

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII(NEW) • EXAMINATION – WINTER 2016

Subject Code:2172507**Date:21/11/2016****Subject Name:Quality Engineering & Management****Time:10.30 AM to 1.00 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 an Ideal OC curve? Explain Producer's and Consumer's risks. **07**
 (b) For an acceptance sampling plan with sample size of 25 and acceptance number (c) = 0, find the probability of accepting a lot that has a defect rate of 2%. What is the probability of accepting the lot if the defect rate is 6%? **07**
- Q.2** (a) A process in control has an estimated standard deviation of **07**
 (b) Using schematic diagram, explain the five phases of SQM. **07**
- OR**
- (b) Explain the benchmarking triangle. What are the different varieties of benchmarking? **07**
- Q.3** (a) What is COPC-2000 Gold standard? Briefly explain its various clauses. **07**
 (b) Briefly explain the various types of quality audits. **07**
- OR**
- Q.3** (a) Briefly explain the eight pillars of TPM. **07**
 (b) Compare the 'quality management maturity grid' of Crosby with the Capability Maturity Model (CMM). **07**
- Q.4** (a) What are muda, muri, and mura? Explain the various types of muda. **07**
 (b) What is service blueprinting? How can poka-yoke be helpful in service blueprinting? Illustrate by using appropriate examples **07**
- OR**
- Q.4** (a) What is the cost of poor quality? Explain the concept of defects per million opportunities (DPMO) by taking some example. **07**
 (b) What is Pareto chart? How does it help in six sigma? **07**
- Q.5** (a) Explain Taguchi method in experimental design. **07**
 (b) The following data represent the number of defects discovered at a factory on successive units of 10 cars each. **07**

Cars	Defects	Cars	Defects	Cars	Defects	Cars	Defects
1	141	6	74	11	63	16	68
2	162	7	85	12	74	17	95
3	150	8	95	13	103	18	81
4	111	9	76	14	81	19	102
5	92	10	68	15	94	20	73

Does it appear that the production process was in control throughout?

OR

- Q.5** (a) A process that produces titanium forgings for automobile turbocharger wheels is to be controlled through use of a fraction nonconforming chart. One sample of size 150 is taken each day for 20 days and the results are given below. Construct **07**

a fraction nonconforming control chart for these data. Does the process appears to be in control?

Day	Nonconforming units	Day	Nonconforming units	Day	Nonconforming units	Day	Nonconforming units
1	3	6	2	11	2	16	0
2	2	7	1	12	4	17	1
3	4	8	2	13	1	18	2
4	2	9	0	14	3	19	3
5	5	10	5	15	6	20	2

(b) Discuss TRIPS and explain its implications.

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