



Reg. No. :

Name :

III Semester B.A. Degree (CBCSS-Sup./Imp.) Examination, November 2020
(2014 – '18 Adms.)

Complementary Course in Economics/ Development Economics

3C03 ECO : MATHEMATICAL ECONOMICS – I

Time : 3 Hours

Max. Marks : 40

PART – A

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

1. The slope of indifference curve : $-\frac{dq_2}{dq_1}$ is
2. $\frac{\text{Proportionate change in factor proportions}}{\text{Proportionate change in relative factor prices}} =$
3. Linear homogeneous production function is related to _____ returns to scale.
4. $\frac{AR}{AR - MR} =$ **(4×1=4)**

PART – B

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

5. What are the properties of demand function ?
6. Discuss the axioms of revealed preference.
7. $AC = q^2 - 5q + 250$, find marginal cost at $q = 10$.
8. Distinguish between point elasticity and arc elasticity.
9. What do you mean by homothetic utility function ?
10. Define elasticity of substitution.
11. $Q = x^2 + 2xy + y^2$, is this function homogenous ? Give your justification.
12. $Q = AL^\alpha K^\beta$, find MRTS.

K20U 1211

13. $P = 300 - 2q$, find revenue maximising level of output.
14. Given the demand function $Q = -4p + 320$, find the point elasticity of demand when $p = 25$. (7×2=14)

PART - C

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

15. The utility function is $U = X_1X_2$, 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. Define and derive Rate of Commodity Substitution.
17. State any three properties of linear homogeneous production function and prove it.
18. Explain different types of price discrimination.
19. $P = 58 - 0.5q$, $TVC = \frac{1}{3}q^3 - 8.5q^2 + 97q$ and $TFC = 4$. Find profit maximising level of output.
20. $Q = 7000 - 10p_1 + 3p_2 + 0.4y$, where $y = 500$, $P_1 = 300$ and $P_2 = 200$, find income elasticity and cross elasticity.
21. What do you mean by monopoly market? How does MR curve of monopoly differ from the MR curve of perfect competition?
22. Write a short note on Linear Expenditure System. (4×3=12)

PART - D

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

23. Explain and prove the properties of Cobb-Douglas production function.
24. Derive Slutsky equation.
25. Explain the role of mathematics in economics. Give example.
26. Write a short note on price discriminating monopoly. Determine the price of a monopolist whose demand and cost functions are $P_1 = 80 - 5q_1$, $P_2 = 180 - 20q_2$ and $C = 50 + 20(q_1 + q_2)$. (2×5=10)