Total No. of Printed Pages—4

4 SEM TDC STSH (CBCS) C 10

2023

(May/June)

STATISTICS

(Core)

Paper : C–10

(Statistical Quality Control)

Full Marks : 50

Pass Marks : 20

Time : 2 hours

The figures in the margin indicate full marks for the questions

1. Choose the correct answer from the following : 1×5=5

(a) Main tools of statistical quality control are

(i) Shewhart charts

(ii) acceptance sampling plans

(iii) both *(i)* and *(ii)*

(iv) None of the above

(b) The relation between expected value of R and SD. Q with usual constant factors is

(i) $E(R) = d_1 Q$

(ii) $E(R) = d_2 Q$

(iii) $E(R) = D_1 Q$

(iv) $E(R) = D_2 Q$

(c) Inspection by attributes over inspection by variables requires

(i) less time

(ii) less skill

(iii) less calculations

(iv) All of the above

(d) The probability of accepting a lot with fraction defective P_t is known as

(i) consumer's risk

(ii) type–I error

(iii) producer's risk

(iv) None of the above

(e) A curve showing the probability of accepting a lot of quality p is known as

(i) OC curve

(ii) ASN curve

(iii) Gompertz curve

(iv) None of the above

(Continued)

2. Answer the following questions : 3×4=12

(a) Delineate the main tools for statistical quality control.

(b) What are meant by process control and product control in industrial statistics?

(c) Describe AQL and LTPD.

(d) Define Six Sigma.

3. Answer any *two* of the following questions : 4×2=8

(a) How are the control limits set up for mean?

(b) Which of the control charts are used for sampling by attributes? Give practical examples where these charts can be used.

(c) Write notes on seven tools of SPC and causes of variation.

4. Answer any *one* of the following questions : 6

(a) Explain the construction of a control chart for fraction defective. Distinguish between defect and defective.

(b) Explain the usefulness of R-chart. When is S-chart used in place of R-chart?

(Turn Over)

5. Answer any *one* of the following questions : 7

(a) Discuss the following concepts in connection with sampling inspection plans : 2+2+2+1=7

(i) Consumer's risk

(ii) Producer's risk

(iii) AOQ

(iv) Average total inspection mean

(b) Describe the techniques of sampling inspection by variables for the normal distribution case. 7

6. Answer any *one* of the following questions : 6

(a) Define acceptance sampling procedure and discuss its uses.

(b) Describe double-sampling plan and the general method of plotting OC curve of such a plan.

7. Answer any *one* of the following questions : 6

(a) Define lean manufacturing and TQM.

(b) Describe Six Sigma training plan.

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