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

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

21C101.2Z

REG NO: [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

END TERM EXAMINATION JULY/AUGUST 2022
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. Construct difference table for the following data

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

3. Write Simpson's (1/3)rd Rule formula.
4. Explain Gauss Siedal method for solving linear equations.
5. Find Median for the following data

   10 , 15 , 9 , 25 , 19

6. Write formula for Spearman's Rank Correlation Coefficient.
7. Define Random Variable and Mention its types.
8. Define Probability mass function and Probability density function.
9. Find Geometric mean of 4,5,6.
10. Write Lagrange's interpolation formula.

PART-B

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

1. (a). Write Formula for Secant Method.   2

    (b). Find the real root for the equation $x^3 - 2x - 5 = 0$ lies in the interval (2,3) using Bisection method in 4 stages.   4

2. Find $f(10)$ from the following data

x	5	6	9	11
f(x)	12	13	14	16

3. (a). Write Simpson's (3/8) Rule.   2

    (b). Evaluate $\int_1^5 \log_e x \, . \, dx$ using Trapezoidal Rule.

    Divide the interval (1,5) into 8 equal parts.   4

4. Solve the following system of equations using Gauss Siedal iterative method   6
    (4 iterations)

$$x + y + 54z = 110$$
$$27x + 6y - z = 85$$
$$6x + 15y + 2z = 72$$

5. Compute Standard Deviation for the following data using Direct method.   6

C I	0-10	10-20	20-30	30-40	40-50	50-60	60-70
f	1	9	17	45	86	5	2

6. (a). Define Expectation.   2

    (b). A throws a fair die once, if the number obtained is divisible by 3, he gets Rs.5 otherwise he loses Rs. 2. Find his Expectation.   4

PART-C

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

1. (a). Estimate the population for the year 1986

Year	1951	1961	1971	1981	1991
Population (in Lakhs)	46	66	81	93	101

   (b). Find the real root of the equation $\cos x - xe^x = 0$ lies between $(0,1)$ using Secant Method in 4 iterations.

2. (a). Solve $\frac{dy}{dx} = y - x^2$, $y(0) = 1$ up to 3rd approximation by using Picard's method. Also find $y(0.1) and\ y(0.2)$

   (b). Solve $\frac{dy}{dx} = xy$, $y(1) = 2\ at\ x = 1.2$ using Runge Kutta second order formula

3. (a). Compute Harmonic Mean for the following data

x	6	7	8	9	10	11
f	4	6	9	5	2	8

   (b). Compute Karl Pearson's Coefficient of Correlation from the following data

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

4. (a). A Random variable X has the following distribution

X	-3	-2	-1	0	1	2	3
P(X)	k	2k	3k	4k	3k	2k	k

   Find k , Mean and Variance of the distribution.

   (b). An unbiased coin is tossed 6 times. Find the probability that the tosses results in
   (i) Heads only   (ii) 3 Heads and 3 Tails.

*****