Chapter 11 - Measures of Dispersion

Question 1 : Find the interquartile range, quartile deviation and coefficient of quartile deviation from the following data:

Marks	28	18	20	24	27	30	15

Solution: First, arrange the data in the ascending order:

S.No.	**Marks**
1	15
2	18
3	20
4	24
5	27
6	28
7	30
N = 7	

$$Q1 = Size\ of\left(\frac{N+1}{4}\right) th\ item = Size\ of\ \left(\frac{7+1}{4}\right) th\ item$$

= Size of 2nd item = 18 marks

$$Q3 = Size\ of\ 3\left(\frac{N+1}{4}\right) th\ item = Size\ of\ 3\left(\frac{7+1}{4}\right) th\ item$$

= Size of 6th item = 28 marks

Interquartile range = Q3 – Q1 = 28-18 = 10

$$Quartile\ Deviation = \frac{Q3-Q1}{2} = \frac{28-18}{2} = 5$$

$$Coefficient\ of\ Quartile\ Deviation = \frac{Q3-Q1}{Q3+Q1} = \frac{28-18}{28+18} = \frac{10}{46} = 0.217$$

Question 2: What are the methods of Standard Deviation?

Solution:

- Direct Method
- Short-cut Method

Question 3: Define Dispersion.

Solution: Dispersion is the measure of the extent to which different items tend to disperse away from the central tendency.