

Roll No.

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433/MH

C-2050

QUANTITATIVE METHOD-II

Semester-VI

Time allowed : 2 Hours] [Maximum Marks : 75

Note : Attempt any four questions. All questions carry equal marks.

- 1. (i) Using matrices to solve following system of equations :

3x + 4y + 5z = 18, 2x - y + 8z = 13 and

5x - 2y + 7z = 20

- (ii) Find the derivative of :

a^x + e^x + log_a x + 3x^2 + 9/x

- 2. Calculate Median (M), Quartile Deviations (Q1, Q3), 7th Decile and 85th Percentile from the following data.

Table with 9 columns: Marks (0-10, 10-20, 20-30, 30-40, 40-50, 50-60, 60-70, 70-80) and Students (8, 12, 20, 32, 30, 28, 12, 4)

- 3. The following are the scores of two batsmen Kapil Dev and Sunil Gavaskar in a series of innings.

Table with 2 rows: Kapil Dev (12, 115, 6, 73, 7, 19, 119, 36, 84, 29) and Sunil Gavaskar (47, 12, 76, 42, 4, 51, 37, 48, 13, 0)

Find out who is better scorer and who is more consistent.

- 4. (i) Find out the coefficient of skewness of the data :

Table with 2 rows: Income (0-50, 50-100, 100-150, 150-200, 200-250, 250-300, 300-350, 350-400, 400-450, 450-500) and No of persons (50, 75, 80, 100, 125, 300, 100, 80, 60, 50)

- (ii) What is meant by dispersion ? What are the requirements of a good measure of dispersion ?

- 5. (i) Calculate coefficient of correlation between the marks in Economic and Statistics, as given below :

Table with 2 rows: Marks in Statistics (15, 10, 20, 28, 12, 10, 16, 18) and Marks in Economics (16, 14, 10, 12, 11, 15, 18, 12)

- (ii) What are various degrees of correlation.

6. (i) Fit regression equation of X on Y. Given

X :	60	62	65	68	70	72	75
Y :	72	68	64	60	56	60	48

(ii) What are the limitations of regression.

7. (i) What points should be taken into consideration in the construction of index numbers?

(ii) Show with the help of the following data that the Fisher's ideal index satisfies both the time reversal and factor reversal test.

Commodity	Price	Expenditure	Price	Expenditure
A	10	120	12	144
B	5	40	6	54
C	20	60	25	100
D	8	80	8	72

8. (i) What is a secular trend.

(ii) Fit a straight line trend equation by the method of least squares. Also estimate the trend values.

Year :	1991	1992	1993	1994	1995	1996	1997	1998
Value :	80	90	92	83	94	99	92	104

9. (i) Find x and y , if

$$\begin{bmatrix} x+y & 2 \\ 1 & x-y \end{bmatrix} = \begin{bmatrix} 3 & 2 \\ 1 & 7 \end{bmatrix}$$

(ii) Distinguish between Mean deviation and Standard deviation.

(iii) Define Median. What are its merits and demerits.

(iv) If $A = \begin{bmatrix} -8 & 5 \\ 2 & 4 \end{bmatrix}$, show that $A^2 + 4A = 42I$

(v) Distinguish between correlation and regression.

(vi) Explain Rank correlation.

(vii) Write down the formulae for calculating Laspeyre's and Paasche's index number.

(viii) Distinguish between cyclical and seasonal variations.

(ix) If $A = \begin{bmatrix} 1 & -2 & 3 \\ -4 & 2 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 3 \\ 4 & 5 \\ 2 & 1 \end{bmatrix}$,
show that $AB \neq BA$.