2/16

2609N533

Candidate's Seat No :_____

M.Sc Sem.-4 (Rep) Examination

509

Statistics

Time : 2-30 Hours] **September-2024** **[Max. Marks : 70**

Note: Attempt all questions.

Q.1

(i) What do you understand by statistical quality control? Discuss briefly its need and utility in industry. [7]

(ii) Explain the concept of six-sigma. [7]

OR

(i) Explain: (a) Prevention costs (b) Internal failure costs. [7]

(ii) Explain natural tolerance limits and specification limits. [7]

Q.2

(i) Explain the tabular cusum for monitoring the process mean. [7]

(ii) Discuss Johnson's method for designing the V-mask. Also discuss disadvantages of V-mask procedure. [7]

OR

(i) Explain the moving average control chart and compare it with other control charts. [7]

(ii) Describe process capability ratio for an off-center process. [7]

Q.3

(i) Explain process capability analysis using a Histogram. [7]

(ii) Explain ChSP-1 plan. Discuss OC curve related to this plan. [7]

OR

(i) Discuss Skip-lot sampling plans. [7]

(ii) Describe the conditions required for proper use of chain sampling. [7]

Q.4

(i) Explain Taguchi's philosophy. [7]

(ii) Explain with an example how design of experiment is helpful in optimizing a process. [7]

OR

(i) Explain with an example how design of experiment is helpful in product design process. [7]

(ii) Explain how statistical process control methods and experimental design are interrelated for the improvement and optimization of process. [7]

P.T.O

NS33-2

Q. 5 Answer any seven: [14]

(i) Define Quality.

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

(a) Aesthetics (b) Features (c) Acceptance sampling (d) Conformance to standards

(iii) What do you mean by average run length (ARL) of the control chart?

(iv) Give one advantage of cusum chart.

(v) What do you understand by rational subgroups?

(vi) Give one disadvantage of EWMA control chart.

(vii) Define PCR_K.

(viii) Define PCR_{km} .

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

(x) What do you mean by 'interaction' in factorial design?

(xi) Define 'contrast'

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

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