MAY 2025 **U/ID 46507/UCC3C**

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions

1. What is Numerical Methods?
2. Define: Secant Method.
3. What do you mean by partial differential equation?
4. What is Taylor's Series Method?
5. Write the formula for Trapezoidal rule.
6. What is Runge Kutta Method.
7. What is Geometric Mean?
8. Define: Variance.
9. What are the characteristics of Probability?
10. What is Poisson Distribution?
11. What is Chi square Test?
12. What is Regression of Analysis?

PART B — (5 × 5 = 25 marks)

Answer any FIVE questions.

13. Find the root of the Equation *xsinx+cosx=0*

14. Find the root of the equation $x^3 - 2x - 5 = 0$ which lies between 2 and 3 using muller's method.

15. Obtain the two regression Lines from the following data.

Size of Items:	6	7	8	9	10	11	12
Frequency:	3	6	9	13	8	5	4

16. Evaluate the solution at $x = .1,.2,.3$ of the following problem by second order Runge-Kutta Method.

$$Y^1 = \frac{1}{2}(1+x)Y^2, y(0) = 1$$

17. Discuss about Geometric Mean and Standard deviation.

18. Derive the Binomial distribution with Examples.

19. Find the mode of the following frequency distribution.

x:	1	2	3	4	5	6	7	8
f:	4	9	16	25	22	15	7	3

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

20. Solve the following system of equations using Gauss-seidal Method.

$10x + 2y + z = 9, 2x + 20y - 2z = -44,$

$-2x + 3y + 10z = 22$

21. Given $\frac{dy}{dx} = 1 + x^2 + y$ with $y(4) = 4$, obtain $y(4.1)$ and $y(4.2)$ by using Taylor's series Method.

22. Explain the Standard deviation and find calculation of variance of numbers 1,2,3,4 and 5.

23. Calculate the Rank Correlation Coefficient for the following data.

x:	80	78	75	64	68	67	50	39
y:	12	14	13	15	17	21	20	22

24. Write the Algorithm and Program for deriving F-Test.

———————