 LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION - STATISTICS

FOURTH SEMESTER – APRIL 2012

# ST 4810 / 4806 - STATISTICAL PROCESS CONTROL

Date : 18-04-2012 Dept. No. Max. : 100 Marks

Time : 1:00 - 4:00

**Section – A**

**Answer all the questions: ( 10 x 2 =20)**

1. Give a typical application of Acceptance Sampling
2. What is lot sentencing?
3. Name the two control charts that detect small process shifts.
4. In what steps of DMAIC is process capability analysis used and name a technique used for the same?
5. When do we go for Attributes Control Chart?
6. When do we go for ?
7. What are the tools used in Analyze step of DMAIC?
8. What are USL and LSL?
9. What are the three components of Juran Trilogy?
10. Discuss the major disadvantages of Shewart Control Chart.

**Section – B**

**Answer any five questions: ( 5 x 8 =40)**

1. Elucidate on Single Sampling plans for attributes.
2. What is the Variable Width Control Limit approach with respect to a p chart?
3. Describe the construction of c chart when we have 2 cases

a) Standards given

b) Standards not given.

1. Explain OC Curve. Why do we need it?
2. What are the different types of Control Chart?
3. Give a note on the Define Step of the DMAIC
4. Explain in detail SIPOC diagram.
5. Define the notations ,Cp and p with respect to process capability. Diagrammatically represent the scenarios wherein Cp=1, Cp<1 and Cp>1.

**Section – C**

**Answer any two questions: ( 2 x 20 =40)**

1. a)What is Acceptance Sampling and what are the three important aspects of it?

b)Discuss the single, double and multiple Sampling Plan in detail.

1. a)Describe the construction of CUSUM charts.

b)Give a brief description of the tools used in different stages of DMAIC

1. a)Discuss the three statistical methods for Quality Control and Improvement.

b)What are the three approaches followed in the construction of p chart when we have a variable sample size?

1. a)Describe briefly the Phase 1 and Phase 2 of Control chart application

b)Explain the role of Design of Experiment in SPC.

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