DECEMBER 2024 **U/ID 46507/UCC3C**

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. What is Newton Raphson Method?

2. What is Numerical differentiation?

3. Define Muller's Methods.

4. What is Simpson's 1/3 Rule?

5. Define Euler's Methods.,

6. What is Harmonic Mean?

7. Define : Conditional Probability.

8. What is median?

9. What is Regression?

10. What is Binomial Distribution?

11. What is F-Test?

12. Define : Rank Correlation.

PART B — ($5 \times 5 = 25$ marks)

Answer any FIVE questions.

13. Find a real root of the equation $x^2 - x - 1 = 0$ using bisection method.

14. Find a root of the equation $x^3 - 2x - 5 = 0$ to 3 significant digit using secant method.

15. Write an algorithm for Lagrange's Interpolation.

16. Write a program for median and its output.

17. Discuss the merits and demerits of measures of central Tendency.

18. Distinguish between correlation and Regression Analytsis.

19. Find the rank correlation coefficient for the following data

x	65	80	55	75	90
y	72	45	63	40	53

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

20. Solve the system of equation $2x + 3y + z = 9$, $x + 2y + 3z = 8$, $3x + y + 2z = 8$ by using LU decomposition.

21. Apply the fourth order of Runge - Kutta method to find an approximation value of y, when $x = 2$, given that $y' = x + y$, $y(0) = 1$.

22. Explain the standard deviation, variation and Harmonic mean with necessary Examples.

23. Explain the hypergeometric distribution and write a program for the computation of Hyper geometric probability.

24. Discuss about the basic principles and characteristics of chi-square test.

———————