

Sri Kuntlanpechukundan

M 8644



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II Semester B.A. Degree (CCSS - Supple./Improv.)
Examination, May 2015
(2011 and Earlier Admn.)

COMPLEMENTARY COURSE IN ECONOMICS

2C02 ECO : Mathematics for Economic Analysis - II

Time : 3 Hours

Max. Weightage : 30

Instructions : Answers may be written either in English or in Malayalam.

PART - A

Objective type questions - In Bunches of two choose the correct answer.

- I
1. If $A^3 = A$, A is of period _____
 a) 3 b) 2 c) one d) zero
 2. $a_{ij} = 0 \forall i < j$ in _____ matrices.
 a) Upper triangular b) Lower triangular
 c) Diagonal d) Square and scalar
 3. Determinant value of a singular matrix.
 a) equal to zero b) not equal to zero
 c) equal to constant d) equal to one
 4. Derivative of Marginal Cost = -6 implies, total cost is
 a) Maximum b) Minimum
 c) Maximum or Minimum d) Cannot predict (Weightage 1)

II

5. In $y = f(X)$, integral of a constant is
 a) constant b) zero c) one d) constant times X
6. If $A^2 = 0$, A is a _____ matrix
 a) Orthogonal b) Idempotent c) Nil potent d) Null

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7. A unit matrix is a _____

- a) square matrix
- b) diagonal matrix
- c) scalar matrix
- d) all of these

8. Find function of total cost if its $MC = 2 + x + x^2$ and $TC = \text{Rs } 50$ at $x = 0$ where x is the output.

- a) $TC = 0$
- b) $TC = 50$
- c) $TC = \frac{x^3}{3} + \frac{x^2}{2} + 2x + 50$
- d) $TC = C + 2x + \frac{x^2}{2} + \frac{x^3}{3}$

(Weightage 1)

PART - B

Short answer questions. Answer **any ten** questions.

- 9. Define symmetric matrix.
- 10. Explain the relation of symmetric matrices with quadratic forms.
- 11. Define characteristic vectors and hence characteristic roots.
- 12. Find $\int 4x^3 dx$.
- 13. Evaluate $\int_0^1 \sqrt{t} dt$.
- 14. If marginal propensity to save is $0.5 + 0.2 Y^{-2}$ find the consumption function.
- 15. Write the Reversal law of inverses.
- 16. Define orthogonal matrix.
- 17. Define trace of a matrix.
- 18. What is meant by linear dependence of vectors ?
- 19. If $MR = 16 - x^2$, find the maximum revenue ?
- 20. Explain augmented matrix.

(10x1=10)



PART - C

Short essay, answer any five questions.

21. Define inverse of a matrix and explain the conditions for the existence of an inverse, by the determinant method.

22. Evaluate $\begin{bmatrix} P & O \\ O & Q \end{bmatrix} \begin{bmatrix} P_1 & O \\ O & Q_1 \end{bmatrix}$

23. What are the uses of vectors and matrices in Economic Analysis ?

24. Explain rank of a matrix determine the rank of $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \\ -3 & -6 & -9 \end{bmatrix}$.

25. Define vector. Test whether the vectors [1 2 3] and [2 - 2 0] are linearly dependent or independent.

26. Explain Consumer's surplus.

27. What are the properties of determinants ? (5x2=10)

PART - D

Long essay. Answer any two questions.

28. Evaluate the area above X-axis bounded by a total product function when $MP = (4 - 3x)^5$ whenever $x = 1$ and $x = 3$.

29. Obtain A^{-1} if $A = \begin{bmatrix} 3 & 4 \\ 1 & 2 \end{bmatrix}$ by Gauss Elimination method.

30. Explain Cramer's rule.

31. Explain optimisation conditions of quadratic forms subject to linear constraints. (2x4=8)