

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 a positive root of $4x - e^x = 0$ using Newton-Raphson method.
- 2. Estimate the missing terms in the following table.

x	0	5	10	15	20	25
y	6	10	?	17	?	31

- 3. A function $y=f(x)$ is given by the following table. Find $f(0.2)$ by a suitable formula.

x	0	1	2	3	4	5	6
f(x)	176	185	194	203	212	220	229

- 4. Use Lagrange's interpolation formula to find the value of y when $x=10$ if the following values of x and y are given.

x	5	6	9	11
y	12	13	14	16

- 5. Using Trapezoidal rule evaluate $\int_{0.6}^2 y dx$ from the following table.

x	0.6	0.8	1.0	1.2	1.4	1.6	1.8	2.0
y	1.23	1.58	2.03	4.32	6.25	8.36	10.23	12.45

- 6. Solve the equation $x^3 + x^2 - 1 = 0$ using iterative method.
- 7. Using Newton's backward interpolation formula find a polynomial for y which takes the values.

x	4	6	8	10
y	1	3	8	16

- 8. The population of a certain town is shown in the following table.

year	1931	1941	1951	1961	1971
Population "000	40.6	60.8	79.9	103.6	132.7

Find the rate of growth of the population in the year 1961.

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Section C

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

9. Use Regula Falsi method to solve $x \log_{10} x = 1.2$.
10. (a) State and prove fundamental theorem for finite differences.
(b) Prove with usual notation $\Delta \nabla = \nabla - \Delta = \delta^2$.
11. From the following data find θ at $x=48$ and $x=84$

x	40	50	60	70	80	90
θ	184	204	226	250	276	304

12. Find $f'(1.5)$ and $f''(1.5)$ from the following table :

x	1.5	2.0	2.5	3.0	3.5	4.0
f(x)	3.375	7.0	13.625	24.0	38.875	59.0

13. The velocity v of a particle at distances from a point on its path is given by the table:

S	0	10	20	30	40	50	60	Feet
V	47	58	64	65	61	52	38	Feet/Sec

Estimate the time taken to travel 60 feet by using Simpson's one-third rule.
Compare the result with Simpson's three-eighth rule.
