INDIAN STATISTICAL INSTITUTE

First Semester Examination: 2025-26

Course Name: **M. Tech. (QR&OR) - I Year**

Subject Name: **Quality Management & Systems**

Date: 26 November 2025 **Maximum Marks: 100** **Duration: 2 hours**

Note: Answer all questions.

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1. Define different cost components mentioned in the 'Cost of Quality Model'. Following is a list of 8 different costs. Identify each of these costs as per your defined cost components.

   a) Legal costs on complaints, b) Skills development of employees, c) Depreciation of testing equipment, d) Visit to vendors' premises, e) Analysis of customers' feedback, f) Internal quality audits, g) Redesigning of processes, h) Root cause investigation.

   Or,

   Explain the various steps of Six Sigma methodology.

   [12]

2. Draw a "House of Quality" diagram and mark its different components. Explain the following situations with reference to the "Relationship Matrix".

   (a) Two Rows are blank.

   (b) Five Columns are blank.

   (c) Three Rows are having several "S" (i.e. strong relationship).

   (d) Two Columns are with several "S" (i.e. strong relationship).

   [5 + 2x4 = 13]

3. Write short note on any five of the following.

   (a) Reliability and Durability of a product quality

   (b) Adequacy audit and Compliance audit

   (c) Corrective action and Preventive action

   (d) Accuracy and Precision of a measurement

   (e) Basic elements of SWOT analysis

   (f) Quality management principles

   (g) Second party audit

   [5 x 5 = 25]

4. Following are the objective evidences of an internal audit conducted according to ISO 9001: 2015 QMS. Your job is to provide explanation on being classified as a non-conformance or not, with identification of relevant ISO clauses. Answer any four.

   (a) An Operator was using a documented work instruction, detailing the steps of manufacturing to be carried out. It was found that the instruction is not authorised.

   (b) One batch of final product was dispatched before completion of the final inspection. However, it was later found that the particular batch passed the final inspection.

   (c) Testing procedure specifies that the temperature to be controlled within 40±1°C. A calibrated thermometer of increment 1°C is used for this purpose.

   (d) Waste records show that waste was removed only once per week on 4 occasions during last three months instead of twice per week as stated in the procedure PROC-6.8.

   (e) An Internal Auditor was asked whether she is qualified for internal auditing. The auditor replied she had attended a two-day training programme on internal audit and then started auditing.

[4 x 5 = 20]

5. Assignments.

[30]