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. Comp. Sci - END SEMESTER EXAMINATIONS APRIL - 2024
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. Derive Newton- Rapson formula to obtain the cube root of N.

2. Use the method of iteration to solve the equation 3x-$\log_{10}$x=6.

3. Prove that$\triangle \left[\frac{f(x)}{g(x)}\right] = \frac{g(x) \triangle [f(x)] - f(x) \triangle [g(x)]}{g(x+h)g(x)}$.

4. Prove that E = e^{hD}.

5. Compute the value of Y from the following data at x = 2.65.

X	-1	0	1	2	3
Y	-21	6	15	12	3

6. Find the form of the function y for the following data. Hence find y(3).

X	0	1	2	5
Y	2	3	12	147

7. Evaluate $\int_0^1 e^{-x^2} dx$ by dividing the range into 4 equal parts using trapezoidal rule.

8. Evaluate $\int_0^{\frac{\pi}{2}} sinx \; dx$ by Simpson's $\frac{1}{3}$ rule dividing the range into six equal parts.

Section C

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

9. Evaluate the real root lying between 1 and 2 of the equation x^3-3x+1=0 upto 3 places of decimals by using Regula-falsi Method.

10. Given $u_0 = 2$, $u_1 = 11$, $u_2 = 80$, $u_3 = 200$, $u_4 = 100$, $u_5 = 8$ find $\nabla^5 u_5$
    (i) without constructing the difference table
    (ii) by constructing the difference table.

Contd...

11. A function y =f(x) is given by the following table. Compute f(0.2) by a suitable formula.

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

12. Evaluate $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at x = 50 from the following data.

x	50	60	70	80	90
y	19.96	36.65	58.81	77.21	94.61

13. Evaluate $\int_0^1 \frac{dx}{1+x}$ using
    a) Trapezoidal rule
    b) Simpson's one third rule
    c) Simpson's three eight rule.

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