Frequently Asked Questions

1. What does the word trend mean?
   Answer:
   The term 'secular trend' or simply "trend" is very popularly used in day-to-day conversation.
   E.g. we often talk that the population, prices, production, etc. are showing an upward trend. What we really mean thereby is that is we observe such variables over a long period of time we find an increasing tendency.

2. How is the trend classified?
   Answer:
   The general tendency of the data to grow or decline over a long period of time is called 'Secular Trend'. Trends are classified in to 2 main categories mainly:
   i. Linear / Straight Line methods
   ii. Non-Linear Trends.

3. What are the various methods of measurement for the straight line trend?
   Answer: The methods of measurement for the straight line trends are the following:
   - The free hand or graphic method
   - The semi average method
   - The method of least squares

4. What are the various methods of measurement for the non-linear trend?
   Answer: The methods of measurement for the Non-linear trends are the following:
   - Freehand or graphic method
   - Moving average method
   - A parabolic trend by a second degree polynomial equation obtained by the method of least squares

5. What is a graphic method?
   Answer:
   Graphic method is the simplest method of studying trend. In this method, the given data are plotted on a graph paper and trend line is fitted to the data just by inspecting the graph of the series.

6. What are the conditions to be followed while fitting a straight line trend through freehand method?
   Answer:
   When a trend line is fitted by the freehand method, an attempt should be made to make it conform as much as possible to the following conditions:
   i. The line should be smooth either a straight line or a combination of long gradual curves
   ii. The sum of vertical deviations from the trend of the annual observations above the trend line should be equal to the sum of the vertical deviations from the trend of the observations below the trend line

7. How is a straight line trend fitted through the method of least squares?
   Answer:
   A trend line is fitted to the data in such a manner that the following 2 conditions are satisfied. The sum of deviations of the actual values of the Y and the computed values of Y is Zero. The sum of the squares of the deviations of the actual and computed values is least from this line. That is why this method is called the method of least squares.

8. What does a straight line trend indicate?
   Answer:
   The straight line trends indicate the increase and decrease of a time series at a constant amount. It is the simplest form of describing the secular trend movement and the trend is frequently accurate.

9. When do we use a non-linear trend?
   Answer:
   There are situations where the straight line trend cannot fit the data adequately. In such cases better description of the time series is given by a nonlinear curve and the following methods are used for measuring the non-linear trends.

10. What is the method of moving average?
    Answer:
    In this method the average value for a number of years (months or weeks) is secured and this average is taken as the normal or trend value for the unit of time falling at the middle of the period covered in the calculation of the average.

11. How do we select the period for moving average?
    Answer:
    As the moving average is commonly applied to data that is characterized by cyclical movements, it is necessary to select a period for moving average which coincides with the length of the cycle otherwise the cycle will not be entirely removed.

12. What will happen if the length of the cycle does not coincide?
    Answer:
    When the period of moving average and the period of the cycle do not coincide, the moving average will display a cycle which has the same period as the cycle in the data, but having less amplitude than the cycle in the data.

13. How do we select the period when the cycle is of uniform length?
    Answer:
    Whenever the cycle in the data is of uniform length, we should take a moving average period equal to or greater than the average period of the cycle in the data. Generally the periods will range between 3 to 10 years for general business series.

14. What do you mean by centering?
    Answer:
    In situations, where synchronizing of moving averages and original data is done through a process called Centering.

15. When do we use the method of moving average?
    Answer: Moving average is appropriate for trend computation only under the following conditions:
    i. When the purpose of investigation does not call for current analysis or forecasting
    ii. When the trend is linear
    iii. When the cyclical variations are regular both in period and amplitudes

    However, in practice these conditions rarely hold good for a data.