

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3171929

Date:19-11-2024

Subject Name: Quality and Reliability Engineering

Time:10:30 AM TO 01:00 PM

Total Marks:70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1 (a)** Differentiate inspection and quality control. **03**
(b) “Quality products make a significant impact on revenues in the long run.” Justify it. **04**
(c) What do you mean by TQM? Also discuss principles of TQM. **07**
- Q.2 (a)** What is the importance of DOE? **03**
(b) Define and discuss Kaizen. **04**
(c) Explain seven new quality improvement tools. **07**
- OR**
- (c)** Discuss the role of 5S in quality improvements in manufacturing sectors. **07**
- Q.3 (a)** Explain the process of operation of quality circle. **03**
(b) Discuss Taguchi Loss Function. **04**
(c) What do you understand by the robust design? How Taguchi techniques help achieving robust design of a product? **07**
- OR**
- Q.3 (a)** Define quality circle. What are the objectives of the quality circles? **03**
(b) Explain the stages of DOE. **04**
(c) Explain PDCA cycle in details. **07**
- Q.4 (a)** What is the aim of Concurrent engineering? **03**
(b) What is Kanban system? What are the major benefits of Kanban system? **04**
(c) What is six-sigma? Explain the relevance of six-sigma concept in achieving quality output in a process. **07**
- OR**
- Q.4 (a)** What is the need of ISO 9000? **03**
(b) Define and discuss TPM. **04**
(c) As natural resources become scare, discuss the role of ISO 14000 in promoting good environmental practices. **07**
- Q.5 (a)** What is reliability engineering? Explain the importance of reliability engineering. **03**
(b) What do you mean by Lean manufacturing? Discuss the wastes and advantages of Lean manufacturing. **04**
(c) What is Business Process Reengineering? What are the principles and advantages of Business Process Reengineering? **07**
- OR**
- Q.5 (a)** What is reliability and failure? **03**
(b) Explain field reliability. **04**
(c) Define MTBF and MTTR, and explain their significance in reliability calculations. **07**
