MAY 2024 **U/ID 46507/UCC3C**

Time : Three hours Maximum : 75 marks

PART A — ($10 \times 2 = 20$ marks)

Answer any TEN questions.

1. What is Arithmetic Mean?

2. Write the formula for finding the root of all equations $f(x) = 0$ by Newton Raphson Method.

3. What is Correlation?

4. Write the Runge-Kutta method of second order.

5. What is Random Sample?

6. Write the multiplication law of probability.

7. What is F-Test?

8. What is the variance of Binomial Distribution?

9. Define Rolle's Theorem.

10. What is degree of freedom?

11. State mean value theorem.

12. Write Trapezoidal rule.

PART B — ($5 \times 5 = 25$ marks)

Answer any FIVE questions.

13. Find a real root of the equation $f(x) = x^2 - 2x - 5 = 0$ using false position method.

14. Given $\frac{dy}{dx} = 1 + y^2$, where $y = 0$, when $x = 0$, find $y(0.2)$ and $y(0.4)$.

15. Discuss Simpson's 1/3 rule.

16. Using Romberg's method compute $\int_0^1 \frac{1}{1+x}\,dx$, correct to three decimal places.

17. Write a program for Median and its output.

18. Discuss the measure of central tendency.

19. Derive the Poisson Distribution.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

20. Calculate Mean deviation from Median for the given data.

C.I.	15-20	20-25	25-30	30-35	35-40
F	8	15	13	20	11
C.I.	40-45	45-50	50-55	55-60	
F	7	3	2	1	

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. Find the moment measure of Kurtosis from the following data :

x :	2	4	6	8	10	12	14
f :	4	11	18	27	20	16	8

23. From the following data, find coefficient of correlation :

x :	55	50	65	60	45	40
y :	70	74	82	61	73	85

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