PRESIDENCY COLLEGE
(AUTONOMOUS)
AFFILIATED TO BENGALURU CITY UNIVERSITY, APPROVED BY AICTE, DELHI & RECOGNISED BY THE GOVT. OF KARNATAKA
RE-ACCREDITED BY NAAC WITH 'A+' GRADE

21C101.2Z

REG NO: | | | | | | | | |

END TERM EXAMINATION JUNE 2023
BCA - II SEMESTER
G2101.2Z: STATISTICAL METHODS AND APPLICATIONS

Duration: 2 Hours **Max Marks: 60**

Instruction: *Answers should be written in* ***English*** *only.*

PART-A

Answer **any EIGHT** questions. **Each** question carries **TWO** marks. **(8 X 2 = 16)**

1. Write the formula for Newton Raphson Method.
2. Write the Lagrange's interpolation formula.
3. Construct the difference table for the following table.

x :	0	1	2	3	4	5	6	7
f(x) :	1	2	4	7	11	16	22	29

4. Write the Simpson's (1/3) rule formula.
5. Write the Taylor's series expansion of f(x).
6. Find mode if mean = 36.5 and median = 32.
7. Find the coefficient of variation given that mean is 1.2 and S. D is 1.378.
8. Define correlation.
9. Define Random Variable and mention types of Random variable.
10. Define Expectation.

PART-B

Answer **any FOUR** questions. **Each** question carries **SIX** marks. **(4 X 6 = 24)**

1. Use Newton's Backward Interpolation formula, find f (84) from the following table.

x:	40	50	60	70	80	90
f(x):	184	204	226	250	276	304

2. Find the real root of the equation $f(x) = x^3 - 5x + 1 = 0$ lies in the interval (0, 1) by using Secant method.

3. Solve by Gauss Siedel Iterative method.
   $x + y + 54z = 110$, $27x + 6y - z = 85$, $6x + 15y + 2z = 72$

4. Find Mean and Standard Deviation for the following data:

x	45	50	55	60	65	70	75	80
f	3	5	8	7	9	7	4	7

5. Find the coefficient of correlation for the following data:

X	10	14	18	22	26	30
Y	18	12	24	6	30	36

6. Assuming that heights of soldiers are distributed normally with mean 68 inches and standard deviation 3 inches. Find number of soldiers in a regiment of 1000 with height.
   a) below 65 inches
   b) above 72 inches
   c) between 65 and 72 inches.

PART-C

Answer **any TWO** questions. **Each** question carries **TEN** marks. **(2 X 10 = 20)**

1. a) Find the root of the equation $x^3 - x - 9 = 0$ lies between 2 and 3 by using Bisection method in 4 stages. (5)

   b) Find f(6) using Lagrange's Interpolation formula from the following data (5)

x	3	7	9	10
f(x)	168	120	72	63

2. a) Evaluate $\int_0^6 \frac{dx}{1+x}$ using Trapezoidal rule. Divide (0, 6) into six parts. (5)

   b) Evaluate $\int_0^1 \frac{dx}{1+x}$ using Simpson's $(\frac{3}{8})^{th}$ rule. Divide (0, 1) into six intervals. (5)

3. a) Find the median for the following data:
   5, 15, 10, 25, 20, 22, 30, 28 (2)

b) Find the rank correlation coefficient for the following data: (8)

X	65	45	67	38	48	50	26	47	70	62
Y	64	40	58	46	52	49	38	47	59	60

4. a) Define Poisson Distribution. (2)
   b) Derive mean and variance of Binomial Distribution. (8)

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