

Statistical Methods

Time : 3 Hours]

[Max. Marks : 40

Note : Attempt any two parts from each question. All questions carry equal marks.

1. (a) Define : Statistics, Population, Sample, Variable.
(b) Explain the characteristics of a frequency distribution.
(c) Draw an Ogive by less than method for the following distribution.

Profit

(Rs. in crore) : 10-20 20-30 30-40 40-50 50-60 60-70 70-80 80-90 90-100

No. of

Companies : 8 12 20 24 15 10 7 3 1

2. (a) Give a brief description of the different measures of central tendency. Why is arithmetic mean so popular?
(b) The wholesale prices of a commodity for sever consecutive days in a month is as follows:

Days	:	1	2	3	4	5	6	7
Prices/Quintal	:	240	260	270	245	255	286	264

Calculate the variance and standard deviation.

- (c) Form the following data calculate 1st quartil, 3rd quartile and 4th decile:

X	:	0	2	4	6	8	10
F	:	5	7	10	9	5	3

3. (a) From the following first four moment of a distribution about the arbitrary origin 4, find out mean and central moments :

$$\gamma_1 =, \gamma_2 = 4, \gamma_3 = 10 \text{ and } \gamma_4 = 45$$

- (b) Write short notes on :

(i) Probability

(ii) Compound Event

(iii) Mutually Exclusive Event.

- (c) Calculate Karl Pearson's Coefficient of Skewness :

Class : 0-10 10-20 20-30 30-40 40-50 50-60 60-70

Freq : 10 12 18 25 16 14 5

4. (a) Define Poisson distribution with an example, giving its general equation. Also state the conditions under which it is used.
- (b) Six coins are thrown simultaneously. Find the chance of obtaining
(i) Probability of exactly two heads (ii) More than 3 heads.
- (c) What are the properties of normal distribution?
5. (a) Find out Karl Pearson's coefficient of correlation for the following:
- | | | | | | | | | | | | |
|---|---|----|----|----|----|----|----|----|----|----|----|
| X | : | 10 | 12 | 15 | 18 | 25 | 35 | 45 | 50 | 55 | 65 |
| Y | : | 5 | 7 | 13 | 15 | 20 | 21 | 29 | 39 | 36 | 44 |
- (b) The following data relates to the height (X) and weight (Y) of 1000 business executives : Mean height (\bar{X}) = 68", Mean Weight \bar{Y} = 150 lbs, Std. Dev. (σ) = 2.5", Std. Dev. = 20 lbs, $r = +0.6$. Estimate (i) The height of an executive whose weight is 100 lbs' (ii) The weight of an executive whose height is 5 ft.
- (c) Explain theory of attributes.

