EA

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 MAY 2024
BCA – II SEMESTER
G2101.2Z: STATISTICAL METHODS AND ITS 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 Lagrange's interpolation formula.
3. Construct 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 Simpson's (3/8) rule formula.
5. Write Taylor's series expansion of f(x)
6. From the following data compute Mean
   85, 70, 10, 75, 500, 8, 42, 250, 40, 36
7. Find the coefficient of variation, if 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 Binomial Distribution.

PART-B

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

1. Use Newton's Forward Interpolation formula find f (45) 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 $x^3 - 2x - 5 = 0$, lies in the interval (2 , 3) using Secant method.

3. Solve the following equations by Gauss Seidal 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 is distributed normally with mean 68 inches and standard deviation 3 inches. Find number of soldiers in a regiment of 1000 with height
   (i) below 65 inches
   (ii) above 72 inches
   (iii) 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 $x^3 - 4x - 9 = 0$ lies in the interval (2,3) by using Bisection method in 4 stages

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

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

2. (a) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ using Simpson's (1/3) rule. Divide (0, 6) into six parts.

(b) Using Runge Kutta method of 4th order solve $\frac{dy}{dx} = 3x + \frac{y}{2}$ with y(0)=1. Compute y(0.2) by taking h=0.2 **(5+5)**

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

(b) Find the rank correlation coefficient for the following data: **(2+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.

(b) A random variable X has the following probability distribution :

$X=X_i$	-3	-2	-1	0	1	2	3
$P(X=X_i)$	k	2k	3k	4k	3k	2k	K

(i) Find K (ii) Evaluate $P(X \geq 1)$ and $P(X < 2)$ **(2+8)**

*****