LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION - STATISTICS

FOURTH SEMESTER – APRIL 2013

ST 4810 - STATISTICAL PROCESS CONTROL

Date : 27/04/2013 Dept. No. Max. : 100 Marks

Time : 1:00 - 4:00

Section A

Answer **ALL** the Questions: (10 X 2 = 20)

1. Define sequential sampling
2. Name the two control charts that detect small process shift
3. Define Process Capability analysis
4. What is an np-chart? How do we construct it?
5. When do we go for $\bar{X}$ and s chart?
6. What is an Average Run Length?
7. What are the tools used in measure step of DMAIC?
8. What is VOC?
9. Give a typical application of Acceptance Sampling.
10. When do we go for attribute control chart?

Section B

Answer **Any FIVE** Questions: (5 X 8 = 40)

11. Elucidate on single sampling Plans for attributes.
12. Discuss the algorithmic CUSUM for monitoring the process mean.
13. What is the Standardized Control Chart approach with respect to a p-chart?
14. What are the different types of control chart?
15. What happens in the phase 1 application of $\bar{X}$ chart and R chart?
16. Explain in detail SIPOC diagram.
17. a) Give any three sources of variability

    b) What are variables data and attributes data? (6 + 2)
18. Elucidate on the Eight dimensions of quality. Define Quality Characteristics and the different types of Quality Characteristics.

Section C

Answer **Any TWO** Questions: (2 X 20 = 40)

19. Discuss the construction and operation of a fraction non-conforming control chart giving the interpretation of points in two cases
    a) Standards are not given
    b) Standards are given (16 +4)
20. a) What are the situations where Acceptance sampling is more likely to be useful?

    b) Explain the advantages and disadvantages of Acceptance Sampling.
21. Describe Process Capability Analysis using Histogram, Probability plots and Process capability Ratio.
22. What happens in the Phase 2 application of $\bar{X}$ chart and R chart? Give a brief note on changing sample size on the $\bar{X}$ chart and R chart?

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