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.C.A - END SEMESTER EXAMINATIONS - NOV'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. Solve the equation $2x^3$ - $3x$ - 6 = 0 by using Newton Raphson method.
2. From the following table find $y(9.5)$ using Lagrange's interpolation formula

| **X** | 7 | 8 | 9 | 10 |
|---|---|---|---|---|
| **y** | 3 | 1 | 1 | 9 |

3. Given the following data, find y'(6) and the maximum value of y. using newton's divided difference formula.

| **x** | 0 | 2 | 3 | 4 | 7 | 9 |
|---|---|---|---|---|---|---|
| **y** | 4 | 26 | 58 | 112 | 466 | 922 |

4. A sample of 3 items is selected at random from a box containing 12 items of which 3 are defective. Find the possible number of defective combinations of the said 3 selected items along with probability of a defective combination.
5. Calculate rank correlation from the following table

| **X** | 5 | 4 | 3 | 6 | 1 | 2 |
|---|---|---|---|---|---|---|
| **Y** | 2 | 6 | 1 | 4 | 5 | 3 |

6. Solve the following system of equation by using gauss elimination method

   $10x + y + z = 12$;
   $2x + 10y + z = 13$;
   $x + y + 5z = 7$.

7. Using trapezoidal rule, evaluate $\int_0^1 \frac{1}{1+x}\, dx$.
8. Calculate coefficients of correlation

| **X** | 10 | 15 | 20 | 25 | 30 |
|---|---|---|---|---|---|
| **Y** | 8 | 12 | 10 | 6 | 4 |

**Contd...**

## Section C

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

9. Solve the following system of equation by using gauss seidal method

$28x + 4y - z = 32;$
$x + 3y + 10z = 24;$
$2x + 17y + 4z = 35.$

10. From the following table find $f(x)$ and hence $f(6)$ using newton's interpolation formula.

| **x** | 1 | 2 | 7 | 8 |
|---|---|---|---|---|
| **f(x)** | 1 | 5 | 5 | 4 |

11. Using Simpson rule, evaluate $\int_1^2 \frac{1}{1+x^2}\, dx$

12. A manufactured product has 2 defects per unit of product inspected. Using poisson distribution, calculate the probabilities of finding a product without any defect, with 3 defects and 4 defects.( Given $e^{-2} = 0.135$)

13. Calculate coefficient of correlation from the following table

| **X** | 23 | 25 | 36 | 48 | 59 | 62 | 77 | 84 | 90 |
|---|---|---|---|---|---|---|---|---|---|
| **Y** | 15 | 22 | 34 | 39 | 45 | 49 | 61 | 74 | 85 |

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