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.Statistics - END SEMESTER EXAMINATIONS - NOV'2024
SEMESTER - IV
20USTAT4004 - Numerical Methods

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

Section B

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

1. Find the sixth term of the sequence 8,12,19,29,42,...
2. Form the divided difference table for the following data.

X	-2	0	3	5	7	8
Y	-792	108	-72	48	-144	-252

3. Apply Guass's forward interpolation 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

4. Explain the method of gauss elimination method.
5. Derive the formula for trapezoidal rule.
6. Explain the relation between the following operators (i) Δ and E (ii) ∇ and E.
7. Find the positive root of $x - cosx = 0$ by bisection method.
8. Using trapezoidal rule, evaluate $\int_0^1 \frac{1}{1+x} dx$.

Section C

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

9. From the following data, find y at x = 43 and x = 84.

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

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

x	5	6	9	11
y	12	13	14	16

11. Derive the Guass's backward interpolation formula.

Contd...

12. Solve the following system by Gauss seidal method .

$$10x - 5y - 2z = 3;$$
$$4x - 10y + 3z = -3;$$
$$x + 6y + 10z = -3.$$

13. Using simpson's rule. Evaluate $\int_0^6 \frac{1}{(1+x)} dx$

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