SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
B.A.(Eco) END SEMESTER EXAMINATIONS APRIL-2023
SEMESTER - V
20UECET5ME1 - Mathematics for Economists

Total Duration : 2 Hrs 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. What are the types of matrix? Explain.
2. What are the properties of determinants with example?
3. Verify the $(A+B)^T = A^T + B^T = B^T + A^T$

   If $A^T = \begin{bmatrix} 4 & 5 \\ -1 & 0 \\ 2 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -1 & 1 \\ 7 & 5 & -2 \end{bmatrix}$
4. What is the main objective of input-output analysis? Explain the importance its features.
5. Find the derivative of the function.f(x) $= 3x + 7$
6. Explain the differences between Implicit and Explicit Function
7. Find the turning points of the function y $= 4x^3 + 12x^2 + 12x + 10$.
8. How do you solve Euler homogeneous differential equations? Explain.

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Solve the following system of equations using Cramer's rule:

   $2x - y = 5$

   $x + y = 4$
10. Following inter industry transaction table was constructed for an economy of the year 2016

Industry	1	2	Final consumption	Total output
1	500	1600	400	2500
2	1750	1600	4650	8,000
labor	250	4800	-	-

Contd...

Construct technology co-efficient matrix showing direct requirements. Does a solution exist for this year?

11. What is Chain Rule? Explain chain rule steps.

12. Let (i) f(x) = -2x^3 +4x^2+9x-15
    (ii) f(x)= (5x^2-8)^2
    Identify whether the above functions are concave or convex at x = 3

13. Find the local maxima and minima of the function
    f(x) = 3x^4 + 4x^3 – 12x^2 - 12.

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