistically competitive market is

- (a) A horizontal straight line
- (b) A vertical straight line
- (c) An upward rising curve
- (d) A downward sloping curve
- (e) Rectangular hyperbola.

(1 mark)

64. In monopolistic competition, industry equilibrium is possible when for each firm

- (a) Average revenue equals average cost
- (b) Average revenue equals total cost
- (c) Average revenue equals average fixed cost
- (d) Average revenue equals average variable cost
- (e) Marginal revenue equals average cost.

(1 mark)

65. Which of the following is/are true feature(s) of a cartel?

- I. It implies the direct agreement among competing oligopolist with aim of reducing uncertainty.
- II. The aim of cartel is to maximize the joint profit.
- III. Identical products are produced by the firms.

- (a) Only (I) above
- (b) Only (II) above
- (c) Only (III) above
- (d) Both (I) and (II) above
- (e) All (I), (II) and (III) above.

(1 mark)

66. The following is the sales data of various firms operating in an industry.

Firm	Sales (Rs. in crore)
I	3,000
II	2,200
III	1,570
IV	4,720
V	1,248
VI	1,008
VII	3,132
VIII	1,422

The 4-firm and 6-firm concentration ratios of the industry are respectively

- (a) 0.66 and 0.74
- (b) 0.71 and 0.88
- (c) 0.78 and 0.83
- (d) 0.64 and 0.81
- (e) 0.59 and 0.74.

(1 mark)

67. In the short run, a firm operating in a monopolistically competitive market has the following demand and cost functions:

$$P = 710 - 2.5Q$$

$$TC = 710Q - 4Q^2 + 0.10Q^3$$

At the profit maximizing level of output, the average cost of the firm is

- (a) Rs.220
- (b) Rs.440
- (c) Rs.680
- (d) Rs.740
- (e) Rs.880.

(2marks)

68. A monopolist is currently charging a price of Rs.12 for the product. If the Lerner index is 0.333, the marginal cost of the monopolist is

- (a) Rs. 2
- (b) Rs. 4
- (c) Rs. 6
- (d) Rs. 8
- (e) Rs.10.

(2marks)

69. The following are the marginal productivity functions of labor and capital for a firm:

$$MP_K = 0.75 \frac{L^{0.75}}{K^{0.25}} \quad MP_L = 0.75 \frac{K^{0.75}}{L^{0.25}}$$

If the wage paid to the laborers is Rs.8 per unit and the cost of capital is Rs.5 per unit, the cost minimizing proportion of L to K is

- (a) $L = \left(\frac{8}{5}\right) K$
- (b) $L = \left(\frac{5}{8}\right) K$
- (c) $L = (5 + 8) K$
- (d) $L = (5 - 8) K$
- (e) $L = (8 \times 5) K$.

(2marks)

70. If the concentration ratio of the four largest firms of an industry is 25%, 25%, 20%, 10%, the concentration ratio of the four-firm of the industry is

- (a) 20%
- (b) 40%
- (c) 60%
- (d) 80%
- (e) 100%.

(2marks)

71. Rahul Ltd., a monopolist, aims at profit maximization. The fixed cost of the firm is Rs.200 and its average variable cost is constant at Rs.30 per unit. Rahul Ltd., sells goods in Karnataka and Andhra Pradesh. The estimated demand functions for the goods in Karnataka and Andhra Pradesh are:

$$P_K = 40 - 2.5Q_K$$

$$P_A = 120 - 10Q_A$$

where, P_K = Price charged by Rahul Ltd., in Karnataka

P_A = Price charged by Rahul Ltd., in Andhra Pradesh

Q_K = Quantity of goods demanded in Karnataka

Q_A = Quantity of goods demanded in Andhra Pradesh

If price discrimination is **not** practiced, the output produced by the Rahul Ltd., to maximize sales revenue is

- (a) 14 units
- (b) 16 units
- (c) 12 units
- (d) 24 units
- (e) 26 units.

(2marks)

72. A survey by a market research firm estimated the supply schedule for toys as follows:

Price (Rs.)	Quantity supplied (Units)

100	25
200	50
300	75

The estimated supply function for toys is

- (a) $Q_s = 0.25P$
- (b) $Q_s = 100 + 25P$
- (c) $Q_s = 200 + 50P$
- (d) $Q_s = 50 + 0.5P$
- (e) $Q_s = 0.5 + 100P$.

(1 mark)

END OF QUESTION PAPER

Suggested Answers

Economics - I (MSF1A3)

Answer	Reason
1. E	<p>Economics assume rationality on the part of its subjects like consumer, producer and seller. Rationality implies acting objectively, keeping in view the ends and the means, the objectives and constraints. However following statements are correct regarding rationality on the part of consumer, seller and the investor.</p> <p>I. The rationality on the part of a firm is to maximize revenue. II. The rationality on the part of an investor is to maximize investment. III. The rationality on the part of the consumer is to maximize satisfaction. Therefore option (e) is the correct answer.</p>
2. A	<p>A command economy is a method of determining what, how, when, where and for whom goods and services are produced using a hierarchical organization. Therefore option (a) is the correct answer.</p>
3. C	<p>According to this Veblen effect, the consumers buy more amount of a commodity because they feel that there is an improvement in the quality of the commodity.</p>
4. E	<p>The elasticity of demand shows the degree of responsiveness of quantity demanded due to change in price and if we measure the elasticity of demand for a commodity according to the point elasticity method then, the value elasticity decreases as we move along the demand curve. Therefore option (e) is the correct answer.</p>
5. D	<p>The demand for a commodity increases</p> <p>a. With the increase in income b. With the increase in wealth c. With an increase in the price of substitutes d. With a decrease in the price of complements e. Expectation of future increase in the price of the good. Therefore option (d) is the correct answer.</p>
6. E	<p>Price of a commodity is measured in the Y axis and the quantity demanded is measured on X axis, the middle point of a straight line demand curve represents unitary elastic demand. Therefore option (e) is the correct answer.</p>
7. B	<p>Elasticity of demand is the degree of responsiveness of quantity demanded due to change in price and it is influenced by the marginal revenue of a commodity. If the elasticity of demand for a commodity is 1, then the marginal revenue for that commodity is zero. Therefore option (b) is the correct answer.</p>
8. E	<p>A decrease in the supply for a commodity is represented by the inward shift of the supply curve. Therefore option (e) is the correct answer.</p>
9. C	<p>The demand for all producer goods is known as induced demand or derived demand. Therefore option (c) is the correct answer.</p>
10. A	<p>A consumer who maximizes total utility will buy to that extent where marginal utility equals price. Therefore option (a) is the correct answer.</p>
11. B	<p>An indifference map shows different combinations of two goods, each combination of a particular curve giving same level of satisfaction to the consume. It is otherwise known as preference map. Therefore option (b) is the correct answer.</p>
12. D	<p>Following statements are true regarding indifference curve</p> <p>I. For ordinary goods the indifference curve is convex to origin II. For perfect complementary goods the indifference curve is L shaped III. For perfect substitute goods the indifference curve is a straight line sloping downward from left to right. Therefore option (d) is the correct answer.</p>
13. B	<p>The slope of the isoquant is measured by the marginal rate of technical substitution. Therefore option (b) is the correct answer.</p>

14. B Before the imposition of tax, the equilibrium price is determined at that point where
 $Q_d = Q_s$
 $12,000 - 6P = 6,000 + 9P$
 $6,000 = 15P$
 $6,000/15 = P$
 $400 = P$ or $P = \text{Rs.}400$
 When a sales tax of Rs.40 per unit is imposed
 $Q_s = 6,000 + 9(P - 40)$
 or $6,000 + 9P - 360 = 5,640 + 9P$
 or $5,640 + 9P = 12,000 - 6P$
 or $15P = 6,360$
 or $P = 424$
 Tax Imposed = Rs.40
 Change in price = $424 - 400 = 24$

$$\text{Proportion of tax borne by customers} = \frac{24}{40} \times 100 = 60\%$$

Proportion of tax borne by producers = 40%.

Therefore option (b) is the correct answer.

15. A $e_p = \frac{\partial Q}{\partial P} \cdot \frac{P}{Q}$; $\frac{\partial P}{\partial Q} = \left(\frac{P}{Q}\right) / e_p$
 $P = 10, Q = 20, e_p = 4$

$$\text{Slope of the demand curve, } \frac{\partial P}{\partial Q} = \left(\frac{10}{20}\right) / 4 = 0.125$$

Therefore option (a) is the correct answer.

16. A $\text{Cross elasticity of demand} = \frac{\% \text{ change in quantity demanded for Product A}}{\% \text{ change in price of Product B}}$
 $= \frac{\Delta Q_A}{\Delta P_B} \times \frac{P_B}{Q_A} = \frac{160 - 200}{160 - 80} \times \frac{80}{200} = \frac{-40}{80} \times \frac{80}{200} = \frac{-3200}{16000} = -0.20$

So the absolute elasticity of demand is 0.20. Therefore option (a) is the correct answer.

17. B The arc elasticity of supply is mathematically represented as follows

$$E_s = \frac{Q_2 - Q_1}{P_2 - P_1} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

$$= \frac{10,500 - 4,000}{24 - 18} \times \frac{44}{10,500 + 4,000}$$

$$= \frac{6,500}{6} \times \frac{42}{14,500} = 3.14$$

Therefore option (b) is the correct answer.

18. A For all straight line demand is elastic in the upper left portion than in the lower right portion. This is consequence of the arithmetic properties of the elasticity measure. The demand becomes inelastic once the elasticity is unitary elastic. The demand is unit elastic when $MR = 0$.

$$TR = 50Q - Q^2$$

$$MR = 50 - 2Q$$

$$\text{When } MR = 0, 50 - 2Q = 0$$

$$\text{Or, } Q = 25$$

$$\text{When } Q = 25, P = 50 - 25 = \text{Rs.}25.$$

Thus, the range of prices where the demand is inelastic is zero to Rs.25. Therefore option (a) is the correct answer.

19. D A consumer consumes two goods X and Y. If the price of good X and Y are given as Rs.10 and Rs.40 and the marginal utility for commodity X is given as 120 utils, the marginal utility of commodity Y can be determined as follows

$$P_X = \text{Rs.}10$$

$$P_Y = \text{Rs.}40$$

$$MU_X = 120 \text{ utils}$$

As we know the consumer maximizes his satisfaction at that point where

$$\frac{MU_X}{MU_Y} = \frac{P_X}{P_Y}$$

$$\Rightarrow \frac{120}{MU_Y} = \frac{10}{40}$$

$$\Rightarrow MU_Y = \frac{120 \times 40}{10} = 480 \text{ utils}$$

Therefore the marginal utility of commodity Y is 480 utils. Therefore option (d) is the correct answer.

20. A A rational consumer would consume up to the point where the Marginal utility = price Marginal utility is given by derivative of total utility i.e. $X^{1.5}$

$$\text{Given } 1.5X^{0.5} = 135 \text{ or } X^{0.5} = 90 \text{ or } X = 8,100 \text{ units}$$

The rational consumer will consume 8,100 units of ice cream where he will maximize his satisfaction.

Therefore option (a) is the correct answer.

21. A The utility function of the consumer is given as

$$U = 20A^{0.5}B^{0.5}$$

$$MU_A = 10A^{-0.5}B^{0.5}$$

$$MU_B = 10A^{0.5}B^{-0.5}$$

$$P_A = 5$$

$$P_B = \text{Rs.}10$$

The optimum combination of the commodity is purchased by the consumer at that point where

$$\frac{MU_A}{MU_B} = \frac{P_A}{P_B}$$

$$\Rightarrow \frac{10A^{-0.5}B^{0.5}}{10A^{0.5}B^{-0.5}} = \frac{5}{10}$$

$$\Rightarrow \frac{B}{A} = \frac{5}{10}$$

$$\Rightarrow 2B = A$$

So the optimum combination purchased by the consumer is 2 units of good B for every unit of good A. Therefore option (a) is the correct answer.

22. A A consumer has a monthly budget of Rs.8,000. He spends all his income on two goods A and B. The prices of good A and B are Rs.4 and Rs.8 respectively. His marginal utility functions are given as follows:

$$MU_A = 6/A$$

$$MU_B = 18/B$$

The consumer will consume at that point where

$$\frac{MU_A}{MU_B} = \frac{P_A}{P_B}$$

$$\Rightarrow \frac{6/A}{18/B} = \frac{4}{8}$$

$$\Rightarrow \frac{6}{A} \times \frac{B}{18} = \frac{4}{8}$$

$$\Rightarrow \frac{B}{3A} = \frac{1}{2}$$

$$\Rightarrow 2B = 3A$$

$$\Rightarrow B = \frac{3A}{2}$$

Since the consumer intends to spend Rs.8,000

$$8,000 = 4A + 8 \times \frac{3A}{2} = 4A + 12A = 16A$$

$$\Rightarrow A = \frac{8000}{16} = 500 \text{ units}$$

$$\Rightarrow B = \frac{3 \times 500}{2} = 750 \text{ units}$$

So the consumer will consume 500 units of A and 750 units of B. Therefore option (a) is the correct answer.

23. D Production is defined as an activity that increases consumer usability of goods and services. Therefore option (d) is the correct answer.
24. A Following assumptions are made about the law of variable proportion
- I. The state of technology is given.
 - II. Only one or two factors are variable
 - III. This law is not applicable when two factors of production are used in a fixed proportion.
- Therefore option (a) is the correct answer.
25. D Due to the operation of law of diminishing marginal productivity, the isoquant is convex to origin. Therefore option (d) is the correct answer
26. C The necessary condition for the maximization of output given the factor price is that isocost line must be tangent to one of the isoquant that means the marginal productivities of the two commodities must be equal to their factor ratios. Therefore option (c) is the correct answer.
27. B

The production function $Q = 60K^{0.3}L^{0.5}$

$$MP_K = \frac{dQ}{dK} = \frac{d60K^{0.3}L^{0.5}}{dK} = 18K^{-0.7}L^{0.5}$$

$$MP_L = \frac{dQ}{dL} = \frac{d60K^{0.3}L^{0.5}}{dL} = 30K^{0.3}L^{-0.5}$$

$$\text{Factor Price ratio} = \frac{40}{60}$$

The expansion path of the equation

$$\frac{MP_L}{MP_K} = \frac{w}{r}$$

$$\Rightarrow \frac{30K^{0.3}L^{-0.5}}{18K^{-0.7}L^{0.5}} = \frac{40}{60}$$

$$\Rightarrow \frac{5K}{3L} = \frac{2}{3}$$

$$\Rightarrow 15K = 6L$$

$$\Rightarrow K = \frac{2}{5}L$$

Therefore option (b) is the correct answer.

28. A $Q = 40K^{0.5}L^{0.5}$

$$K = 36 \text{ units}$$

$$L = 100 \text{ units}$$

$$Q = 40(36)^{0.5}(100)^{0.5} = 40 \times 6 \times 10 = 2,400 \text{ units}$$

Therefore option (a) is the correct answer.

29. D When a market is in equilibrium, price will neither tend to rise nor to fall because total market demand is equal to total market supply for a good.

30. D In the short run, the firm will stop production when the price falls below OD because that is the short down point for the firm where price = AVC.

If the price falls below that the firm will shut down its production. Therefore option (d) is the correct answer.

31. A A rational firm will employ upto that point where

$$AP_L = MP_L$$

$$AP_L = \frac{Q}{L} = \frac{18L^2 - L^3}{L} = 18L - L^2$$

$$MP_L = \frac{dQ}{dL} = \frac{d18L^2 - L^3}{dL} = 36L - 3L^2$$

By equating AP_L and MP_L , we will get

$$18L - L^2 = 36L - 3L^2$$

$$\Rightarrow 18L = 2L^2$$

$$\Rightarrow L = 9 \text{ units}$$

Therefore the first stage will end at 9 units of output and at the end of the second stage of production

$$MP_L = 0$$

$$\Rightarrow 36L - 3L^2 = 0$$

$$\Rightarrow L = 12 \text{ units}$$

Therefore the second stage of production function is over the range of labor input of

$$9 < L \leq 12$$

Therefore option (a) is the correct answer.

32. C

$$TP_L = 30L - 1.5L^2$$

$$MP_L = 30 - 3L$$

Marginal returns become negative, once MP_L equals zero. Thus,

$$30 - 3L = 0$$

Or, $L = 10$ units

33. A

As we know the total productivity of labor is maximum at that point where

$$MP_L = 0$$

Now we can write that

$$TP_L = 450L^2 - 30L^3$$

$$MP_L = \frac{dTP_L}{dL} = \frac{d(450L^2 - 30L^3)}{dL} = 900L - 90L^2$$

Total productivity is maximum at that point where

$$MP_L = 0$$

$$\Rightarrow 900L - 90L^2 = 0$$

$$\Rightarrow L = 10 \text{ units}$$

Therefore option (a) is the correct answer.

34. D

The average fixed cost curve is rectangular hyperbola. Therefore option (d) is the correct answer.

35. E

The main technical economies are associated with

I. Specialization and indivisibility of capital.

II. Set-up costs.

III. Initial fixed costs.

IV. Reserve capacity requirements

Therefore option (e) is the correct answer.

36. D

When MP is rising, MC is falling; when MP is diminishing, MC is rising. Marginal Cost (MC) will be minimum when Marginal Product (MP) is maximum. Therefore option (d) is the correct answer.

37. E

$$TC = 150 + Q^3 + 2Q^2 + 5Q$$

$$MC = \frac{dTC}{dQ} = \frac{d(150 + Q^3 + 2Q^2 + 5Q)}{dQ} = 3Q^2 + 4Q + 5$$

If $Q = 5$ units

$$MC = 3Q^2 + 4Q + 5 = 3(25) + 4 \times 5 + 5 = 75 + 20 + 5 = \text{Rs.}100$$

Therefore option (e) is the correct answer.

38. A

$$TVC = 300Q - 40Q^2 + 4Q^3$$

$$AVC = \frac{300Q - 40Q^2 + 4Q^3}{Q} = 300 - 40Q + 4Q^2$$

$$\frac{dAVC}{dQ} = \frac{d(300 - 40Q + 4Q^2)}{dQ} = -40 + 8Q = 0$$

$$\Rightarrow -40 + 8Q = 0$$

$$\Rightarrow -40 = -8Q$$

$$\Rightarrow Q = 5 \text{ units}$$

Therefore option (a) is the correct answer.

39. B

As we know at the break even point $TR = TC$

Here $TC = 5,700 + 7Q$

and the price is given as $P = Rs.10$

$TR = 10Q$

So at the break even point of the firm is

$TR - TC = 0$

$10Q = 5,700 + 7Q$

or $3Q = 5,700$

$Q = 1,900$ units

So the break even level of output is determined at 1,900 units of output. Therefore option (b) is the correct answer.

40. A The total cost function of the firm is given as

$$TC = 1,000 + 20Q - 0.5Q^2$$

Fixed cost = 1,000

$$\text{Average fixed cost} = \frac{\text{Fixed cost}}{Q} = \frac{1,000}{100} = Rs.10$$

Therefore option (a) is the correct answer.

41. B

$$TC = 1,000 + 560Q + 32Q^2 - 4Q^3$$

$$AVC = \frac{560Q + 32Q^2 - 4Q^3}{Q}$$

$$AVC = 560 + 32Q - 4Q^2$$

In the short run the firm will shut down its production at the minimum level of average variable cost. Now we can write that

AVC is minimum at that point where

$$\frac{dAVC}{dQ} = 0$$

$$\Rightarrow \frac{d(560 + 32Q - 4Q^2)}{dQ} = 0$$

$$\Rightarrow 32 - 8Q = 0$$

$$\Rightarrow 32 = 8Q$$

$$\Rightarrow Q = 4 \text{ units}$$

Therefore option (b) is the correct answer.

42. C If the average cost function of the firm is estimated to be $AC = 1,000/Q + 20 + 10Q + 50Q^2$

$$TC = AC(Q) = Q(1,000/Q + 20 + 10Q + 50Q^2) = 1,000 + 20Q + 10Q^2 + 50Q^3$$

Now the fixed cost of the firm will be Rs.1,000 which is independent of output. Therefore option (c) is the correct answer.

43. C The firm will earn normal profit when

$$MR = MC$$

$$MR = P = 60 - 6Q$$

$$MC = dTC/dQ = Rs. 12$$

The firm will earn normal profit at the point where

$$MR - MC = 0$$

$$60 - 6Q = 12$$

$$\text{or } 6Q = 48$$

$$\text{or } Q = 8 \text{ units}$$

Therefore option (C) is the correct answer.

44. E Marginal revenue of the firm equals price as the firm is the price taker and the industry is the price maker in case of perfect competition. Therefore option (e) is the correct answer.
45. D Following statements are about the perfect competition in the long run
 I. A firm earns normal profit in the long run.
 II. The equilibrium output is known as optimum level of output.
 III. In the long run there is only one equilibrium point.
 Therefore option (d) is the correct answer.
46. A Following statements are true.
 I. If the industry is a constant cost industry the supply curve will be a straight line.
 II. If the industry is an increasing cost industry, the supply curve will be an upward rising curve.
 III. If the industry is a decreasing cost industry, the supply curve will be a downward sloping curve.
 Therefore option (a) is the correct answer.
47. A In perfect competition the supply of an individual firm is equal to zero if the price is below average variable cost. Therefore option (a) is the correct answer.
48. E The total cost function of the firm is $TC = 400 + 8Q + 4Q^2$. If the firm is a perfectly competitive firm and is selling its goods at Rs.24. At equilibrium level in a perfectly competitive market, marginal revenue equals marginal cost.
 $MR = MC$
 Here $P = Rs.24$
 $TR = PQ = 24Q$
 $TC = 400 + 8Q + 4Q^2$
 $MR = Rs.24$
 $MC = 8 + 8Q$
 So at the point of equilibrium
 $24 = 8 + 8Q$
 $8Q = 16$
 $Q = 2$ units
 $TC = 400 + 8Q + 4Q^2 = 400 + 8 \times 2 + 4(2)^2 = 400 + 16 + 16 = Rs.432$
 Therefore option (e) is the correct answer.
49. C $TC = 250Q + 5Q^2$
 $MC = 250 + 10Q$
 $= 250 + 50$
 $= Rs.300$
 Therefore the required the marginal cost is Rs.300.
50. B The market demand function is given as
 $Q_d = 27,000 - 20P$
 $Q_s = 6,000 + 40P$
 Market will be in equilibrium at that point where
 $Q_d = Q_s$
 $27,000 - 20P = 6,000 + 40P$
 $21,000 = 60P$
 $P = 21000/60 = Rs.350$
 Since the industry is operating under perfect competition all the firms are price takers
 Hence for each firm $P = AR = MR$
 Given the AVC function of the firm

$$AVC = 350 - 36Q + 2Q^2$$

$$VC = 350Q - 36Q^2 + 2Q^3$$

$$MC = \frac{dVC}{dQ}$$

$$MC = \frac{d(350Q - 36Q^2 + 2Q^3)}{dQ} = 350 - 72Q + 6Q^2 = 0$$

The firm will be in equilibrium at that point where

$$350 = 350 - 72Q + 6Q^2$$

$$72 = 6Q$$

$$Q = 12 \text{ units}$$

Therefore at 12 units of output the firm will maximize his profit. Therefore option (b) is the correct answer.

51. B The theoretical highest price that can prevail in the market is when the quantity demanded is zero.

$$3,50,000 - 35P = 0$$

$$3,50,000 = 35P$$

$$P = \frac{3,50,000}{35} = \text{Rs. } 10,000.$$

52. E Following statements are true about the monopoly market

I. In monopoly there is no close substitute produced by the firm as single producer of the product

II. The monopolist can influence both the price and quantity

III. Since the firm is the single producer, the entry is totally restricted.

Therefore option (e) is the correct answer.

53. A Following reasons are responsible for the creation of monopoly market

a. Exclusive knowledge of the raw material.

b. Patent rights for a product or for a production process.

c. Government licensing or the imposition of foreign trade barriers to exclude foreign exchange.

d. The market cannot support more than one plant of optimal size.

e. The existing firms adopt the limiting price policy.

Therefore option (a) is the correct answer.

54. E Price discrimination is possible under the following conditions

I. Discriminating owing to consumer's peculiarities.

II. Discrimination owing to the nature of the good.

III. Discrimination owing to the distance and frontier barriers.

Therefore option (e) is the correct answer.

55. B In case of monopoly market price is greater than marginal revenue. Therefore option (b) is the correct answer.

56. B To maximize profit the first order condition requires that the MR should equal to MC. A monopolist can maximize profits by equating MR with MC.

Therefore option (b) is the correct answer.

57. A For a company total cost and total revenue functions are given as follows:

$$TR = 600Q - Q^2/2$$

$$TC = 1,000 + 120Q + 2Q^2$$

The profit maximizing price of the firm can be determined as follows

Equilibrium price of the firm is determined at that point where

$$MR = MC$$

$$MR = 600 - Q$$

$$MC = 120 + 4Q$$

Equilibrium price of the firm is determined at that point where

$$600 - Q = 120 + 4Q$$

$$\text{or } 480 = 5Q$$

$$Q = 96 \text{ units}$$

$$P = 600 - Q/2 = 600 - (96/2) = 600 - 48 = \text{Rs.}552.$$

Therefore the equilibrium price is Rs.552. So option (a) is the correct answer.

58. A The cost and demand functions of the monopolist of the firm are given as follows:

$$TC = 1,000 + 40Q^2$$

$$P = 800 - 40Q$$

The profit maximizing output of the firm is determined at that point where $MR = MC$

$$TC = 1,000 + 40Q^2$$

$$MC = 80Q$$

$$P = 800 - 40Q$$

$$TR = P \times Q = Q(800 - 40Q) = 800Q - 40Q^2$$

$$MR = 800 - 80Q$$

Now we can write that

$$80Q = 800 - 80Q$$

$$160Q = 800$$

$$Q = 5 \text{ units}$$

$$P = 800 - 200 = 600$$

$$TR = PQ = \text{Rs.}3,000$$

Therefore option (a) is the correct answer.

59. B Profit will be maximum when the first order derivative of profit function is equal to zero.

$$\frac{\partial \pi}{\partial Q} = -20Q + 400 = 0$$

Or, $Q = 20$ units.

60. E $AC = 800/Q + 80 + 4Q$

$$TC = 800 + 80Q + 4Q^2$$

$$TVC = 80Q + 4Q^2$$

At output 10,

$$\begin{aligned} TC &= 800 + 80(10) + 4(10)^2 \\ &= 800 + 800 + 400 = \text{Rs.}2,000. \end{aligned}$$

Therefore option (e) is the correct answer.

61. B At 9 units of output the price is Rs.25 per unit. So the $TR = PQ = 25 \times 9 = 225$
At 10 units of output the price is Rs.24 per units. So the $TR = PQ = 24 \times 10 = 240$
The Marginal revenue of the additional unit of the sale, $MR = TR_N - TR_{N-1} = 240 - 225 = \text{Rs.}15$

Therefore option (b) is the correct answer.

62. D In case of monopolistic competition, all the features are similar to that of perfect competition like presence of large number of buyers and sellers, free entry and free exit of firms, individual firm is the price taker but the industry is the price maker. A monopolist in case of a monopolistic competitive market produces the products which are close substitutes where as in case of [perfect competition, firms produce the

- homogeneous products Therefore option (d) is the correct answer.
63. D The demand curve for a monopolist firm is a downward sloping curve from left to right.
Therefore option (d) is the correct answer.
64. A In monopolistic competition, industry equilibrium is possible for each firm when average revenue equals average cost. Therefore option (a) is the correct answer.
65. E Cartel is a form of collusive oligopoly. Following are the true features of cartels.
I. Cartels imply direct agreement among competing oligopolist with the aim of reducing uncertainty.
II. The aim of cartel is the maximization of joint profit.
III. Identical products are produced by the firms.
Therefore option (e) is the correct answer.
66. B Total sales: $3,000 + 2,200 + 1,570 + 4,720 + 1,248 + 1,008 + 3,132 + 1,422 = 18,300$
4-firm concentration ratio = $(4,720 + 3,132 + 3,000 + 2,200) / 18,300 = 13,052 / 18,300 = 0.71$
6-firm concentration ratio = $(4,720 + 3,132 + 3,000 + 2,200 + 1,570 + 1,422) / 18,300 = 16,044 / 18,300 = 0.88$.
67. C A firm is operating in a monopolistically competitive market is followed by the following demand and cost functions:
 $P = 710 - 2.5Q$
 $TR = PQ = 710Q - 2.5Q^2$
 $TC = 710Q - 4Q^2 + 0.10Q^3$
The profit maximizing level of output of the firm is determined at that point where
 $MR = MC$
 $710 - 5Q = 710 - 8Q + 0.30Q^2$
 $3Q = 0.3Q^2$
 $3Q = 0.3Q^2$
 $Q = 10$ units
 $AC = 710 - 4Q + 0.10Q^2$
 $AC = 710 - 4(10) + 0.10(10)^2$
 $AC = 710 - 40 + 10 = \text{Rs.}680$.
68. D Learner Index of monopoly power is $L = (P - MC) / P$
 $0.33 = (12 - MC) / 12$
 $4 = 12 - MC$
 $MC = 12 - 4 = \text{Rs.}8$.
69. B Efficient allocation of L & K:
 $MP_L / w = MP_K / r$
 $0.75K^{0.75} / (L^{0.25} \times 8) = 0.75L^{0.75} / (K^{0.25} \times 5)$
 $5K = 8L$
Or, $L = 5/8K$.
Therefore option (b) is the correct answer.
70. D The concentration ratio is the percentage of total industry sales made by the four largest firms in the industry and the four firms' concentration ratio = $25 + 25 + 20 + 10 = 80\%$. Therefore option (d) is the correct answer.
71. A When price discrimination is not practiced by the monopolist, $P_K = P_A$.
 $P_K = 40 - 2.5Q_K$
 $2.5Q_K = 40 - P_K$
 $Q_K = 16 - 0.4P_K$

$$P_A = 120 - 10Q_A$$

$$10Q_A = 120 - P_A$$

$$Q_A = 12 - 0.1P_A$$

Total output sold by the monopolist = $Q = Q_A + Q_K$

$$\text{Thus, } Q = 16 - 0.4P_K + 12 - 0.1P_A$$

$$Q = 28 - 0.5P$$

$$0.5P = 28 - Q$$

$$P = 56 - 2Q$$

$$TR = P \times Q$$

$$= Q(56 - 2Q) = 56Q - 2Q^2$$

$$\text{Maximum TR: } \frac{\partial TR}{\partial Q} = 0$$

$$= \frac{\partial (56Q - 2Q^2)}{\partial Q} = 56 - 4Q = 0$$

$$\text{Or, } Q = 14 \text{ units}$$

72. A The supply function can be represented by

$Q = a + bP$: differentiating w.r.t P we get

$$\frac{\partial Q}{\partial P} = b$$

When price changes from 100 to 200, $\partial P = 100$ and ∂Q is 25 (from the question)

$$\text{So } b = 25/100 = 0.25$$

When P is 100, Q is 25

$$\text{So, we get } 25 = a + (0.25 \times 100)$$

$$\text{Or } a = 0$$

Therefore the supply function is $Q = 0.25P$.