5.Write down 10 differences between Descriptive statistics and inferential Statistics

Answer:

**Descriptive Statistics:**

**Definition:** Descriptive statistics are techniques used to summarize and describe the main features of a dataset, providing a simple overview of the sample and the measures. Examples include calculating the mean, median, mode, and standard deviation, and creating charts or graphs.

1. **Purpose:**Summarises and describes the features of a dataset.
2. **Focus:**Focuses on describing the data that is currently available
3. **Techniques:**Uses measures such as mean, median, mode, range, variance, and standard deviation.
4. **Population vs. Sample:**Deals with the entire population or the entire dataset.
5. **Representation:**Presents data through tables, charts, graphs, and summary measures.
6. **Accuracy:**Provides exact values that describe the data set.
7. **Data Analysis:**Involves organising and summarising data.
8. **Scope:** Limited to the data at hand.
9. **Examples:**Calculating the average age of students in a class.
10. **Usage:**Often used as the first step in data analysis to understand the basic features of the data.

**Inferential Statistics:**

**Definition:** Inferential statistics are techniques used to make generalizations, predictions, or inferences about a population based on a sample of data taken from that population. Examples include hypothesis testing, confidence intervals, and regression analysis.

1. **Purpose:**Makes inferences and predictions about a population based on a sample.
2. **Focus:**Focuses on drawing conclusions and making predictions about data that is not directly observed.
3. **Techniques:** Uses hypothesis testing, confidence intervals, regression analysis, and more.
4. **Population vs. Sample:**Deals with a sample to make generalisations about the population.
5. **Representation:**Presents data through probability distributions, p-values, confidence intervals, etc.
6. **Accuracy:**Provides estimates and predictions that include a level of uncertainty.
7. **Data Analysis:**Involves analysing and interpreting data.
8. **Scope:**Applies findings to a broader context beyond the data at hand.
9. **Examples:**Estimating the average age of all students in a university based on a sample.
10. **Usage:**Used after descriptive statistics to make predictions or test hypotheses about the data.