



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

**B.Sc. DEGREE EXAMINATION – STATISTICS**

**SIXTH SEMESTER – APRIL 2015**

**ST 6608 - STATISTICAL QUALITY CONTROL**

Date : 20/04/2015  
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

**PART – A**

Answer **ALL** the questions:

(10 x 2 = 20 Marks)

1. What do you mean by quality of a product?
2. Why do we need Total Quality Management?
3. Explain Box Plot Technique.
4. List the information one may visually see in Histogram.
5. What are the uses of control charts?
6. When should the control charts for fraction defectives be prepared?
7. Define Process Capability.
8. What is meant by CUSUM chart?
9. What purposes are served by sampling inspection plans?
10. Define Single Sampling Plan.

**PART – B**

Answer any **FIVE** questions:

( 5 x 8 = 40 Marks )

11. Write a note on the Stem and Leaf plot.
12. Explain the concept of TQM.
13. What role does Statistical Quality Control play in maintaining the quality of a product?
14. Derive control limits for number of defectives.
15. Discuss the behavior of  $\bar{X}$  charts in relation to R charts.
16. The following are the  $\bar{X}$  and R values of 4 sub-groups of readings:  
 $\bar{X}$  : 10.2    12.1    10.8    and    10.9  
R : 1.1    1.3    0.9    and    0.8  
The specification limits for the components are  $10.7 \pm 0.2$ 
  - (i) Establish the control limits for  $\bar{X}$  and R charts
  - (ii) Find the process capability
  - (iii) Will the product meet its specification?
17. Explain the Double sampling plan for attributes.
18. Discuss the item-by-item sequential sampling plan.

**PART – C**

Answer any **TWO** questions:

(2 x 20 = 40 marks)

19. a) Discuss some specific functional responsibilities for quality.

b) Why the cost of quality should be explicitly considered in an organization?

20. a) Explain the procedure of controlling the proportion of defectives using a p-chart.

b) The number of defects observed on 20 electronic circuit boards are given below:

Sample:	1	2	3	4	5	6	7	8	9	10	11
Number of Defects	5	2	1	0	3	4	6	4	2	1	0
Sample:	12	13	14	15	16	17	18	19	20		
Number of Defects:	2	4	2	1	3	0	1	1	2		

Verify whether the process is in control using a suitable control chart.

21. a) Distinguish between Shewhart control charts and CUSUM control charts.

b) Describe operating characteristic (OC) curve of a single sampling plan.

22. a) Distinguish between Producer's risk and Consumer's risk.

b) What are the advantages of Statistical Quality Control?

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