



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**M.Sc. DEGREE EXAMINATION - STATISTICS**

**THIRD SEMESTER – NOVEMBER 2013**

**ST 3817 - STATISTICAL QUALITY CONTROL**

Date : 09/11/2013  
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

**Section – A**  
**(Answer all the questions)**

**( 10 x 2 =20)**

1. Define Target Value of a Quality Characteristic.
2. What is non-conformity? When is a non-conforming product defective?
3. Why do we need to maintain control over process mean and process variability?
4. When do we go for Attributes Control Chart?
5. Name the primary techniques used in Process Capability Analysis.
6. What is Risk Priority Number?
7. Define Reference Value
8. State the two control charts that detect small process shifts
9. Why do we need Six Sigma?
10. Define average outgoing quality.

**Section – B**  
**(Answer any five questions)**

**( 5 x 8 =40)**

11. What are the chance and assignable causes of variation? How do they affect the process?
12. What is the Standardized Control Chart approach with respect to a p chart?
13. Describe the construction of c chart when we have 2 cases
  - a) Standards given
  - b) Standards not given.
14. Write advantage and disadvantages of acceptance sampling.
15. Compare attribute control chart and variable control chart.
16. Write the major uses of data obtained from a Process Capability Analysis.
17. Elucidate on Double Sampling plans for attributes.
18. Give a short note on TQM.

**Section – C**

(Answer any two questions)

( 2 x20 =40)

19. Express Deming's fourteen points for Management and define Juran Trilogy?

20. a) Explain EWMA control charts.

b) Verify whether the process is under control for the following data using EWMA control chart with  $\lambda = 0.10$  and  $L = 2.7$ . ( 8 + 12)

Sub group i	$x_i$
1	8.45
2	8.99
3	10.29
4	11.66
5	10.16
6	10.18
7	11.04
8	11.46
9	9.20
10	10.34
11	10.39
12	10.46
13	11.52
14	11.31
15	10.52

21. a) Briefly explain the OC curve in single sampling plan for attributes.

b) Draw the OC curve for the plan  $n = 89$ ,  $c = 2$ .

( 8 + 12 )

22. a) Describe process capability analysis using a histogram and probability plot.

b) Explain the uses of  $C_p$ ,  $C_{pk}$ .

(10 + 10)

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