



K23U 3703

Reg. No. :

Name :

III Semester B.A. Degree (CBCSS – Supplementary) Examination, November 2023
(2017-2018 Admissions)

**COMPLEMENTARY COURSE IN ECONOMICS/DEVELOPMENT
ECONOMICS**

3C03ECO : Mathematical Economics – I

Time : 3 Hours

Max. Marks : 40

PART – A

Answer **all 4** questions. **Each** carries **1** mark.

1. First derivative of total cost curve is _____.
2. If $AR = 10$ and $MR = 5$ find the price elasticity of demand.
3. Who proposed the theory of monopolistic competition ?
4. If good X is a neutral good what is its MRS for good Y ?

PART – B

Answer **any 7** questions. **Each** carries **2** marks.

5. What is expansion path ?
6. Define demand function.
7. Find marginal utility of good x from the total utility function $U = 20y^2 + x^3 + 6x^5$.
8. What happens to the budget line if income of the consumer increases, but the price of good x and y remain constant ?
9. Write a note on indirect utility function.
10. What do you mean by elasticity of substitution ?
11. If demand is $Q = 12 - 2P$, what is the price elasticity at $P = 3$?
12. Write a note on second degree price discrimination.
13. Find the marginal product and average product of the production function
 $Q = 2X^3 - 9X + 12$.
14. What is excess capacity ?

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PART – C

Answer **any 4** questions. **Each** carries **3** marks.

15. Prove that a Cobb Douglass production function satisfies Euler's theorem.
16. What are the characteristics of monopolistic competition ?
17. Derive the expressions for ordinary and compensated demand function.
18. Define indifference curve. What are the types of indifference curve ?
19. Distinguish between economies of scale and economies of scope.
20. Write a note on market equilibrium. If the demand function $Q_d = 50 - 3P$ and the supply function, $Q_s = 10 + P$. Find the equilibrium price and quantity.
21. Given the equation of production function isoquant $20K^{\frac{3}{4}}L^{\frac{1}{4}} = 800$. Find $MRTS_{LK}$.
22. Given $Q = 4\sqrt{KL}$. Find MP_L and MP_K and determine the effect on Q of a one-unit change in K and L , when $K = 50$ and $L = 600$.

PART – D

Answer **any 2** questions. **Each** carries **5** marks.

23. Price effect is decomposed into income effect and substitution effect. Explain.
24. Explain revealed preference hypothesis.
25. State and prove the properties of CES production function.
26. The monopolist faces two demand functions :
 $Q_1 = 24 - 0.2P_1$ and $Q_2 = 10 - 0.05P_2$. Where $TC = 35 + 40Q$. What price will the firm charge
a) With discrimination and
b) Without discrimination ?