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Name..... 28

Reg. No.....

SIXTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION MARCH 2021

Economics

ECO 6B 12—MATHEMATICAL ECONOMICS

ne : Three Hours

Maximum : 80 Marks

Section A

Answer **all** *questions.*
Each question carries 1 *mark.*

1. The relationship between marginal revenue and price is given by :

   A) $MR = p(1 - 1/e)$.

   B) $MR = p(e - 1/e)$.

   C) $MR = p(1 - e)$.

   D) $MR = p(e - p/e)$.

2. Lagrange multiplier is a mathematical method for :

   A) Constraint optimization.

   B) Minimization.

   C) Maximization.

   D) None of these.

3. The rate at which a consumer can give up some amount of one good in exchange for another good while maintaining the same level of utility is called :

   A) Price elasticity.

   B) MRS.

   C) MRTS.

   D) PPC.

4. What is the shape of the demand curve faced by a firm under perfect competition ?

   A) Horizontal.

   B) Vertical.

   C) Positively sloped.

   D) Negatively sloped.

5. Given the Cobb-Douglas Production function $Q = A K^{\alpha} L^{\beta}$, 'A' refers to :

   A) Managerial efficiency.

   B) Marginal productivity.

   C) Marginal profit.

   D) Marginal revenue.

Turn over

6. When the demand curve of a monopolist is $Q = a - bP$, then the total revenue is given by

A) $a - bPQ$.

B) $a - bQ$.

C) $aP - bP$.

D) $aP - bP^2$.

7. If the percentage increase in the quantity of a commodity demanded is smaller than the per fall in its price, the coefficient of price elasticity of demand is :

A) Greater than one.

B) Equal to one.

C) Smaller than one.

D) Zero.

8. If the $MRTS_{LK}$ equals 2, then the MP_K/MP_L is :

A) 2.

B) 1.

C) $\frac{1}{2}$.

D) 4.

9. When the total product reached at its maximum, marginal product is :

A) Zero.

B) Negative.

C) Positive.

D) Indeterminate.

10. Dual of the dual is :

A) Dual.

B) Primal.

C) Alternative.

D) None of the above.

11. The output elasticity of labour measures :

A) $(\Delta Q)/(\Delta L)$.

B) $(\%\Delta Q)/(\%\Delta L)$.

C) $(\Delta L)/(\Delta Q)$.

D) $(\%\Delta L)/(\Delta L)$.

12. The price elasticity of demand measures :

A) The slope of a budget curve.

B) How often the price of a good changes.

C) How sensitive the quantity demanded is to changes in demand.

D) The responsiveness of the quantity demanded to changes in price.

$(12 \times 1 = 12$

Section B

Answer at least **six** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall Ceiling 18.

13. What is an objective function ?

14. Define Market

15. Convert the following primal problem into dual problem :

Maximize $4X + 6Y$
S.A. $2X + 4Y \leq 12$
$4X + 3Y \leq 16$
$X \geq 0\ Y \geq 0.$

16. What do you mean by factor intensity ?

17. Define utility theory.

18. What is meant by linear homogeneous production function ?

19. Interpret the consumption function formula, $C = a + b\ Yd$.

20. *The profit function equation is made up of two primary functions.* Identify them.

21. What is optimal solution ?

22. What is an indirect utility function ?

23. Can AC fall, when MC is rising ? Substantiate your argument.

24. Find out marginal utility from the total utility function

$U = 20x^4 + 7x^3 + 13x^2 + 12x + 9.$

(6 × 3 = 18 marks)

Section C

Answer at least **four** *questions.*
Each question carries 6 *marks.*
All questions can be attended.
Overall Ceiling 24.

25. Determine the equilibrium price and quantity and maximum profit of a monopolist whose demand and cost junctions are :

$P_1 = 80 - 5Q_1, P_2 = 180 - 20Q_2, C = 50 + 20(Q_1 + Q_2).$

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26. Derive an input-output technical co-efficient.

27. What are the factors that influence the MPS ?

28. Determine the profit maximizing condition of a multi plant monopolist.

29. Distinguish between homogeneous and homothetic utility functions.

30. Illustrate average revenue and marginal revenue using an example.

31. Discuss the meaning and applications of Lagrange multiplier.

32. Distinguish between increasing and diminishing returns to scale.

$(4 \times 6 = 24$

Section D

Answer any **two** *questions.*
Each question carries 13 *marks.*

33. Answer the following :

a) Discuss the mathematical conditions for achieving equilibrium in a perfectly compe market.

b) Find the profit maximizing output where $TC = Q^3 - 7Q^2 + 12Q + 5$, price (p) is 8.

34. State and prove the properties of Cobb- Douglas production function. Point out its major limita

35. Discuss the equilibrium conditions of a discriminating monopolist. Identify the advantage disadvantages of price discrimination.

36. Explain various methods of measuring price elasticity of demand using numerical examples. An the significance of cross elasticity of demand.

$(2 \times 13 = 26$