**BUSINESS TOOLS FOR DECISION MAKING**

**UNIT 1**

TWO MARKS QUESTIONS

**1. Definition of statistics.**

 Statistics may be defined as the science of collection, presentation, analysis and Interpretation of numerical data”.

**2. What are the characteristics of Statistics?**

 \*Statistics is a quantitative science

 \*It never consider a single item

 \*The values should be different

 \*Statistical result true on average

**3. What is mean by classification?**

 Classification is the process of arranging data into groups or classes according to the common characteristics possessed by the individual items.

**4. State the types of classification.**

 \*Geographical classification

 \*Historical classification

 \*Qualitative classification

 \*Quantitative classification

**5. What is mean by tabulation?**

 Tabulation is the process of arranging data systematically in rows and columns of table.

**6. What is the meaning of Diagram?**

 Diagram or various geometrical shapes such as bar and circles etc. They are more attractive and easier to understand then graphs and are widely used in advertisements and publicity.

**7. What are types of bar diagram?**

 There are 4 types,

 \*Simple bar diagram

 \*Multi bar diagram

 \*Subdivided bar diagram

 \*Percentage bar diagram

**8. What is historical Classification?**

 Some data can be classified on the basis of time and arranged chronologically or historically.

**9. What is Median?**

 Median is the value of the middle most value item when all the items are in the order of magnitude.

**10. What is mean by mode?**

 Mode is the value which has higher number of frequencies of value.

**UNIT 2**

**1. What is dispersion?**

Dispersion is the measures of the variation of the items. In the words of Murray R. Spiegel, “the degree to which numerical data tend to spread about an average value is called the variation or dispersion of the data.”

**2. What is range?**

This is the simplest possible measure of dispersion and is defined as the differences between the largest and smallest values of the variable.

 **Range = L – S**

**3. What us quartile deviation?**

Quartile deviation is half of the difference between the first and third quartiles. Hence it is called as semi inter quartile range. It is simple to understand and easy to calculate. It can be calculated for data with open end classes also.

**4. What is mean deviation?**

Mean deviation is the arithmetic mean of the absolute deviations of the value about their arithmetic mean or median or mode. Mean deviation about median is the least. It could be easily verified in individual observations and discrete series where the actual values are considered.

**5. What is standard deviation?**

 Standard deviation is the root mean square deviation of the values from their arithmetic mean**.** Standard deviation possess most of the desirable properties of a good measures of dispersion and it is most widely used absolute measure of dispersion also.

**6. What are the characteristics of good measures of dispersion?**

* + - It should be rigidly defined.
		- It should be based on all the items.
		- It should not be unduly affected by extreme items.
		- It should lend itself to algebraic manipulation.
		- It should be simple to understand and easy to calculate.

 **7. What is co efficient of mean deviation?**

Mean deviation calculated by any measure of central tendency is an absolute measure. For the purpose of comparingvariation amongdifferent series a relative mean deviation is required. The relative mean deviation is obtained by dividing the mean deviation by the average used for calculating mean deviation.

**8. What is skewness?**

 Skewness means lack of symmetry. We study skewness to have an idea about the shape of the curve which we can draw with the help of the given data. If in a distribution mean=median=mode, then that distribution is known as symmetrical distribution.

**9. What is the uses of range?**

Range is used in finding the control limits of mean chart and range chart in standard quartile co efficient.

The minimum and the maximum temperature likely to prevail on each day are forecasted.

**10. What is kurtosis?**

Kurtosis is the measure of the combined sizes of the two tails. It measures the amount of probability in the tails. The value is often compared to the kurtosis of the normal distribution, which is equal to number three.

**UNIT 3**

**1. Define Correlation.**

 According to L. R. Connon, “If two or more quantities vary in sympathy, so that movements in one tend to be accompanied by corresponding movements in the others, then are said to be correlated.”

**2. What is meant by correlation?**

 The term correlation refers to the relationship between the variables. Simple correlation refers to the relationship between two variables.

**3. What are the types of correlation?**

 Correlation is classified into many types but the important are:

 \*Positive and Negative

 \*Simple and Multiple

 \*Partial and total

 \*Linear and Non-linear

**4. What are the methods of correlation?**

 The different methods of finding out the relationship between two variables are:

 A. GRAPHIC METHOD:

 Scatter diagram or scattergram

 Simple graph or correlagram

 B. MATHEMATICAL METHOD:

 Karl Pearson’s coefficient of correlation

 Spearman’s rank coefficient of correlation

 Coefficient of concurrent deviation

 Method of least squares.

**5. What is meant by Pearson’s coefficient off correlation?**

 This is also called product moment correlation coefficient. This is denoted by r. This is covariance between two variables divided by product of their standard deviations.

**6. What is meant by rank correlation coefficient?**

 Rank correlation measure is useful in dealing with qualitative characteristics, such as intelligence, beauty, morality character, etc.., it cannot be measured quantitatively, as in the case of Pearson’s coefficient of correlation, but based on the rank’s given to the observations.

**7. What is meant by concurrent deviation?**

 Under concurrent deviation method only the direction of change in the concerned variables is taken into account. When it is desired to study only nature of correlation and not its degree, the method of concurrent deviation is the easiest.

**8. State any 2 merits of Karl Pearson’s correlation of coefficient.**

 \*Karl Pearson’s correlation coefficient is the most popular correlation coefficient. It is used in regression equations also.

 \*The population correlation coefficient can be estimated from the square value.

**9. What is Regression?**

 We can estimate the value of one variable is provided the value of the other variable is given. The statistical method which helps us to estimate the unknown value of one variable from the known value of the related variable is called Regression.

**10. What are the uses of Regression Analysis?**

 \*Regression analysis predicts the value of dependent variable from the values of independent variables.

 \*The regression analysis is highly useful and the regression line equation helps to estimate the values of dependent variable, when the values of independent variables are used in the equation.

**UNIT 4**

**1. What is mean by Secular Trend?**

 Secular trend is also long term trend or trend simply. The overall nature of the series is the trend. Increasing trend us observed in population, price, production literacy etc. It is very rare to find a time series which neither increase nor decrease.

**2. What are the merits of Semi Average?**

 \*It involves simple calculations. It is easy to adopt.

 \*The trend at any point of time can be found.

**3. What is Time series?**

 A time series is a collection of observation made sequentially in time. The series of values might have been observed at regular intervals of time such as daily sales, annual profits and decennial census certain time series might have been recorded at irregular intervals as and when they happened such as flood and earthquake.

**4. What are the uses of time series analysis?**

 \*The analysis of tike series helps to know the past conditions.

 \*It helps in assessing the present achievements.

 \*It helps to predict reliability.

 \*It facilitates comparison.

**5. What are the methods to measure secular trends?**

 \*Free hand or Graphical method

 \*Semi Average Method

 \*Moving Average Method

 \*Method of Least Square.

**6. Define time series.**

 According to Morris Hamburg “A time series is a set of observation arranged in chronological order.”

**7. What is moving average?**

 The method of moving averages is one of the most useful methods of estimating trend. It is an algebraic method. Graph sheet is not used for calculating trend. For a series, there is only one arithmetic mean; there are many moving averages. Moving totals are found and they are divided by appropriate number to get the moving average.

**8. What is method of least square?**

 \*Method of east square is one of the most useful statistical techniques.

 \*The value of one variable corresponding to any value of another can be estimated on the basis of their relation.

**9. What is Interpolation?**

 Give few values of an independent variable and corresponding values of a dependent variable called function, finding the value of the function. Corresponding to an intermediate value of the argument is the problem of interpolation.

**10. Write the methods of Seasonal Variations.**

 \*Method of Simple average

 \*Ratio to trend method

 \*Ratio to moving average method

 \*Link relative method.

**UNIT -5**

1. **What is meant by Index Numbers?**

M. Spiegel Say, “An index number is a statistical measure designed to show change in variables or a group of related variables with respect to the geographic location or other characteristic**”.**

1. **What are the tests of a Good Index Numbers?**
* Unit Test
* Time Reversal Test
* Factor Reversal Test
* Circular Test
1. **What is the Simple Aggregative Index?**

 It may be noted that the current year figure is in the numerator while the base year figure is in the denominator as in the other methods when the index number of the current year as compared to the base year is calculated.

1. **What is Price Index Number?**

A price index number is the percentage of change in the price of one commodity or one group of commodities in the current year.

A similar calculation in quantity results in quantity index number.

1. **What is Cost of Living Index Number?**

 Cost of living index number shows the impact of changes in the prices of a number of commodities and services on a particular class of people in the current year in the comparison with the base year.

1. **What is Factor Reversal Test?**

 This requires the formula to be such that **P01 × Q01 = ∑p1q1÷∑p0q0**, after ignoring the factor 100 in each index. P01 gives the relative change in price while q01 gives the relative change in quantity. Hence, P01 ×Q01 should give the relative change in price multiplied by quantity and so should be equal to ∑p1q1÷∑p0q0.

**7. Define – Circular Test:**

* Circular test is an extension of the time reversal test.
* The formula required,

 P01 × P12 × P20 = 1.

 **8. What is Aggregative Expenditure Method?**

The average price paid for each item is to be gathered from the shops of the region. The prices are retail prices. As mentioned earlier under general problems in the construction of index numbers.

 **9. What is Family Budget Method?**

 The formula under this method as given,

**Cost of living index number = ∑WP ÷ ∑W**

Weights [W] are determinedon the basis of the family enquiry wherein the relative importance of items within a group and the relative importance of a group to the total are known. When W is base year value, both the methods become one and the same.

**10. Define Time Reversal Test:**

 In the words of prof. Irving Fisher, “the formula for calculating the index number should be such that it will give the same ratio between one point of comparison and the other, no matter which of the two is taken as base or putting it in another way, the index number reckoned forward should be reciprocal of the one reckoned backward”.