**Unit-II Data Classification, Tabulation and Measures of Central Tendency Meaning, uses and construction of frequency table. Meaning, Purpose, Calculation advantages and demerits of Measures of central tendency – Mean, median and mode.**

# Frequency Table

**Meaning**

A **frequency table** is a tabular representation of data that shows the number of times each value or group of values (class) occurs in a data set. It organizes raw data into categories or intervals, making it easier to interpret and analyze patterns, trends, and distributions.

# USES OF FREQUENCY TABLE

**Simplification of Data**: Converts raw data into a manageable and readable form.

**Identifying Patterns**: Highlights the frequency distribution of data, showing which values occur most often.

**Basis for Graphical Representation**: Serves as the foundation for constructing histograms, bar charts, or pie charts.

**Statistical Analysis**: Helps calculate measures like mean, median, mode, and range.

**Decision-Making**: Aids in summarizing data for informed decision-making in research, business, or other fields.

# Construction of a Frequency Table

**Determine the Range**

Range=Maximum Value−Minimum Value

**Decide the Number of Classes (for Grouped Data)**

Example formula: Number of Classes=$\sqrt{n}$, where n is the number of observations.

**Calculate the Class Width**

Class Width=Range/Number of Classes

**Example: Frequency Table for Test Scores**

**Raw Data:**

50, 52, 53, 55, 58, 60, 61, 62, 65, 68, 70, 72, 72, 73, 75

**Steps:**

**1.Range**: 75−50=25  2. **Number of Classes**: $\sqrt{15}\approx4$

**3.Class Width**: 25/5=5.  4. **Class Intervals**: 50–54, 55–59, 60–64, 65–69, 70–74.

**Example: Frequency Table for Test Scores**

**Raw Data:**

50, 52, 53, 55, 58, 60, 61, 62, 65, 68, 70, 72, 72, 73, 75

| Class Interval | Tally | Frequency |
|---|---|---|
| 50–55 | | 3 |
| 55–60 | | 2 |
| 60–65 | | 3 |
| 65–70 | | 2 |
| 70–75 | | 5 |
| | Total | 15 |

## Meaning, merits and demerits of mean:

A measure of central tendency is a typical value of entire group or data.

Mean is a value which is typical or representative of a set of data.

**Murry R. Speigal**

## Merits:

1. It is easy to understand.
2. It is easy to calculate
3. It is used in further calculation
4. It is rigidly defined.
5. It is based on the value of every item in the series.

**Demerits (limitations):**

1. The mean is unduly affected by the extreme items.
2. It is unrealistic
3. It may lead to a false conclusion
4. It cannot be accurately determined even if one of the values is not known.
5. It is not useful for the study of qualities like intelligence, honesty, and character.

## Meaning, merits and demerits of median:

Median may be defined as the value of that item which divides the series into two equal parts. One half contains values greater than median and the other half containing values less than median. - **L.R. Connor**

## Merits:

1. It is easy to understand and easy to compute
2. It is quite rigidly defined.
3. It eliminates the effect of extreme items.
4. It is amenable to further algebraic process.
5. Since, it is positional average; median can be computed even if the items at the extremes are unknown.

**Demerits (limitations):**

1. Typical representative of the observations cannot be computed if the distribution of item is irregular. For example, runs scored by a batsman in last five ODI matches are, 1, 2, 3,100 and 175, the median is 3.
2. Where the number of items is large, the prerequisite process i.e.., arraying the items is a difficult process.
3. It ignores the extreme items.
4. In case of continuous series, the median is estimated, but not calculated.
5. It is more affected by fluctuations of sampling than in mean.
6. Median is not amenable to further algebraic manipulation.

## Meaning, merits and demerits of mode:

Mode is the most common item of a series. Mode is the value which occurs the greatest number of frequencies in a series. The mode of a distribution is the value at the point around which the item tends to be most heavily concentrated. - **Croxton and Cowden**

Merits:

1. It is easy to understand as well as easy to calculate. In certain cases, it can be found out by inspection.
2. It is usually an actual value as it occurs most frequently in the series.
3. It is not affected by extreme values as in the mean.
4. It is simple and precise.
5. It is the most representative average.

**Demerits (limitations):**

1. It is not suitable for further mathematical treatment.
2. It may not give weight to extreme items.
3. In a bimodal distribution there are two modal classes, and it is difficult to determine the value of the mode.
4. It is difficult to compute, when there are both positive and negative items in a series and when there one or more items are zero.
5. It is stable only when the sample is large.