

UNIVERSITY OF CALICUT

School of Distance Education

MEC1 C01: MATHEMATICAL ECONOMICS

(COMPLEMENTARY FOR BSC MATHEMATICS)

2019 Admission Onwards

MULTIPLE CHOICE QUESTIONS

1: $f(x) = 3x^3 - 4x^2 + 10$ implies

- a. $f(1) = 10$
- b. $f'(x) = 9x^2 - 8x + 10$
- c. $f''(x) = 18x - 8$
- d. $f'(2) = 10$

2: Which of the following are NOT true?

- a. $f(x) = ax^n$ implies $f'(x) = anx^{n-1}$
- b. $f(x) = 4x^5 - 3x^2$ implies $f'(x) = 20x^{-5} - 6x^{-2}$
- c. $f(x) = 4x + 3/x^2$ implies $f'(x) = 4 - 6/x^3$
- d. $f(x) = \ln(x)$ implies $f'(x) = x^{-1}$

3: $y = 100/x + 4x$ has

- a. a maximum point where $x = 5$
- b. a minimum point where $x = 5$
- c. a maximum point where $x = 0$
- d. a minimum point where $x = -5$

4: Which of the following statements are (in general) true?

- a. Marginal cost (MC) is minimised where $MC = \text{Average Variable Cost (AVC)}$
- b. Total Cost (ATC) is minimised where $MC = ATC$
- c. Average Variable Cost (AVC) is minimised where $MC = AVC$
- d. Total revenue is maximised where $MC = \text{Marginal Revenue (MR)}$

5: Which of the following functions have unit elasticity at $P = 6$?

- a. Demand: $Q_d = 5/P$
- b. Demand: $\log Q_d = 100 - 3 \log P$
- c. Demand: $Q_d = 24 - 2P$
- d. Supply: $Q_s = 5P$

6: For the demand function $Q_1 = 10 - 9 P_1 + P_2 + 0.01Y$ which of the following statements are true?

- a. $dQ_1 / dP_1 = -9 + P_2 + 0.01Y$
- b. $dQ_1 / dP_1 = -10$
- c. $dQ_1 / dP_2 = P_2$
- d. $dQ_1 / dY = 0.01$

7: For the function $Q = AK^aL^b$ which of the following statements are NOT true?

- a. $dQ/dL = AbK^aL^{b-1}$
- b. Marginal Product of Labour (MPL) = $AaK^{a-1}L^b$
- c. Marginal Product of Capital (MPK) = aQ / K
- d. Marginal rate of substitution of capital for labour (MRS) = $|dK / dL|$

8: Which of the following functions are NOT homogeneous of degree 1 (i.e. linear homogeneous)?

- a. $Q = 100 K^{1/4} L^{3/4}$
- b. $Q = 20 K^a L^{1-a}$
- c. $Q = K^2 + 2KL + L^2$
- d. $Q = (K^2 + 2KL + L^2)^{1/2}$

d) Structural equations. (B)

9. The law which studies the direct relationship between price and quantity supplied of a commodity is

- a. Law of demand
- b. Law of variable proportion
- c. Law of supply
- d. None of the above

10. When price rises, quantity supplied

- a. expands
- b. falls
- c. increases
- d. unchanged.

11. In case of perfectly inelastic supply the supply curve will be

- a) rising
- b) vertical
- c) horizontal
- d) falling.

12. When a percentage in price results in equal change in quantity supplied, it is called,

- a) elastic supply
- b) perfectly inelastic
- c) elasticity of supply
- d) unitary elastic supply.

13. when supply of a commodity decreases on a fall in its price, it is called

- a) Expansion of supply
- b) Increase in supply
- c) Contraction of supply
- d) Decrease in supply.

25. which is not a phase of business cycle?
- (a) Depression (b) Accumulation.
(c) Recession (d) recovery.
26. Suppose the supply for product A is perfectly elastic. If the demand for this product increases:
- A. the equilibrium price and quantity will increase;
B. the equilibrium price and quantity will decrease;
C. the equilibrium quantity will increase but the price will not change;
D. the equilibrium price will increase but the quantity will not change.
27. If the coefficient of income elasticity of demand is higher than 1 and the revenue increases, the share of expenditures for commodity X in total expenditure:
- A. will increase;
B. will decrease;
C. will remain constant;
D. can not be determined.
28. If the demand for agricultural products is inelastic:
- A. as the prices decrease, the revenues earned by producers increase;
B. as the prices decrease, the revenues earned by producers decrease;
C. rising prices do not lead to differentiation in producers' incomes;
D. the percentage decrease in prices is lower than the percentage increase in demand.
- For a rational consumer who has to choose between two goods in the context of budget constraints, the price change of one of the goods, caeteris paribus, will determine:
- A. a parallel shift of the budget line to the left;
B. a change in the slope of the budget line;
C. no change in the budget line;
D. a parallel shift of budget line to the right.
29. The price of the product A was reduced from 100 to 90 lei and, as a result, the quantity demanded has increased from 70 to 75 units. The demand is:
- A. inelastic;
B. elastic;
C. unit elastic;
D. can not be determined from the given information.

30. Choose the false statement:
- A. in general, the demand for necessity goods is less elastic than demand for luxury goods;
 - B. if the price and the producers' income are directly proportional, the demand is elastic;
 - C. after a long period of time since the change in the price of the good A, supply becomes more elastic;
 - D. for a company whose production process involves making two goods, one main and the other secondary, if the price of the main good increases, - caeteris paribus - the supply on the secondary good's market will increase (and vice versa).
31. If the demand curve for product A moves to the right, and the price of product B decreases, it can be concluded that:
- A. A and B are substitute goods;
 - B. A and B are complementary goods;
 - C. A is an inferior good, and B is a superior good;
 - D. Both goods A and B are inferior.
32. Suppose the price of a good decreases by 10% and the quantity demanded for a certain period of time increases by 15%. In these conditions:
- A. the revenues earned by producers decrease;
 - B. the revenues earned by producers increase;
 - C. the revenues are not influenced in any way;
 - D. the company's expenses rise.
33. If a price increase of 50% results in an increase in the quantity supplied of an economic good from 10 to 20 pieces, calculate the coefficient of price elasticity of supply.
- A. $\frac{1}{4}$. B. $\frac{1}{2}$; C. 1; D. 2.
34. The total utility coincides with the marginal utility:
- A. for the first unit consumed;
 - B. only for the irrational consumer;
 - C. at the level of the last unit consumed;
 - D. at the saturation point.

35. The indifference curve means:
- A. equal consumption of two goods;
 - B. equal utility from the consumption of two combinations of goods; C. equal consumer income;
 - D. equal prices of the goods consumed.
36. The points located at the intersection of the budget line with the coordinate axes mean:
- A. the consumer does not spend all his income;
 - B. the consumer spends all his income for only one good;
 - C. the consumer spends absolutely nothing;
 - D. these are points impossible to reach by the consumer.
37. An economic agent contracts a loan of 15.000 lei, which he will repay in three equal annual installments. What will be the total interest paid, knowing that the annual interest rate is 12% per year?
- A. 3.600 lei; B. 1.800 lei; C. 5.400 lei; D. 1.500 lei.
38. An economic agent makes a bank deposit of 10.000 lei with an interest rate of 5%. What will be the amount in the bank after 2 years, if the economic agent does not make withdrawals from the account created during this period?
- A. 11.000 lei; B. 1.000 lei; C. 11.025 lei; D. 500 lei.
39. Which of the following statements are false?
- A. information, the entrepreneur's ability, technical progress are neo-factors of production;
 - B. according to the stages of the circular flow of the company's capital, it takes three forms: money, capital goods and commodity;
 - C. fixed capital depreciation is only due to physical deterioration;
 - D. the factors of production are resources attracted and used in economic activity.
40. Which of the following aspects distinguish fixed capital from working capital:
- a. the number of cycles of production they participate in
 - b. the location of the production activity;
 - c. the period of time after which they are replaced;
 - d. the way they transmit their value to the new product.
- A (a,d) B (c,d) C (a,c,d) D (b,c,d)

;

41. The following data is given for a company: material costs 89 mil; working capital 45 mil; indirect salaries 10 mil; fixed costs 90 mil.; variable costs 52 mil. Calculate fixed material costs and depreciation:
- A. 60 and 64; B. 70 and 56; C. 80 and 44;
42. Fixed cost includes:
- a. expenditures for the salaries of the administrative staff;
 - b. expenditure for depreciation of fixed capital;
 - c. energy costs for manufacturing;
 - d. expenditure for general lighting.
- D. 89 and 45. D. (b,c,d) D (a,d) A. (a,b,c) B. (a,b,d)
43. When production volume is zero:
- 1. the fixed cost is 0;
 - 2. the variable cost is 0;
 - 3. the fixed cost is higher than the variable cost;
 - 4. the variable cost is higher than the fixed cost.
- A (a,b,c) B (b,c,d) C. (a,c,d) D. (b,c)
44. Calculate the average fixed cost (AFC), for a level of production $Q = 20$, knowing that the total cost function is: $TC = 200 + 3Q + 2Q^2$.
- A. 1060; B. 200; C. 20; D. 10.
45. Which of the following statements is false:
- a. perfect competition involves many sellers of standardized products;
 - b. monopolistic competition involves many sellers of homogeneous products;
 - c. the oligopoly involves several producers of standardized or differentiated products;
 - d. monopoly involves a single product for which there are no close substitutes.
46. On the market with perfect competition:
- A. the firm is a "price-taker," meaning, it takes over the market price;
 - B. the firm is a "price-maker", meaning, it determines the market price;
 - C. the companies' products are differentiated;
 - D. input barriers are minimal, and exit barriers are maximal.
47. Which of the following conditions indicate that a good is produced under perfect competition:
- a) producers' profits are high;
 - b) producers' profits are small;
 - c) total supply is inelastic;
 - d) individual demand is perfectly elastic.

48. The profit maximization condition for a firm in a market with monopolistic competition is the following (MR is marginal revenue, MC is marginal cost, P is price, ATC is average total cost, TR is total revenue):
- A. $MR=MC$;
 - B. $MC = P$;
 - C. $MR = ATC$;
 - D. TR to be maximum.
49. Which of the following statements about monopoly is true:
- A. there are several companies producing a specific product;
 - B. there is only one producing company, but the product has close substitutes;
 - C. there are no competitors on the relevant market;
 - D. input barriers are low.
50. There are differences between monopolistic and perfect competition regarding:
- A. market entry;
 - B. the number of sellers and buyers;
 - C. the market power of competitors;
 - D. homogeneity of products.
51. Which of the following can be considered as the basic features of public goods:
- A. are state-owned;
 - B. are characterized by non-excludability and non-rivalry;
 - C. are characterized by excludability and rivalry;
 - D. may be positive or negative.
52. Which of the following solutions are not part of the ways of internalizing externalities:
- A. the imposition of fines on the producer of negative externalities;
 - B. the introduction of taxes and duties that bring private costs to the level of social costs;
 - C. closure of companies producing positive or negative externalities;
 - D. the association of the negative externality manufacturer with the receptor of such an effect.
53. Normally, the natural economy is characterized by:
- A. price formation through complex mechanisms;
 - B. perfect competition;
 - C. the preponderance of product exchange;
 - D. the satisfaction of the individual and community needs of its own production.

54. Which of the following features define human needs:

- A. are not concurrent;
- B. do not disappear momentarily if they are satisfied;
- C. are unlimited in capacity;
- D. are unlimited in number.

55. If the price elasticity of demand for wine is estimated to be -0.6 , then a 20% increase in price of wine will lead to in quantity demanded of wine at that price

- (a) 12% increase ;
- (b) 12% decrease ;
- (c) 19.6% increase ;
- (d) 20.6% decrease

56. If the price elasticity of demand of Chicken is $+0.95$, then a 20% increase in price of chicken will lead to in quantity demanded of chicken at that price

- (a) 19% increase ;
- (b) 19% decrease ;
- (c) 20.95% increase ;
- (d) 20.6% decrease

57. If the cross price elasticity of demand for two products is negative, then the two products are

- (a) Complementary to each other ;
- (b) Perfectly substitute for each other;
- (c) Completely competitive ;
- (d) Unrelated

58. If demand of coffee increases by 10% with 20% decline in the price of sugar we can say that

- (a) Cross price elasticity of demand is negative and both the products are complementary to each other;
- (b) Cross price elasticity of demand is negative and the goods are substitute;
- (c) Cross price elasticity is positive and the products are complementary to each other
- (d) None of these

59. If the price of coffee falls by 8% and the demand for Tea declines by 2%. The cross price elasticity of demand for Tea is

- (a) 0.45 ;
- (b) 0.25 ;
- (c) $+0.44$;
- (d) -0.30

60. When the price of complementary products falls, the demand of the other product will

- (a) Fall ;
- (b) Increases ;
- (c) Remain stable ;
- (d) Drops by 25%

61. When the price of complementary products increases, the demand of the other product will

- (a) Falls ;
- (b) Increases ;
- (c) Remains same ;
- (d) Increases by 25%

62. Elasticity of supply depends upon

- (a) Nature of the commodity ;
- (b) Production technology ;
- (c) Future outlook of prices
- (d) All the three

63. A supply curve passing through the origin will have elasticity
(a) Less than 1; (b) More than 1; (c) Just One; (d) Zero
64. A supply curve passing through any point on X axis (quantity) will have elasticity
(a) Less than 1; (b) More than 1; (c) Just one; (d) Zero
65. Supply curve passing through any point on Y axis (Price) will have elasticity
(a) Less than 1; (b) More than 1; (c) Just One; (d) Zero
66. Goods which are perfect substitute of each other will have rate of substitution
(a) Unity; (b) Less than 1; (c) More than 1; (d) Zero
67. Goods which are perfect substitute of each other will have elasticity of substitution.....
(a) Unity; (b) Less than 1; (c) More than 1; (d) Infinite
68. Goods which are not perfect substitute of each other but have to be consumed in a fixed ratio will have rate of substitution
(a) Unity; (b) Less than 1; (c) More than 1; (d) Zero
69. If a dealer is prepared to supply 1000 sets of a 29" Color TV if the price is ₹12,000 per set, however if the price rises to ₹15,000 he is prepared to supply 1,500 pieces. The elasticity of supply of TV set is
(a) 1; (b) 2; (c) 0.75; (d) 1.4
70. In question No. 201 if at ₹15,000, the dealer is prepared to supply on 1250 sets of TV the elasticity of supply is
(a) 1; (b) 2; (c) 0.75; (d) 1.4
71. In question No. 201 if at ₹15,000, the dealer is prepared to supply on 1100 TV sets, the elasticity of supply is
(a) 1; (b) 2; (c) 0.4; (d) 1.5
72. Tea and Coffee are perfect substitute of each other, given the price of Tea and Coffee being ₹100 and ₹200 per Kg. a consumer is prepared to buy 3 Kg. of each. If the price of tea remain same and the price of Coffee rises to ₹400 per kg. the demand for Tea goes to 6 Kg. and that of Coffee falls to 1Kg. The elasticity of substitution between Tea and Coffee is
(a) 1; (b) 4; (c) 5; (d) 3
73. Select the odd one
(a) Consumer taste ; (b) Price of the goods ;
(c) Change in population ; (d) Increase in price of product
74. Select the odd one
(a) Price of the product ; (b) Cost of production ;
(c) No. of suppliers ; (d) St. duties

75. X a consumer spends his entire income on two commodities A and (B) if price of A increases by 10% and his expenditure on item B remains same, then the price elasticity of item A is
(a) 1 ; (b) <1 ; (c) >1 ; (d)
76. In question No. 207. If the price of item No. A instead of increasing falls by 25% and still his total expenditure as well expenditure on item B remains same, the price elasticity of A will be
(a) 1 ; (b) <1 ; (c) >1 ; (d)
77. An individual is spending his entire income on two items A and B equally. If income elasticity of A is 4 what is income elasticity of B
(a) 4; (b) 2; (c) 3; (d) 1
78. If an individual is spending his entire income on two items A and B in the ratio of 60:40. If income elasticity of A is 5 what is income elasticity of B
(a) 4; (b) 2; (c) 5; (d) 1
79. If prices of petrol rises from ₹40. To ₹48 per lt., the demand for cars falls from 60 per month to 45 per month, the cross elasticity of petrol and Car is
(a) 1.5; (b) 1.25; (c) 1.0; (d) 1.59
80. If prices of Eggs rises from ₹25 per dozen to ₹30 per dozen, the demand for vegetable burger increases from 30 per day to 40 per day, then the cross elasticity of eggs and vegetable burger is
(a) 1.5 ; (b) 1.25 ; (c) 1.65 ; (d) 1.86
81. Cross elasticity of a nearly perfect substitute products will be
(a) Infinite; (b) Zero; (c) >1; (d) <1
82. Cross elasticity of unrelated products will be
(a) Infinite; (b) Zero; (c) >1; (d) <1
83. Cross elasticity of complementary products will be
(a) Infinite; (b) Zero; (c) >1; (d) <0
84. If two goods are perfect substitutes for one another, the elasticity of substitution will be
(a) Infinite; (b) Zero; (c) >1; (d) <0
85. If two goods are not substitutes at all for one another, the elasticity of substitution will be
(a) Infinite; (b) Zero ; (c) >1; (d) <0

86. If the disposal income of a household increases by 10% and the demand for bread falls by 5%. The income elasticity of bread is
(a) 0.5; (b) -0.5; (c) 1.0; (d) -1.0
87. Bread can be considered as
(a) Essential goods ; (b) Luxury goods ;
(c) Inferior goods ; (d) Normal goods
88. If the disposal income of a household increases by 10% and the demand for X commodity increased by 25%. The income elasticity of X is
(a) 1.5; (b) -0.5; (c) 2.5; (d) -2.5
89. In question No. 220 X can be considered as
(a) Essential goods ; (b) Luxury goods ;
(c) Inferior goods ; (d) Normal goods
90. If the disposal income of a household increases by 10% and the demand for X commodity increased by 10% the income elasticity of X is
(a) 1.5; (b) 0.5; (c) 1.5; (d) 1.0
91. In question No. 222 X can be considered as
(a) Essential goods ; (b) Luxury goods ;
(c) Inferior goods ; (d) Normal goods
92. If the disposal income of a household decreases by 10% and the demand for X commodity remains same. The income elasticity of X is
(a) 0 ; (b) 0.5 ; (c) 0.5 ; (d) 2.5
93. In question No. 224 X can be considered as
(a) An essential goods ; (b) Luxury goods ;
(c) Inferior goods ; (d) Normal goods
94. Which of these would lead to increase in quantity supplied at a given price
(a) Increase in VAT ; (b) Increase in excise duty ;
(c) Increase in import duty ; (d) Reduction in levies
95. Which of these would lead to decrease in quantity supplied at a given price
(a) Decrease in VAT ; (b) Decrease in excise duty ;
(c) Decrease in import duty ; (d) Imposition of higher levies
96. The income elasticity of demand of inferior goods is generally
(a) >1 ; (b) <1 ; (c) <0 ; (d) $=0$
97. The income elasticity of demand of normal goods is generally
(a) >1 ; (b) <1 ; (c) <0 ; (d) >0

98. The cross elasticity of complementary goods is generally

- (a) > 1 ; (b) < 1 ; (c) < 0 ; (d) $= 0$

99. The cross elasticity of substitute goods is generally

- (a) > 1 ; (b) < 1 ; (c) < 0 ; (d) > 0

100. The elasticity of a demand curve with a constant slope

- (a) Increases at higher price ; (b) Decreases at higher price;
 (c) Increases at lower price ; (d) Remains constant

ANSWER KEY

1	C	21	B	41	C	61	B	81	D
2	B	22	C	42	B	62	C	82	C
3	B	23	D	43	C	63	B	83	A
4	C	24	B	44	D	64	A	84	B
5	D	25	C	45	B	65	C	85	A
6	D	26	A	46	A	66	B	86	D
7	B	27	B	47	D	67	A	87	D
8	C	28	B	48	A	68	D	88	B
9	C	29	A	49	C	69	B	89	A
10	A	30	B	50	D	70	A	90	C
11	B	31	B	51	B	71	D	91	C
12	D	32	B	52	C	72	A	92	D
13	C	33	D	53	D	73	A	93	A
14	B	34	A	54	D	74	B	94	A
15	A	35	B	55	A	75	A	95	A
16	D	36	B	56	B	76	A	96	C
17	C	37	A	57	A	77	A	97	C
18	A	38	C	58	B	78	B	98	B
19	C	39	C	59	B	79	B	99	C
20	B	40	C	60	B	80	A	100	A