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 APRIL-2023
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 the negative root of x^3 - $2x + 5 = 0$ correct to three places of decimals by the Newton-Raphson method.

2. Solve the following system of equation using Gauss Seidel method.
   6x + 15y + 2z = 72;
   X +y + 54z = 110;
   27x + 6y- z = 85.

3. Use Lagrange's interpolation formula to find the value of y when x = 10 if the following values of x and y are given.

x	5	6	9	11
y	12	13	14	16

4. A river is 80 metres wide. The depth d in metres at a distance x from one bank is given by the following table. Calculate the area of cross section of the river using Simpson's rule.

X	0	10	20	30	40	50	60	70	80
Y	0	4	7	9	12	15	14	8	3

5. Explain briefly about the properties of Normal distribution.

6. A bag contains 8 white and 4 red balls. Five balls are drawn at random. What is the probability that 2 of them are red and 3 white?

7. What is correlation? Does correlation always signify a cause and effect relationship between the variable.

8. 10 coins are tossed simultaneously. Find the Probability of getting
   1) atleast 7 heads
   2) atmost 7 heads

Contd...

Section C

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

9. Solve the following system of equation using Gaussian Elimination Method x+ y+ z = 9; 2x-3y+4z = 13 ; 3x+4y+5z = 40.

10. Find f(19) using Newton's divided difference formula given that

X	11	17	21	23
f(x)	14646	83526	194486	279846

11. Evaluate I $= \int_0^6 \frac{1}{1+x} dx$

    Using a) Trapezoidal Rule

    2) Simpson's Rule (Both). Also check it by direct integration.

12. Eight coins are tossed simultaneously 256 times. Number of heads observed at each throw is recorded as given below.

No of heads	0	1	2	3	4	5	6	7	8
Frequency	2	6	30	52	67	56	32	10	1

    Fit a binomial distribution and find the expected frequency. Also find mean and standard deviation.

13. The following table gives the daily income and expenditure on food of 9 families:

Income (Rs.)	1	5	3	2	1	1	7	3
Expenditure (Rs.)	6	1	0	0	1	2	1	5

    Obtain regression equation for these data by least square.

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