

S. NO.: 408

BATCH: 87-2015

Reg. No.:

END OF SEMESTER EXAMINATIONS, APRIL / MAY - 2017

MATHEMATICAL METHODS

SUBJECT CODE : 12UAEC05

MAJOR : B.A (ECONOMICS)

SEMESTER : III

TIME : 3 HOURS

MAX. MARKS: 75

**SECTION A - ( 10 X 1 = 10 )**

**Answer All Questions:**

1. What is Analytical Geometry?
2. Give the meaning of intercept.
3. What is point of inflexion?
4. How to derive Marginal Cost?
5. What is elasticity of demand?
6. State the meaning of null matrix.
7. What is Adjoint A?
8. If  $A = \begin{bmatrix} 3 & -2 \\ 0 & 1 \end{bmatrix}$ . Find  $2A$ .
9. For  $T_i$ , function  $u = 20x^4 + 7x^3 + 13x^2 + 12x + 9$ . Compute Marginal utility.
10. What is Transpose of a matrix?

**SECTION B - ( 5 X 4 = 20 )**

**Answer any FIVE Questions:**

11. If x intercept is 4 and y intercept is 5 find the equation of the straight line.
12. Solve:  $4(x+3) = 3(x+5)$
13. Evaluate  $\frac{dy}{dx}$  for  $y = (3x^2 + 2x)(x+9)$
14. If  $A = \begin{bmatrix} 2 & 1 \\ 4 & 3 \\ 1 & 0 \end{bmatrix}$  and  $B = \begin{bmatrix} 1 & 3 \\ 2 & 2 \end{bmatrix}$  verify that  $(AB)^T = B^T A^T$ .
15. Compute  $Mu$  of  $X$  at  $x=1$  and  $y=2$  for the Total utility function  $u = 3x^2y + 4xy^2 + 2x + 2y$ .
16. What are the conditions for maxima and minima?
17. Find the Inverse of the matrix  $A = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix}$ .
18. Find the Rank of matrix  $A = \begin{bmatrix} 1 & 4 & 0 \\ 2 & 5 & 0 \\ 3 & 6 & 0 \end{bmatrix}$ .

**SECTION C - ( 3 X 15 = 45 )**

**Answer any THREE Questions:**

19. Solve the Quadratic equation  $3x^2 + 7x + 2 = 0$  by the standard formula method.
20. Find the maxima and minima for the function  $Z = 10x + 20y - x^2 - y^2$ .
21. Consider a monopolist who faces a linear demand function  $P = 100 - 2q$  and a linear Total cost function  $C = 50 + 2q$ . Determine the Optimum level of output, Price, Total Revenue, Total cost and Profit.
22. Solve the following equations by using Cramer's rule.
 
$$2X - 3Y + 4Z = 5$$

$$X + 2Y - 3Z = 8$$

$$X - Y - Z = 1$$
23. Solve the following Simultaneous equations.
 
$$2X_1 + 3X_2 = 7$$

$$3X_2 - 2X_3 = 5$$

$$2X_1 + 7X_2 = 10$$

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