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. END SEMESTER EXAMINATIONS APRIL-2022
SEMESTER - V
17UMACE5A01 - Numerical Methods

Total Duration : 3 Hrs.   **Total Marks : 60**

Section A

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

1. Evaluate $\sqrt{12}$ by using Newton Raphson method correct to 3 decimal places.

2. Solve the system of equations by Guass elimination method.
   x+2y+z=3, 2x+3y+3z=10, 3x-y+2z=13.

3. Find the function f(x) from the following table hence evaluate f(6) by Newton's method.

x	1	2	7	8
f(x)	1	5	5	4

4. Evaluate $I=\int_0^6 \frac{1}{1=x}dx$ using (i) Trapezoidal rule (ii) Simpson's one-third rule

5. Using Euler's method , Solve numerically the equation, y'= x+y, y(0)=1, for x=(0.0),(0.2),(1.0).

6. Find the positive root of $X^3 - X = 1$ correct to four decimal places by bijection method.

7. Solve the system of equations by Guassseidal method.
   10x+2y+z=13, x+10y-2z=9, 3x-y+10z=12.

8. Using Lagrange's interpolation formula find y(10) from the following table.

X	5	6	9	11
Y	12	13	14	16

Section B

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

9. Find a positive root of x-$\cos$ x $= 0$ by Regula falsi method correct to four decimal places.

10. Apply Guass forward formula to obtain f(x) at x=3.5 from the table below.

x	2	3	4	5
f(x)	2.626	3.454	4.784	6.986

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11. From the data given below, find the value of x when y=13.5 .

x	93.0	96.2	100.0	104.2	108.7
y	11.38	12.80	14.70	17.07	19.91

12. The population of a certain town is given below. Find the rate of growth of the population in 1931, 1941, 1961 and 1971.

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

13. Obtain the values of y at x=0.1,0.2. Using Runge Kutta fourth order for the differential equation y'=-y, given y(0)=1.

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