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.Sc.(AI) - END SEMESTER EXAMINATIONS APRIL-2023
SEMESTER - I
22UAIAT1001 - Allied Mathematics - I

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

Section B

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

1. Using Newton forward formula, find f(43)

x	40	50	60	70	80	90
f(x)	184	204	226	250	276	304

2. Prove that S = $\triangle(1+\triangle)^{-1/2} = \nabla(1-\nabla)^{-1/2}$
3. Find eigen value and eigen vector of the Matrix $\begin{bmatrix} 4 & 1 \\ 3 & 2 \end{bmatrix}$.
4. Expand sin5θ in power of sinθ and cosθ.
5. If Y = $\dfrac{\log x}{y}$, find second derivates.
6. Find the Equation whose roots are given $3+\sqrt{5}$.
7. If X= u(1+v) and Y = v(1+u), find $\dfrac{\partial(x,y)}{\partial(u,v)}$.
8. If y = $x^2 e^x$, prove that $y_n = \dfrac{1}{2}n(n-1)\ y_2$ - $n(n-2)y_1$ + $(n\text{-}1)(n\text{-}2)y$ using Leibnitz's theorem.

Section C

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

9. Find the value of F(3.5) using the following table

X	3	4	5	7
F(X)	31	69	131	351

10. Find the eigen Value and eigen Vector of A = $\begin{bmatrix} 3 & -1 & 0 \\ -1 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix}$
11. Solve: $6x^4 - 25x^3 + 37x^2 - 25x + 6$.
12. Expand $sin^5\theta.cos^4\theta$.
13. Find the extreme value of f(x,y) = xy - $x^2 - y^2 - 2x - 2y + 4$.

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