

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 172504****Date: 27-11-2014****Subject Name: Quality Management and Reliability Engineering****Time: 10:30 am - 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.

- Q.1** (a) What is the reliability engineering? Discuss the importance of reliability engineering. **07**
- (b) Failure rate of equipment is estimated at 10 failures during every 500 hours of operation out of 100 equipment in operation. The failing equipment is removed from service but not replaced. After how many hours, 35% of equipment will be left to serve? Also find the probability of satisfactory working of the equipment after 300 hours. **07**
- Q.2** (a) What is Pareto chart? Why is it so called? How does it help in Six Sigma? **07**
- (b) What is kaizen? What are the five “Gemba” principles in “Gemba” management? **07**
- OR**
- (b) What is the significance of 5S approach? State how 5S approach can be practiced in an organization. **07**
- Q.3** (a) What is Benchmarking? Explain Gap Analysis. **07**
- (b) What are the criteria for rating hotels in star and diamond categories? **07**
- OR**
- Q.3** (a) Using schematic diagram, explain the five phases of Strategic Quality Management. **07**
- (b) What is Service blueprint? How can poka-yoke be helpful in service blueprint? Explain using appropriate example. **07**
- Q.4** (a) What is COPC – 2000 Gold Standards? Briefly explain its various clauses. **07**
- (b) What are *muda*, *muri*, and *mura*? Explain the various types of *muda*. **07**
- OR**
- Q.4** (a) Briefly explain the various types of quality audits. **07**
- (b) How significant is the role played by ISO-9000 in Indian industry? **07**
- Q.5** (a) Explain DMAIC process with suitable example. **07**
- (b) What is DPMO? Calculate DPMO for the following operation: **07**
- A pen manufacturing company has identified three opportunities for a pen to be defective: a blunt nib, leakage in the ink tube, and crack in the plastic shield of the pen. In a batch of 100000 pens, the company has found 105 defects.
- OR**
- Q.5** (a) Explain the use of Ishikawa’s fishbone diagrams using suitable examples. **07**
- (b) Explain Taguchi method in experimental design. **07**
