LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SIXTH SEMESTER – **NOVEMBER 2023**

UST 6503 – STATISTICAL QUALITY CONTROL

Date: 03-11-2023   Dept. No.   Max. : 100 Marks
Time: 01:00 PM - 04:00 PM

PART A

Answer ALL the questions: (10x2=20 Marks)

1. Define Quality
2. What is Total Quality Management?
3. Point out any two uses of stem and leaf plot.
4. When do you use Histogram?
5. Write the control limits for R chart.
6. State the applications of p chart.
7. When do we use c chart?
8. Give the ways to represent cusums.
9. Define OC cuve.
10. Write OC function for single sampling plan.

PART- B

Answer any **FIVE** questions: (5x8=40 Marks)

11. What are the causes of variation in quality control? Explain.
12. Describe the dimensions of quality in SQC.
13. What are the various patterns in control chart?
14. Write the procedures of constructing Box plot technique.
15. Discuss the stem and leaf plot with an example.
16. Write down the merits and demerits of Acceptance Sampling.
17. Write short notes on the CUSUM control chart.
18. Draw a suitable control chart for the following data pertaining to the number of coloured threads (considered as defects) in 15 pieces of cloth in a certain number of synthetic fibre and state your conclusions. 7,12,3,20,21,5,4,3,10,8,0,9,6,7, 20.

PART - C

Answer any **TWO** questions: (2x20=40 Marks)

19. Explain W. E. Deming's 14 points.
20. a) Write a short note on statistical methods for quality control and improvement.   (10)
    b) Describe the procedure for the construction of the X bar and R chart.   (10)

21. a) Construct p- chart for the following data. (10)

The number of defectives observed on 20 electronic circuit boards is given below:

S. No	1	2	3	4	5	6	7	8	9	10
No. of Defectives	4	3	0	1	2	3	5	2	3	0
S. No	11	12	13	14	15	16	17	18	19	20
No. of Defectives	1	3	5	3	0	2	1	0	0	1

b) A process is in statistical control with $\overline{\overline{X}} = 75$ and $\overline{S} = 2$ The control chart uses a sample size of $n = 4$. Specifications are at 80 ± 8. The quality characteristic is normally distributed. Find the process capability index. (10)

22. a) Write short notes on (i)AQL, (ii)LTPD, (iii)AOQL and (V)ATI for single sampling plan. (10)

b) Explain Double sampling plan for attributes. (10)

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