S.No. 9146 **RMCNS 3**

(For candidates admitted from 2005–2006 onwards)

M.A. DEGREE EXAMINATION, NOVEMBER 2023.

Economics

MATHEMATICAL AND STATISTICAL METHODS

Time : Three hours Maximum : 100 marks

SECTION A — ($5 \times 8 = 40$)

Answer any FIVE questions

1. What is the format of partial derivative? What is the terminology of demand and supply model?

2. What is the order of matrix? Explain matrix and determinant with example.

3. What is sampling error in sampling distribution? Explain the types of Random sampling method.

4. Find the Median of the following grouped data.

Marks	0-10	10-20	20-30	30-40	40-50
Frequency	9	10	24	16	11

5. What does a multiple linear regression analysis examine?

6. What are the basic concepts of revenue and its types?

7. A garden contains 39 plants. The following plants were chosen at random, and their heights were recorded in cm: 38, 51, 46, 79, and 57. Calculate their heights' standard deviation.

8. Find the means of X and Y variables and the coefficient of correlation between them from the following two regression equations:

$2Y - X - 50 = 0$

$3Y - 2X - 10 = 0$

SECTION B — $(3 \times 20 = 60)$

Answer any THREE questions.

9. For a particular process, the cost function is given by $C = 56 - 8x + x^2$, where C is cost per unit and x, the number of unit's produced. Find the minimum value of the cost and the corresponding number of units to be produced.

10. In the mid-term exam, there were too questions to be answered. Every correct answer was awarded 2 marks and every incorrect one with a negative mark. If the student answered all 100 questions and got 80 marks, how many did the student get correct and how many incorrect did the student get?

11. Explain the methods of Data Collection.

12. Calculate the standard deviation for the following data :

Class-interval	1-5	6-10	11-15	16-20
Frequency	4	3	2	1

N = 10.

13. The following data is given :

Types of Animals	Number of animals	Average domestic animals	Standard deviation
Dogs	5	12	2
Cats	5	16	1
Hamsters	5	20	4

Calculate the ANOVA coefficient.