DECEMBER 2022 **U/ID 46507/UCC3C**

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer any TEN Questions

1. What is Numerical Calculation?
2. Write the general formula for bisection method.
3. Explain false position method.
4. What is mode?
5. Find the formula for Trapezoidal Rule.
6. Find the geometric mean of 2,4,8,16,32
7. What is Standard Error?
8. Define conditional probability.
9. State Euler's method.
10. What is Poisson distribution?
11. Define probability density function.
12. Write down the formula for Regression Co-efficient.

PART B — ($5 \times 5 = 25$ marks)

Answer any FIVE Questions

13. Compute the inverse of the matrix

$$\begin{bmatrix} 2 & 1 & 1 \\ 1 & -1 & 1 \\ 4 & 2 & -3 \end{bmatrix}$$

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

15. Obtain the two regression lines from the following data:

x :	6	2	10	4	8
y :	9	11	5	8	7

16. Calculate the standard deviation from the following data:

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

17. Find the Geometric mean of the following distribution

Value	2	100	50	4	6	8	6	10
Frequency	5000	400	200	3750	3000	750	600	300

18. Distinguish between Correlation and Regression Analysis.

19. Discuss on Density function and distribution function.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions

20. Solve the following system of equations by Gauss-Jordan method

$5x - 2y + z = 4$

$7x + y - 5z = 8$

$3x + 7y + 4z = 10$

21. Use Romberg's Method to compute $\int_0^1 \frac{1}{1+x^2}\,dx$

Correct to four decimal places.

22. (a) If A and B are two events of a sample space S, prove that

$P(A \cup B) = P(A) + P(B) - P(A \cap B)$

(b) State and prove Baye's Theorem.

23. A Box contains 100 Transistors 20 of which are defective, 10 are selected for Inspection. Indicate what is the probability that

(a) all 10 are defective

(b) all 10 are good.

(c) at least one is defective and

(d) at the most three are defective.

24. 10 Students obtained the following percentage of Marks in the College Internal Test (x) and in the university final examination (y)

x	51	63	63	49	50	60	65	63	46	50
y	49	72	75	50	48	60	70	48	60	56

Find the correlation coefficient between the marks of the two tests.