

CODE: **195303**
NOVEMBER 2020

TIME: 2 Hrs
MAX. MARKS: 50

PART A (10 x 2=20)
*Answer any **TEN** questions.*

1. Express the following equation in the form of matrices:

$$5x_1 - 4x_2 - 3x_3 = 25$$

$$2x_1 + x_2 + 2x_3 = 50$$

$$6x_1 - x_2 + x_3 = 28$$

2. Define Matrices.

3.
$$A = \begin{pmatrix} 2 & -2 \\ -3 & -4 \\ 0 & 0 \end{pmatrix} \quad B = \begin{pmatrix} -4 & 1 \\ 7 & 2 \\ 9 & 3 \end{pmatrix} \quad \text{Find } A+B$$

4. What is Differential Calculus?

5. Give the formula for Quotient rule

6. Define Indifference Curve.

7. Illustrate Consumer Equilibrium.

8. Define Isoquants.

9. What is Expansion Path?

10. What is LPP?

11. Define Cost.

12. If $Y = 20x^4 + 7x^3 + 13x^2 + 12x + 9$. Find second order derivative.

PART B

(2 x 5=10)

Answer any **TWO** questions.

13. $A = \begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}$ $B = \begin{pmatrix} -1 & 2 \\ 2 & -1 \end{pmatrix}$ $C = \begin{pmatrix} 3 \\ 1 \end{pmatrix}$

Find $2A - 3B$

14. Find the inverse of matrix A:

If $A = \begin{pmatrix} 4 & -2 & 1 \\ 7 & 3 & 3 \\ 2 & 0 & 1 \end{pmatrix}$

15. Find the inverse of matrix $A = \begin{pmatrix} 4 & 0 & 2 \\ 2 & 10 & 2 \\ 3 & 9 & 1 \end{pmatrix}$

16. Explain any 4 rules of differentiation.

17. Differentiate: $2x^4 / 5x - 6$.

18. Discuss the properties of Isoquants.

19. Write a short note on Linear Programming Problem.

20. Explain the relationship between Average Cost and Marginal Cost.

PART C

(2 x 10=20)

Answer any **TWO** questions.

21. Solve the following using Matrix Inversion Method:

$$2x_1 + 3x_2 - x_3 = 9$$

$$x_1 + x_2 + x_3 = 9$$

$$3x_1 - x_2 - x_3 = -1$$

22. Explain the uses of differential calculus.

23. Find the maximum value of: $Z = 5x_1 + 7x_2$ by using graphical method subject to constraints:

$$x_1 + x_2 \leq 4$$

$$3x_1 + 8x_2 \leq 24$$

$$10x_1 + 7x_2 \leq 35$$

24. Write Short notes on:

- a. Cobb Douglas Production Function.
- b. Euler's Theorem

25. Differentiate between fixed cost and variable cost.

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