



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)

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

P.T.O.

K25P 1111

-2-



PART – B

Short answer questions. Answer **any 8** questions. Answer should **not** exceed 1½ pages **each**.

(8×2=16)

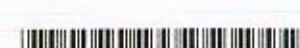
- Write a note on Leontief cost functions.
- Compare pure and mixed strategies.
- Given production function, $Q = 36KL - 2K^2 - 3L^2$, find MP_L and MP_K .
- If price of a commodity is Rs. 3/- and price elasticity of demand is -3 , find the MR.
- What is a dumping ?
- Given the demand function, $P = Q^2 + 2Q + 1$, write down the TR and MR function.
- State the conditions for the equilibrium of a monopolist.
- Define income effect.
- Suppose $AC = 3Q + 7$, find MC.
- What is a budget line ?
- What is constrained optimization ?

PART – C

Short essay. Answer **any 4** questions. Answer should **not** exceed 2½ pages **each**.

(4×5=20)

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



-3-

K25P 1111

PART – D

Long essay. Answer **any 2** questions. Answer should **not** exceed 6 pages **each**.

(2×10=20)

- Derive the equilibrium of a firm under perfect competition.
- Explain the different types of production function
- A perfectly competitive firm faces $p = \text{Rs } 4/-$ and $TC = Q^3 - 7Q^2 + 12Q + 5$, find the best level of output. Also find the profit at this level of output.
- 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		