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.
BCA. - END SEMESTER EXAMINATIONS APRIL - 2024
SEMESTER - II
20UCAAT2002 - 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 root of $x\ log_{10}x - 1.2 = 0$ by Newton-Raphson Method correct to 3 decimal places.
2. Use Lagrange's interpolation formula to find the value of y when x=10 in the following table.

x	5	6	9	11
y	12	13	14	16

3. Using Newton's divided difference formula, find f(x) and f(6) from the following data:

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

4. Slove using Gauss elimination method.

x-y+z=1
-3x+2y-3z=-6
2x-5y+4z=5

5. From the following data obtain first derivative of y=$\log_e$x at x=500

x	500	510	520	530	540	550
y	6.2146	6.2344	6.2538	6.2729	6.2916	6.3099

6. Evaluate $\int_0^5 \frac{1}{4x+5}dx$ by Simpson's one-third rule.
7. Explain Correlation and its types.
8. Following are the ranks obtained by 10 students in two subjects Statistics and Economics. Find the rank correlation coefficient.

Statistics	8	6	1	2	10	7	5	3	4	9
Economics	5	4	3	2	8	9	6	1	7	10

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Section C

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

9. Solve the system of equations by Gauss Seidal Method.
   28x+4y-z=32
   x+3y+10z=24
   2x+17y+4z=35

10. Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ at x=51 from the following data.

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

11. Find the value of x corresponding to y=100 from the table using lagrange's inverse formula.

x	3	5	7	9	11
y	6	24	58	108	174

12. Evaluate $\int_0^{10} \frac{dx}{1+x^2}$ by using
    (i) Trapezoidal rule. (ii) Simpson's rule.

13. Calculate Karl Pearson's coefficient of correlation:

x	1	3	5	8	9	10
y	3	4	8	10	12	11

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