

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII(NEW) EXAMINATION – SUMMER 2019****Subject Code:2173407****Date:10/05/2019****Subject Name:Quality & Reliability Engineering****Time:02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

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

**MARKS**

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|------------|---|-----------|
| <b>Q.1</b> | (a) Define Quality Control. What are the objectives of quality control?                                       | <b>03</b> |
|            | (b) Suggest the various dimensions, customers are influenced by in determining quality levels.                | <b>04</b> |
|            | (c) Explain PDCA cycle in details.  | <b>07</b> |
| <b>Q.2</b> | (a) Define Reliability. How it is associated with quality?  | <b>03</b> |
|            | (b) What is Quality Circle?   | <b>04</b> |
|            | (c) Discuss 5-S campaign as Kaizen Technique.   | <b>07</b> |
| <b>OR</b>  |   |           |
|            | (c) Define Prevention, Appraisal, Internal failure and External failure terms related to the cost of quality. | <b>07</b> |
| <b>Q.3</b> | (a) Explain in short term "Bench Marking".  | <b>03</b> |
|            | (b) Write short note on KANBAN system.  | <b>04</b> |
|            | (c) Write short note on JIT production system.  | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.3</b> | (a) Discuss benefits of becoming ISO 9000 certified company.  | <b>03</b> |
|            | (b) Give overview of ISO 9000 series of standards.  | <b>04</b> |
|            | (c) Write short note on ISO 14001 an environmental management system.   | <b>07</b> |
| <b>Q.4</b> | (a) Explain in short term "Cost of Quality" (COQ) system  | <b>03</b> |
|            | (b) Discuss Taguchi Quality Loss Function.  | <b>04</b> |
|            | (c) Discuss Advantages and Limitation of Six Sigma  | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.4</b> | (a) Define DOE and enlist the components of DOE.  | <b>03</b> |
|            | (b) Define QFD and state its benefits.  | <b>04</b> |
|            | (c) What are the objectives of Total Productive Maintenance (TPM)? Briefly explain the eight pillars of TPM.  | <b>07</b> |
| <b>Q.5</b> | (a) Draw and explain the Bathtub curve.   | <b>03</b> |
|            | (b) What is Six Sigma? Discuss the concepts.  | <b>04</b> |
|            | (c) Define MTBF and MTTR and explain their significance in reliability calculations of any system.            | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.5</b> | (a) Explain in short term "Lean Manufacturing"  | <b>03</b> |
|            | (b) Explain Venn diagram of probability.  | <b>04</b> |
|            | (c) Discuss Reliability in terms of Hazard rate and failure density.  | <b>07</b> |

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