DEFINITION 1.1.1 (Descriptive Statistics) Those statistical methods or techniques which are used for presenting and summarizing data in either tables or graphs form. It includes construction of charts, graphs and tables and calculation of averages, percentiles, dispersions and other descriptive measures.

DEFINITION 1.1.2 (Inferential Statistics) Those statistical methods or techniques which are used for making conclusions or inferences about the entire population using the observation from the samples by using the. It includes point estimation, interval estimation, hypothesis testing, statistical modeling, clustering and many more methods based on probability theory

DEFINITION 1.1.3 (Population) It is a set of all individuals, persons, objects or historical events which are of some interest to the statistician to make inferences for a specific problem or experiment.

DEFINITION 1.1.4 (Sample) A sample is a subset of population which is used to collect information and to make inferences about the entire population.

DEFINITION 1.1.5 (Parameter) It is a numerical characteristics of a population that summarize the data for the entire population

DEFINITION 1.1.6 (Statistic) Statistic is a function of a sample (it is a numerical characteristic for this sample).

DEFINITION 1.1.7 (Variables) A variable is a characteristic, feature or factor that varies from one individual to another in a population.

DEFINITION 1.1.8 (Qualitative (Categorical) Variables) These variables can only take values which are non-numerical.

DEFINITION 1.1.9 (Quantitative Variables) These are the variables which take numerical values.

DEFINITION 1.3.1 (Pie Charts) A pie chart is a simple way of representing the proportion of each class or category of data on a circular disk, so that each category is allocated a circular sector representing it.

DEFINITION 1.3.2 (Bar Charts) In a bar chart, the frequency of each class is represented by a bar. The height of the bar corresponds to the frequency of the class. The width of the bar doesn't matter

DEFINITION 1.3.3 (Two Directional Bar Charts) Such bar charts can represent both positive and negative values of different classes.

DEFINITION 1.3.4 (Multiple Bar Charts) Such bar charts are used to represent multiple inter related variables by clustering bars side by side.

DEFINITION 1.3.5 (Component (Stacked) Bar Chart) Such bar charts when each class or category has components, which make up the class. Each of the components is represented by a section in the bar whose size is proportional to its contribution in the class.

DEFINITION 1.3.6 (Histogram) Histogram is similar to bar chart but they both have a basic difference that is in histograms, classes of the variable are adjacent to each other and the rectangular bars must touch each other. Histograms are generally used to represent quantitative data. The class intervals in a histogram are called as bins. To study the properties of the data, statisticians usually vary the bin size to make inferences about the distribution of variable.

DEFINITION 1.3.7 (Skewedness) Histograms are called as skewed if they are non-symmetric. In such histograms, bins on one side have very high frequency which decreases as we move to the other side. The side with lower frequency is said to have a longer tail.

DEFINITION 1.3.8 (Polygon) The frequency polygon is a polygon which connects with a straight line the points (,), ii xf whereas i x and i f is the midpoint and the frequency of class boundary i respectively, and closes from the left to the center of the previous class, and from right to center of the subsequent class after last class.

DEFINITION 1.3.9 (Ogive) The cumulative frequency polygon is a polygon which connects with a straight line the points (,) ii bF, whereas i b and i F is the upper bound and the cumulative frequency of class boundary i respectively, and closes from the left to the beginning of first closes.For a less than cumulative frequency, the ogive is known as a less than ogive and for a greater than cumulative frequency the ogive is known as a greater than ogive.

DEFINITION 1.4.1 (Mean) Let 12 , ,..., n x x xbe numerical data, then one defines the mean (we denote it by x) is following relation: (قانون)

DEFINITION 1.4.2 (Weighted Mean) In a weighted mean (we denote it by w x), some of the observations are given more weight than the others. This is used when some values are more significant than others. Let the observed values be 12 , ,...., n x x xand the weights corresponding to each value are 12 , ,...., n w w wthen the weighted mean is calculated as: (قانون) When all the weights are equal then the weighted wean is equal to the ordinary mean

DEFINITION 1.4.3 (Median) Median (we denote it by x) is that value which divides the data in half after ordering them, in ascending or descending order such that one-half of the data is less than or equal to the median and the other half is greater than or equal to the median. The following graph explains the concept of median

DEFINITION 1.4.4 (The Mode) The mode (we denote it by ˆ x) of a set of raw data is the value, which has occurred maximum number of times i.e. has the highest frequency.

DEFINITION 1.4.5 (Variance Percentiles) The percentiles (we denote they by 1 P , 2 P ,…and 99 P) of a variable divide the observed values into 100 equal parts. Median is 50th percentile and it divides data into two equal halves. The percentile P1 divides the observed data into 1% from bottom and 99% from top. Similarly any jth percentile, Pj divides the observed value into two parts such that j % observed values are below this value and (100 - j) % observed values are above this value. The following graph explains the concept of percentiles.

DEFINITION 1.4.6 (Deciles) The percentiles (we denote they by 1 D , 2 D ,…and 9 D) in multiple of 10 or equivalently deciles divide the data into 10 equal parts. D1 is the 10th percentile; D2 is 20th percentile and so on till D9 which is the 90th percentile. The following graph explains the concept of deciles.

DEFINITION 1.4.7 (Quartiles) The Quartiles (we denote they by 1 Q , 2 Q and 3 Q) quartiles divide the data into 4 equal parts. The first quartile Q1 is 25th percentile, the second quartile Q2 is 50th percentile which is also the median of the data and the third quartile Q3 is 75th percentile. The following graph explains the concept of quartiles.

DEFINITION 1.4.8 (Extreme Values) We say that a value x of given data is said to be extreme if one of the following relations is realizing

DEFINITION 1.4.9 (Five Numbers) These is a summary of the variable data which includes the below mentioned five characteristics Smallest value, Q1, Q2, Q3, Largets value

DEFINITION 1.4.10 (Box Plot) The box plot of given data is the graphical representation of its five numbers summary.