

D 91630

(Pages : 2)

Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE EXAMINATION, DECEMBER 2015

(CUCSS)

Statistics

ST 3E 03—STATISTICAL QUALITY CONTROL

(2010 Admission onwards)

Time : Three Hours

Maximum : 36 Weightage

Part A

Answer all questions.

Each question carries 1 weightage.

1. What are the main causes of quality deviations ?
2. What is RQL and AQL ?
3. Define the OC function for a single sampling plan.
4. What is a sequential sampling plan ?
5. Distinguish between defects and defectives.
6. Describe a sampling plan for a single specification limit.
7. Explain a np chart.
8. Describe a p-chart for the fraction of non-conforming units.
9. Define ARL of a control chart.
10. What is an EWMA chart.
11. Define orthogonal arrays.
12. What do you understand by process capability studies ?

(12 × 1 = 12 weightage)

Part B

Answer any eight questions.

Each question carries 2 weightage.

13. Comment on the statement "Quality improvement means reduction of variability in process and products."
14. Give the average total inspection under single sampling plan when the sample is not used and the remaining lot is used after defectives are sorted out.
15. What is a double sampling plan ? Give the advantages of a double sampling plan over a single sampling plan.

Turn over

16. Derive the OC function for a single sampling plan by variables when the standard deviation is known and a single specification limit is given.
17. What do you mean by semi-curtailed and fully curtailed plans ? Explain using double sampling plan.
18. How is CSP-II and CSP-III plans a modification over the CSP-I plan ? Explain.
19. Explain the need of constructing a standardized C-chart. Discuss its construction.
20. Give the difference between control limits and warning limits. Describe these in the content of control chart for proportion p .
21. What are probability control limit and three sigma control limit ? Illustrate them with reference to an \bar{X} chart.
22. What is a CUSUM chart ? Discuss the type of memory it enjoys.
23. What is robust quality ? What are the main factors that should be considered to achieve Robust quality ?
24. Define the process-capability index and explain the logic behind this index.

(8 × 2 = 16 weightage)

Part C

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

25. Derive the OC function of a sequential sampling plan and comment on it.
26. What is the (i) Average cycle length ; (ii) Average length of a f 100 % inspection period ; (iii) Average outgoing quality of a continuous sampling plan.
27. Obtain the control limits on \bar{X} -R charts when process dispersion is unknown. How do you identify lack of control of the process using \bar{X} -R charts ?
28. What is a V mask ? How is it used to read a CUSUM chart ? Show the equivalence of V mask and tabular CUSUM form.

(2 × 4 = 8 weightage)