Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 171906 **Date: 03-12-2013**

Subject Name: Quality and Reliability Engineering

Time: 10:30 TO 01:00 **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** List out 7QC tools of problem solving. Explain any three. **07**

(b) Short note **07**

i) Fault Tree Analysis

ii) Total Employee Involvement

Q.2 **(a)** i) What is reliability engineering? **03**

ii) Define Maintainability, Availability, Failure Rate and Mean Time To Repair **04**

(b) i) Which techniques are used to determine reliability **03**

ii) 6 transformers are tested for 600 hr,2 failed after 50 and 200 hr and the remaining 4 transformer perform satisfactorily until the end of the test find the failure rate. **04**

OR

(b) i) Define MTTF,MTBF and Failure density **03**

ii) Failure rate =0.002 unit/hr. What is reliability for 900 hours? **04**

Q.3 **(a)** Short note **07**

i) TAGUCHI's 8 point approach

ii) Advantages of JIT production system

(b) Explain implantation barriers and scope of ISO9000. **07**

OR

Q.3 **(a)** Explain basic concepts, scope and implantation barriers of ISO 14000. **07**

(b) Short note **07**

i) Principles of Robust Design

ii) KANBAN System

Q.4 **(a)** What is Concurrent Engineering? Explain need of Concurrent Engineering. **07**

(b) Short note **07**

i) Agile Manufacturing

ii) Business Process Re-engineering

OR

Q.4 **(a)** What is Six Sigma? Discuss merits and demerits of six sigma. **07**

(b) Short note **07**

i) Lean Manufacturing

ii) World class manufacturing

Q.5 **(a)** What is TPM? Discuss Role of Total Production Maintenance. **07**

(b) Explain fundamental laws of probability **07**

OR

Q.5 **(a)** "Quality as wining strategy";Justify the sentence **07**

(b) Define: Inspection, Quality Control, Quality assurance, Quality management, Probability, Random variables, Total productive maintenance **07**

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