(FOR THE CANDIDATES ADMITTED DURING THE ACADEMIC YEAR 2022 ONLY)

SUB CODE 22UEO408

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY-2024

BA ECONOMICS **MAXIMUM MARKS: 50**

SEMESTER IV **TIME : 3 HOURS**

PART - III

MATHEMATICAL METHODS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

1. A line for linear equation should begin from

a) Origin b) X axis c) Y axis d) All of the above

2. If A and B are symmetric matrices of the same order then $(AB^{1}-BA^{1)}$ is

a) Skew symmetric matrix b) Null matrix c) Symmetric matrix d) None of the above

3. The sum of the roots of the Quadratic equation $3x^2-9x+5= 0$ ----------

a) 3 b) 6 c) -3 d) 2

4 Find the Minimum value of (2x+1) (x+3)

a) 25/8 b) -25/8 c) 63/8 d) -63/8

5. Community Surplus equals

a) Producer surplus minus consumer surplus b) Profit plus utility c) Total Utility minus profit

d) Consumer surplus producer surplus

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES (K2)

6. Define Quadratic equation

7. What is Matrix?

8. What do you mean by Differentiation?

9. Define Partial differentiation..

10. Define Producer's Surplus.

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) State Importance of Mathematical Tools in Economic Analysis

(OR)

b) $2x_1+3x_2=5$

$11x -5x_2 = 6$

Write the above equation in Matrix form

12. a) If $A=\begin{pmatrix}1 & 2 & -3\\ 0 & -1 & 2\\ 3 & 0 & 4\end{pmatrix}$ And $B=\begin{pmatrix}-1 & 3 & 4\\ 6 & 2 & 0\\ 2 & 1 & 3\end{pmatrix}$ Find A+B

(OR)

b) If $A = \begin{pmatrix} 1 & 5 \\ 6 & 7 \end{pmatrix}$ and $B \begin{pmatrix} 10 & 2 \\ 8 & 6 \end{pmatrix}$ Find A-B and B-A

13. a) If MR is Rs 50 and the price elasticity of demand is 2 find the AR

(OR)

b) Given the total cost function $C= 50-2Q+7Q^2+Q^3$ Find the Marginal Unit When Q=5

14. a) Find the Partial Derivatives of $Z= 4x^2+4xy+y^2$

(OR)

b) For the Total Utility Function $U = 2x^2 y – 3xy+7x+9y$ Find Marginal Utilities of X and Y at X=2 and Y=1

15. a) Explain the rules of integration

(OR)

b) Explain Consumer surplus

SECTION – C (5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K4 /K5)

16. a) Find the Value of x If $\frac{x}{6} + \frac{x}{8} = \frac{x+1}{7} + \frac{x}{12} + 3$

(OR)

b) Solve the Quadratic Equation by completing the Square

$4x^2+4x-3=0$

17. a) Discuses the various types of Matrices

(OR)

b) The Transpose of a Product of Matrices is the Product is reverse order of their Transposes i,e) $(AB)^T = B^T A^T$ and $(ABC)^T = C^T B^T A^T$

If $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ and $B \begin{pmatrix} 0 & -1 \\ 6 & 7 \end{pmatrix}$ Verify that $(AB)^T = B^T A^T$

18. a) The Total Cost C of output X is given by

$$C= \frac{2}{3} X + \frac{35}{2}$$

Find i) Cost when out put is 4 units

ii) Average cost of output of 10 units

iii) Marginal cost when output is 3 units

(OR)

b) Evaluate dy/dx for $Y= x+1/x-1$

19. a) Examine the Maxima or Minima of the function

$f(x,y) = 16 - (x-2)^2 - (y-2)^2$

(OR)

b) For the Total Utility Function U = (3x+7y) (x-5), find Marginal Utility of x and y at x =2 and y =1

20. a) The demand function for a commodity P=30 - 2D.The supply function P = 3 D. Find Consumer's .Surplus

(OR)

b) The supply function for commodity $P = 2+D^2$. Find the Producer's surplus when Price is Rs.18