S.NO: 22N1- PE **Course Code: PGED**

A.D.M.COLLEGE FOR WOMEN, NAGAPATTINAM

(AUTONOMOUS)

M.A(Economics) Degree Examination

I Semester –**November**– 2022

CC IV – MATHEMATICAL METHODS FOR ECONOMIC ANALYSIS

Time: 3 hours **Maximum Marks: 75**

Section –A **(10X2=20)**

Answer **ALL** the Questions

1. Interpret the components of the following function: $2y - 4x + 5 = 0$.

2. Write the general form quadratic function. Indicate the variables, constant and coefficients in that function.

3. State the meaning of differentiation.

4. Find the derivative of the function $y = \frac{2}{x^3}$.

5. What is matrix?

6. State the meaning of transpose of a matrix with an example.

7. Find the determinant: $\begin{pmatrix} 10 & 5 \\ 3 & 3 \end{pmatrix}$.

8. What are the minors in matrix?

9. What is input-output model?

10. State the nature of returns to scale assumed under input-output analysis. Why?

Section –B (5X5=25)

Answer **ALL** the Questions

11. a) Explain any five types of Mathematical functions used in Economics.

(or)

b) If C = 100 + 0.75Y is an estimated Keynesian consumption function. Given an economic interpretation to the function and show its implications.

12. a) Explain the any five rules of differentiation with example.

(or)

b) Find derivative: i) $y = \frac{2x^3 - x^2 + x - 2}{x^2}$ ii) $y = x^2 (x - 3)$.

13. a) What are the types of matrices? Explain with example.

(or)

b) Find AB if $A = \begin{pmatrix} 4 & 7 \\ 9 & 1 \end{pmatrix}$ and $B = \begin{pmatrix} 3 & 8 & 5 \\ 2 & 6 & 7 \end{pmatrix}$.

14. a) i) What do you mean by determinant?

ii) Find the determinant of the matrix:

$$A = \begin{pmatrix} 3 & 4 & 5 \\ -6 & 2 & -3 \\ 8 & 1 & 7 \end{pmatrix}.$$

(or)

b) Find the inverse of the matrix: $A = \begin{vmatrix} 2 & 1 & -1 \\ 5 & 9 & -2 \\ -10 & 1 & 4 \end{vmatrix}$.

15. a) Explain the assumptions of input-output model.

(or)

b. What are the limitations of input-output model?

Section –C (3 X 10 = 30)

Answer any **THREE** Questions

16. Discuss the uses of Mathematics in Economics.

17.i) What do you mean by partial derivatives?

ii) What two cross partial derivatives are equal, when $z = 12 - x^2 - y^2 + xy$.

18. If $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ $B = \begin{pmatrix} -1 & 2 \\ 2 & -1 \end{pmatrix}$ and $C = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$, then find

i) 2A – 3B and ii) ABC.

19. Solve by Cramer's rule:

$5x - 7y + z = 11$

$6x - 8y - z = 15$

$3x + 2y - 6z = 7$

20. Describe the technique of input-output analysis.