# 6. Measures of Dispersion

**Question 1 : A measure of dispersion is a good supplement to the central value in understanding a frequency distribution. Comment.**

**Answer :** The study of the averages is only one sided distribution story. In order to understand the frequency distribution fully, it is essential to study the variability of the observations. The average measures center of the data whereas the quantum of the variation is measured by the measures of dispersion like range, quartile deviation, mean deviation and Standard Deviation. For example, if a country has very high income group people and very low income group people, then we can say that the country has large income disparity.

**Question 2 : Which measure of dispersion is the best and how?**

**Answer :** Standard Deviation is the best measure of dispersion as it satisfies the most essentials of the good measure of dispersion. The following points make Standard Deviation the best measure of dispersion:

1. Most of the statistical theory is based on Standard Deviation. It helps to make comparison between variability of two or more sets of data. Also, Standard Deviation helps in testing the significance of random samples and in regression and correlation analysis.

2. It is based on the values of all the observations. In other words, Standard Deviation makes use of every item in a particular distribution.

3. Standard Deviation has a precise value and is a well-defined and definite measure of dispersion. That is, it is rigidly defined.

4. It is independent of the origin.

5. It is widely used measure of dispersion as all data distribution is nearer to the normal distribution.
6. It enables algebraic treatment. It has correct mathematical processes in comparison to range, quartile deviation and mean deviation.

**Question 3 : Some measures of dispersion depend upon the spread of values whereas some are estimated on the basis of the variation of values from a central value. Do you agree?**

**Answer :** Yes, it is true that some measures of dispersion depend upon the spread of values, whereas some calculate the variation of values from the central value. The spread of values is determined by the absolute measures of dispersion like Range, Quartile Mean Deviation, and Standard Deviation. These measures express dispersion in terms of original unit of the series and it cannot be used for the comparison of statistical data having different units. On the other

hand, the relative measures of the dispersion calculate the variability of the values from a central value. The relative measure includes coefficient of Range, Mean Deviation and Variation. It is used when the comparison has to be made between two statistical sets. These measures are free from any units.

**Question 4 : In a town, 25% of the persons earned more than Rs 45,000 whereas 75% earned more than 18,000. Calculate the absolute and relative values of dispersion.**

**Answer : Absolute Value of Dispersion**