

18P371

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Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(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. Write down various dimensions of quality.
2. What are the advantages of acceptance sampling?
3. What is the difference between AOQ and AOQL?
4. Discuss total quality management.
5. Distinguish between non-conforming products and non-conformity. Give Examples.
6. Describe the statistical principle of control charts.
7. Describe *c* chart.
8. What is an OC curve? What is the use of it?
9. How do you design a variable sampling plan using nomograph?
10. Define ASN. Derive the ASN of double sampling plan for attributes.
11. What is meant by process capability analysis?
12. Define standardized cusum. Write down its advantages.

(12 x 1 = 12 Weightage)

PART B

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

13. Explain the construction of operating characteristic curve of a double sampling plan.
14. Explain rectifying inspection and write notes on important measures used for the evaluation of rectifying sampling plan.
15. Compare multiple and sequential sampling plans.
16. What are the common non random patterns appearing on a control chart? How do you interpret them?
17. Derive the OC function and ARL of \bar{X} chart.
18. Explain the functioning of *S* chart for monitoring the process spread.
19. Explain the construction of *p*-chart for the fraction of non-conforming units.

20. Write down the advantages and disadvantages of variable sampling plans.
21. Derive the probability of acceptance for variable sampling plans with a single specification limit when lots are normally distributed with known variance.
22. Write notes on orthogonal arrays and robust quality.
23. Explain various measures for process capability analysis.
24. Explain the significance of EWMA control charts.

(8 x 2 = 16 Weightage)

PART C

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

25. Explain single sampling plan. Derive the OC function, ASN, AOQ and ATI of single sampling plan.
26. When do you prefer continuous sampling plans? Explain various continuous sampling plans.
27. Explain the construction and operation of \bar{X} and R control charts.
28. Explain cumulative sum control chart. Distinguish between tabular cusum and V-mask form of cusum.

(2 x 4 = 8 Weightage)
