

K22U 2711



Reg. No. :

Name :

Third Semester B.A. Degree (CBCSS – Supplementary)
Examination, November 2022
(2016-18 Admissions)
COMPLEMENTARY COURSE IN ECONOMICS/DEVELOPMENT
ECONOMICS
3C03ECO : Mathematical Economics – I

Max. Marks : 40

Time : 3 Hours

PART – A

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

1. The shape of the demand function depends upon the properties of _____
2. In a perfect competition, shut down point is the point where $P =$ _____
3. _____ refers to a market in which there is a single buyer.
4. For total cost function $TC = 2.5q^2 + 6q + 12$, MC at $q = 7$ is _____

PART – B

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

5. How does AR and MR is related to elasticity ?
6. Distinguish between substitute goods and complement goods.
7. What do you mean by compensated demand ?
8. Define homothetic utility function.
9. What is duality in consumer theory ?
10. Given the demand function $Q = \frac{130}{p} - 0.2p + 9$. Find point elasticity when $p = 11$.

P.T.O.



11. Given the profit function $\pi = -2q^2 + 140q - 1500$. Find maximum profit.
12. Given $Q = AL^{\alpha} K^{\beta}$. Prove Euler's theorem.
13. Given $TC = 15q^3 + 10q^2 + 6q + 300$. Find AVC and MC at $q = 8$.
14. $Q = 2.5L^{0.7} K^{0.3}$. Find MRTS function.

PART – C

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

15. The utility function is $U = X_1 X_2$, that $X_1 = 8$ Rupees, $X_2 = 2$ Rupees and that the consumer's income for the period is 16. Find the utility maximising level of goods.
16. How does the total revenue curve of the perfect competitor differ from the total revenue curve of the monopolist ?
17. $Q = 6500 - 12p_1 + 4p_2 + 0.5y$, where $y = 750$, $p_1 = 200$ and $p_2 = 150$ find own price, cross price and income elasticity of demand.
18. Discuss the advantages of translog production function over Cobb-Douglas and CES production function.
19. State the properties of indifference curve. Derive MRS equation.
20. Given the cost function $C = 4L + 10K$ and the production function $Q = LK$, where 'L' and 'K' represents labour and capital respectively. Find the optimum level of labour and capital when output is 40.
21. Explain linear expenditure system.
22. Given the demand function $q = -0.5p + 100$, $TVC = q^2 + 2q$ and $TFC = 500$. Find the equilibrium quantity and price.



PART – D

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

23. Explain the properties of CES production function. Discuss its advantages over Cobb-Douglas production function.
 24. What do you mean by price discrimination ? Give graphical explanation of first and second degree price discrimination.
 25. Explain the role of mathematics in economics. Give example.
 26. Derive Slutsky equation.
-