K25P 1111

Reg. No. : .....

Name : .....

IV Semester M.A. Degree (C.B.S.S. – Supple./Imp.) Examination, April 2025
(2021 and 2022 Admissions)
ECONOMICS/DEVELOPMENT ECONOMICS
ECO 4E15 : Mathematical Economics

Time : 3 Hours Max. Marks : 60

PART – A

Objective type questions. Answer **all** questions. **(8×½=4)**

1. If total revenue, TR = 100 + 100Q², then what is the marginal revenue ?
   A) 100Q² B) 100Q C) 200Q D) 200Q²
2. Lagrangian multiplier is a/an
   A) OLS method B) MLP method
   C) Constraint optimisation method D) Unconstraint optimisation method
3. In perfect competition, shut down point is the point where
   A) AR = AC B) AC = AVC C) AVC = TC D) Price = AVC
4. If TC = 3x² + x, MC at x = 2 is
   A) 12 B) 14 C) 7 D) 13
5. In matrices, inter-industry demand is summarised as,
   A) Input-output matrix B) Linear buying matrix
   C) Linear selling matrix D) Output- input matrix
6. A linear function is in the form,
   A) Y = a + bx B) Y = a + bx + cx² C) Y = axⁿ D) Y = aˣ
7. A perfectly vertical demand curve has a price elasticity of
   A) Zero B) One C) Negative D) Infinity
8. When total utility curve reaches maximum, MU will be
   A) Positive B) Negative C) Zero D) Rising

P.T.O.

PART – B

Short answer questions. Answer **any 8** questions. Answer should **not** exceed **1½** pages **each**. **(8×2=16)**

9. Write a note on Leontief cost functions.
10. Compare pure and mixed strategies.
11. Given production function, Q = 36KL – 2K² – 3L², find MP_L and MP_K.
12. If price of a commodity is Rs. 3/- and price elasticity of demand is – 3, find the MR.
13. What is a dumping ?
14. Given the demand function, P = Q² + 2Q + 1, write down the TR and MR function.
15. State the conditions for the equilibrium of a monopolist.
16. Define income effect.
17. Suppose AC = 3Q + 7, find MC.
18. What is a budget line ?
19. What is constrained optimization ?

PART – C

Short essay. Answer **any 4** questions. Answer should **not** exceed **2½** pages **each**. **(4×5=20)**

20. Explain the Hawkins – Simons conditions of viability of an input-output model.
21. Explain the scope of mathematical economics.
22. Given utility function, U = xy + 3x + 4y, find the marginal utilities of good x and y.
23. Discuss the Slutsky approach to substitution effect.
24. Distinguish between cardinal and ordinal utilities.
25. Prove Euler's theorem using Cobb-Douglas production function.

PART – D

Long essay. Answer **any 2** questions. Answer should **not** exceed **6** pages **each**. **(2×10=20)**

26. Derive the equilibrium of a firm under perfect competition.
27. Explain the different types of production function
28. A perfectly competitive firm faces p = Rs 4/- and TC = Q³ – 7Q² + 12Q + 5, find the best level of output. Also find the profit at this level of output.
29. The following inter-industry transaction table was constructed for an economy in a given year. Construct a technology matrix showing direct requirements. Does a solution exists for this system ?

Industry	1	2	Final Consumption	Total Output
1	500	1600	400	2500
2	1750	1600	4650	8000
Labour	250	4800		

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