



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – STATISTICS

SIXTH SEMESTER – APRIL 2022

16/17/18UST6MC03 – STATISTICAL QUALITY CONTROL

Date: 20-06-2022

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION – A

Answer all the Questions.

(10 X 2 =20)

1. Define Quality.
2. What is TQM?
3. Point out any two uses of stem and leaf plot.
4. When do you use Histogram?
5. Specify the purpose of the p chart.
6. Write the control limits for R chart.
7. When do we use cusum chart?
8. Define process capability ratio.
9. Write any two advantages of acceptance sampling.
10. Define consumer's and producer's risk.

SECTION- B

Answer any Five Questions.

(5 X 8 = 40)

11. What are the causes of variations? Give Example for each.
12. Write short notes on statistical methods for quality control and improvement.
13. Discuss on quantile plot.
14. Write about Box plot technique.
15. Explain the procedure of controlling the proportion of defectives using a p-chart.
16. An automobile manufacturer wishes to control the number of nonconformities in a subassembly area producing manual transmissions. The inspection unit is defined as four transmissions, and data from sixteen samples. The Non conformities are 1, 3, 2, 1, 0, 2, 1, 5, 2, 1, 0, 2, 1, 1, 2, 3. Set up a control chart for nonconformities per unit.
17. Write short notes on CUSUM control chart.
18. Construct OC curve for a single sampling plan $n=90$ and $c=2$ and find AOQL.

SECTION – C

Answer any two Questions.

(2 X 20 = 40)

19. Briefly explain

- a) the eight components of Quality.
- b) Deming 14 points.

20. a) Construct Histogram and stem and leaf plot for the data given below:

127 125 131 124 129 121 142 151 160 125 124 123 120 119 128 133 137 124 142 123 121
136 140 137 125 124 128 129 130 122 118 131 125 133 141 125 140 131 129 126

b) calculate sample mean and sample variance for the above data.

21. a) The following are the Mean and R values of 4 sub-groups of readings:

Mean	10.2	12.1	10.8	10.9
R	1.1	1.3	0.9	0.8

Construct the suitable control chart for the above table.

b) A process is in control with $\bar{X} = 100$ and $\bar{S} = 1.05$. The process specifications are 95 ± 10

- a) Estimate the potential capability.
- b) Estimate the actual capability.
- c) Estimate the fraction defective.
- d)

22. a) Explain the operating procedure for double sampling plan with an example.

b) Briefly explain Continuous sampling plan.

@@@@@@@@