

17P373

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Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2018

(Regular/Supplementary/Improvement)

(CUCSS - PG)

CC15P ST3 E03 - STATISTICAL QUALITY CONTROL

(Statistics)

(2015 Admission onwards)

Time : Three Hours

Maximum : 36 Weightage

PART A

Answer *all* questions. Each question carries 1 weightage.

1. Define quality and total quality management
2. What is the significance of an operating characteristic curve?
3. Describe a multiple sampling plan.
4. Define chance causes and assignable causes of variations. Give examples.
5. Briefly explain the procedure of a single sampling plan by variables.
6. Describe the statistical principle of control charts.
7. Distinguish between specification limits and control limits.
8. Describe S chart. When do you prefer it over R chart?
9. What is a median chart?
10. What is meant by Economic design of control charts?
11. What is meant by control charts with memory? Give an example.
12. Define process capability index.

(12 × 1 = 12 Weightage)

PART B

Answer any *eight* questions. Each question carries 2 weightage.

13. List out the various dimensions of quality. Explain.
14. What is meant by acceptance sampling? Explain its advantages and disadvantages.
15. Explain rectifying inspection. Derive the average outgoing quality level of a single sampling plan for attributes under rectifying inspection.
16. Explain item-by-item sequential sampling plan based on SPRT.
17. Explain the procedure of designing a single sampling plan with single specification limit and unknown process variance when the consumer's and producer's risks are specified.
18. Explain Continuous sampling plan? Distinguish between CSP- I and II plans.

19. Describe between control chart for attributes and control chart for variables. How will you evaluate the performance of a control chart?
20. Define ARL of a control chart. Derive the expression of ARL in \bar{X} -chart.
21. Explain p-chart for the fraction of non-conformities.
22. Explain the evaluation of a CUSUM chart using the tabular scheme.
23. What do you mean by robust quality? What are the main steps required to achieve robust quality?
24. Explain orthogonal array and its properties.

(8 × 2 = 16 Weightage)

PART C

Answer any *two* questions. Each question carries 4 weightage.

25. Compare Single sampling plan and double sampling plan. Explain its merits and demerits. Explain the construction of OC curve for single sampling plan.
26. Explain the construction of sampling plan for variables when AQL and LTPD along with the consumer's and producer's risk are given.
27. What are modified control charts? Explain the two sided modified mean chart and derive its power function.
28. Describe EWMA control charts. Show that it has non uniform memory.

(2 × 4 = 8 Weightage)
