UNIT – II

Descriptive Statistics

1. Share the purpose of graphical data representation

It enables the quick analysis of large amounts of data at one time and can aid in making predictions and informed decisions.

2. Why data representation is very important nowadays?

Data representation is a way of encoding the information/outcome of something into meaningful form which will be easily understandable.

3. Highlight main purpose of using measures of central tendency in statistics

Central tendency provides an exact representation of the entire collected data either by considering middle or center of the data.

4. Calculate the range of the dataset: 25, 30, 35, 40, 45.

Range: difference between lowest and highest value in the series. (25,45) and result is 20.

5. How is the Standard deviation different from the Mean deviation?

Mean	Standard deviation
A statistical measure used to calculate the average deviation from the mean value of the given data set	A measure tells how far data value are spread out from the mean of a data set
$$\frac{1}{n}\sum_{i=1}^{n}\lvert x_i - m(X)\rvert$$ $m(X)$ = average value of the data set n = number of data values x_i = data values in the set	$$\sigma = \sqrt{\frac{\sum(x_i-\mu)^2}{N}}$$ σ = population standard deviation N = the size of the population x_i = each value from the population μ = the population mean

6. What does the coefficient of variation (CV) indicate about a dataset?

It is a type of relative measure of dispersion, which is expressed as the ratio of the standard deviation to the mean. It is used to measure the dispersion of data from the average or the mean value.

7. What do you mean by measures of dispersion?

Dispersion refers to the spread of the values around the central tendency or scattering of data..It indicates how spread out data is, or how much it varies from a central value.

8. Define the term "population" in statistical terms.

Population refers complete group of data with atleast one common characteristics.

9. Define the term "skewness" in statistics.

Skewness measure of the asymmetry of a distribution. A distribution is asymmetrical when its left and right side are not mirror images.

10. Explain the concept of "range" in data analysis.

The range is the spread of your data from the lowest to the highest value in the distribution. It is expressed as the difference between the highest and lowest values.

11. What is a quartile in statistics?

Quartiles are the set of values that divide the data points into four identical values using three individual data points.

12. List down characteristics of good measures of dispersion

- It should be based on all the observations of the data.
- Easy to understand and calculate
- Capable of further mathematical /algebraic manipulation
- It should be rigidly defined.
- It should not be affected by extreme values.
- It should not be unduly affected by sampling fluctuations.

13. Highlight the significance of the Gini ratio in assessing economic inequality.

Gini ratio measures the dispersion of income or distribution of wealth among the members of a population. It measures inequality on a scale from 0 to 1, where higher values indicate higher inequality. A value of 0 indicates perfect equality: everyone has the same income.

14. How does diagrammatic representation enhance the understanding of data?

Diagrammatic representation enhances understanding by providing visual insights that make complex data easier to comprehend, allowing trends and patterns to be quickly identified.

15. What scenarios might it be preferable to use weighted average?

A weighted average takes into account the relative importance of different values by assigning weights, calculated as Weighted Average=$\sum(w_i \cdot x_i)\sum w_i$, and is preferable when certain data points contribute more significantly to the overall average.

16. Justify the importance of data dispersion, in statistical analysis?

The key concepts of data dispersion include range, standard deviation, and the coefficient of variation provide insight into the variability or spread of data, helping to understand the consistency of the data set.

17. In what ways can graphic representation of data improve decision-making in business contexts?

Graphic representations like charts and graphs, can improve decision-making by visually summarizing complex data, highlighting trends, enabling quicker analysis, and facilitating presentations to stakeholders, thus enhancing communication and understanding.

18. Relate Lorenz curve with income inequality

The Lorenz curve is a graphical representation of income distribution, plotting the cumulative percentage of total income received versus the cumulative percentage of the population, with its deviation from the line of equality indicating the level of income inequality.