

- Instruction :**
- 1) All questions are compulsory
 - 2) Figures to the right indicate marks.
 - 3) Use of calculator is allowed.

- Q.1 a) What is dispersion? State the measures of dispersion. State which measure is the best. 06
 b) Calculate coefficient of quartile deviation for the following data.

Income (in Rs.) :	260-270	270-280	280-290	290-300
No. of workers :	6	7	10	20
Income (in Rs.) :	300-310	310-320	320-330	
No. of workers :	12	10	5	

06

OR

- Q.1.a) Define standard deviation and coefficient of variation. What are the merits and demerits of standard deviation? 06
 b) The following results are obtained about the weight distribution of boys and girls in a class

	Boys	Girls
Numbers	100	50
Mean weight	60kg	45kg
Variance	9	2

Find the standard deviation of the combined data. Which of the two distributions is more variable? 06

- Q.2 a) What is correlation? What are the measures of correlation? Explain the method of scatter diagram. 06
 b) Calculate Karl Pearson's coefficient of correlation for the following data and comment on the value.

x :	42	44	58	55	89	98	66
y :	56	49	53	58	65	76	58

06

OR

- Q.2 a) What is rank correlation? How does the coefficient of rank correlation between two variables differ from Karl Pearson's coefficient of correlation? Interpret values of $R = 1$ and $R = -1$. 06
 b) Calculate rank correlation coefficient for the following data.

X :	92	89	87	86	83	77	71	63	53
Y :	86	83	91	77	68	85	52	85	37
X :	50								
Y :	57								

06

- Q.3 a) What is an index number? Why are index numbers called economic barometers? State limitations of index number. 06
 b) For the data given below calculate price index numbers using
 i) Simple aggregate of prices
 ii) Simple arithmetic average of price relatives.

Commodity	Base year Price	Current year Price
A	20	25
B	17	20
C	30	35
D	10	15

OR

- b) Construct index numbers of price from the following data by i) Laspeyre's iii) Paasche's
 iii) Bowley's iv) Fishers index number.

Commodity	Base year		Current year	
	Price	Quantity	Price	Quantity
A	2	3	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

06

- Q.4 a) Define skewness and Kurtosis. Represent skewness kurtosis graphically. State measures of Skewness.

07

- b) Calculate Karl Pearson's measure of skewness for the following data and comment on the value.

Values	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	6	8	17	21	15	11	2

07

OR

- Q.4 a) Define raw moments about a and central moments.

Show that

$$\mu_1 = 0$$

$$\mu_2 = \mu_2' - \mu_1'^2$$

07

- b) Use the following information regarding variate x and find mean, Standard deviation and μ_3 the third central moment.

$$N = 10 \quad \sum x = 22 \quad \sum x^2 = 80 \quad \sum x^3 = 150$$

07

