

Roll.No.

20UCSAT2002

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 Computer Science- END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - II

20UCSAT2002 - Allied Mathematics - II

Total Duration : 2 Hrs.30 Mins.

Total Marks : 60

Section B

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

1. Find the real root of the equation $x^3 - 3x + 1 = 0$ lying between 1 and 2 upto three decimal places by Newton Raphson method.
2. Use Lagrange's formula to find the value of y at $x=6$ from the following data:

x	3	7	9	10
y	168	120	72	63

3. The population of a certain town is shown in the following table:

Year x	1931	1941	1951	1961	1971
Population y	40.62	60.80	79.95	103.56	132.65

Find the rate of growth of the population in 1961.

4. Using Taylor's method find $y(0.1)$ correct to 3 decimal places from $\frac{dy}{dx} + 2xy = 1, y_0 = 0$

5. Give an estimate of the population in 1971 from the following table:

year	1941	1951	1961	1971	1981	1991
Population in lakhs	363	391	421	?	467	501

6. Find the value of x correct to one decimal place for which $y=7$ given

x	1	3	4
y	4	12	19

7. Explain Simpson's three eight rule.

8. Solve $\frac{dy}{dx} = 1-y, y(0)=0$ using Euler's method. Find y at $x=0.1$ and $x=0.2$

Contd..

Section C

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

9. Find a real root of the equation $x^3 - 3x + 1 = 0$ lying between 1 and 2 correct to three places of decimals by using bisection method.
10. Construct Newton's forward interpolation polynomial for the following data:

x	4	6	8	10
y	1	3	8	16

Use it to find the value of y for $x = 5$.

11. Using Newton's divided difference formula evaluate $f(8)$ given that

x	4	5	7	10	11	13
f(x)	48	100	294	900	1210	2028

12. Evaluate $\int_0^{10} \frac{dx}{1+x^2}$ by using
- Trapezoidal rule
 - Simpson one third rule

13. Use Runge-Kutta method of the fourth order to find $y(0.1)$ given that $\frac{dy}{dx} = \frac{1}{x+y}, y(0)=1$
