UNIT- III
STATISTICS PROCESS CONTROL

1 Define Statistics?

Statistics is defined as the science that deals with the collection, tabulation, analysis, interpretation, and presentation of quantitative data.

2. What is a measure of central tendency?

A measure of central tendency of a distribution is a numerical value that describes the central position of the data or how the data tend to build up in the center. There are three measures in common in use in quality viz, the average, the median and the mode.

3. What is Measures of dispersion?

Measures of dispersion describe how the data are spread out or scattered on each side of the central value. The measures of dispersion used are range and standard deviation.

4. What is a normal curve?

The normal curve is a symmetrical, unimodal, bell-shaped distribution with the mean, median and mode having the same value.

5. What is the use of the control chart?

The control chart is used to keep a continuing record of a particular quality characteristic. It is a picture of process over time.

6. Give the objectives of the attribute charts?
- Determine the average quality level.
- Bring to the attention of management any changes in the average.
- Improve the product quality.
- Evaluate the quality performance of operating and management personnel.
- Determine acceptance criteria of a product before shipment to the customer.

7. Define Six Sigma Problem Solving Method?

Define - improvement opportunity with an emphasis on increasing customer satisfaction. Measure - determine process capability (Cp/ Cpk) & dpmo (defects per million opportunities).Analyze - identify the vital few process input variables that affect key product output variables ("Finding the knobs").Improve - Make changes to process settings, redesign processes, etc. to reduce the number of defects of key output variables. Control - Implement process control plans, install real-time process monitoring tools, and standardize processes to maintain levels.

8. Differentiate Population & Sample?

Population represents the mathematical world and Sample represents the real world. A population frequency distribution is represented by a smooth curve whereas a sample frequency distribution is represented by a histogram.

9. Give the sources of variation?

Equipment

Material Environment Operator

10. Define Run chart?
A run chart is a very simple technique for analyzing the process in the development stage or, for that matter, when other charting techniques are not applicable.

11. Define Control chart?
Control chart is a means of visualizing the variations that occur in the central tendency and the dispersion of a set of observations. It is a graphical record of the quality of a particular characteristic.

12.What are the four basic steps included in SPC?
The four basic steps included in SPC are
        a. Measuring the process
        b. Eliminating variances in the process to make it consistent.
        c. Monitoring the process.
        d. Improving the process to its best target value.

PART B

1. Explain Pareto chart?
2. Explain the cause and effect diagram and Check sheet ?
3. Explain the Histogram and Scatter diagram?
4. Explain the Measures of Tendency and Dispersion?
5. Explain DMAIC Methodology?
6. Explain Affinity, Interrelationship, Tree diagram, Prioritization matrix, Matrix diagram, Process decision program, Activity network diagram?