1604E055

Candidate's Seat No :_____

M.Sc. Sem-4 Examination
509
Statistics
April 2022

Time : 2-00 Hours]

[Max. Marks : 50

Instruction: All questions in **Section-I** carry equal marks.

Attempt any **Three** questions in **Section-I**.

Question 9 in **Section-II** is **COMPULSORY**.

Section-I

Q.1 Define 'quality'. Discuss dimensions of quality.

[14]

Q.2 (A) Explain: (a) Appraisal costs   (b) Prevention costs.

(B) Explain the concept of six-sigma.

[07]
[07]

Q.3 Discuss V- mask procedure. Give its disadvantages.

[14]

Q. 4(A) Explain the tabular cusum for monitoring the process mean.

(B) Explain the moving average control chart and compare it with other control charts.

[07]
[07]

Q.5 Discuss how process capability analysis is helpful in quality improvement program.

[14]

Q .6 (A) Discuss SkSP-2 plan.

(B) What do you understand by Continuous Sampling? Discuss CSP-1 plan.

[07]
[07]

Q.7 Discuss how Taguchi's philosophy is helpful in the quality improvement process of any organization.

[14]

Q.8(A)Explain with an example how design of experiment is helpful in characterizing a process.

(B) Explain 2^{k-p} fractional factorial design with an example.

[07]
[07]

Section-II

Q.9 Answer any eight.

[08]

(A) Quality is _____ variability.

   (a) opposite of

   (c) reciprocal of

   (b) proportional to

   (d) synonym of

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(B) Which one of these is not a component of quality?

    (a) Reliability   (b) Durability

    (c) Acceptance sampling   (d) Serviceability

(C) Assignable variations may be due to

    (a) variations in raw materials   (b) limitations of the process

    (c) limitations in the skills of the operator   (d) all of the above

(D) Quality characteristics are classified into variables and _____.

    (a) constants   (b) attributes

    (c) standard   (d) specifications

(E) Give one advantage of cusum chart.

(F) What do you understand by rational subgroups?

(G) What of these can be used as the decision interval for the tabular cusum charts?

    (a) 2σ (b) 6σ (c) 5σ (d) 4σ

(H) EWMA control chart is used to detect small process shifts.

    (a) True   (b) False

(I) Define PCR_K.

(J) Define PCR_{km}.

(K) Give one advantage of Continuous –sampling plans.

(L) Give one disadvantage of Skip-lot sampling plans.

(M) Define 'contrast'.

(N) When there are several factors of interest in an experiment, a --------design should be used.

(O) What do you mean by noise factors?

(P) What do you understand by fractional factorial design?

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