Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2013

Subject code: 1720909 **Date: 07-06-2013**

Subject Name: Quality Control and Reliability

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) Discuss the stages of quality control in details. **07**

(b) Explain the Taguchi concept in quality control. **07**

Q.2 (a) What are quality costs? Explain in details. **07**

(b) Discuss the system approach in quality management. **07**

OR

(b) Explain Total Quality Management (TQM) **07**

Q.3 (a) Explain with illustrations the benefits of ISO 9000 series. **07**

(b) Draw the OC curve with nomenclature and explain its parameters. **07**

OR

Q.3 (a) Discuss the Juran concept of quality management. **07**

(b) Explain the consumer and producer relationship in relation with OC curve. **07**

Q.4 (a) Explain the criteria for selecting the sampling plan. **07**

(b) Explain the quality conformance in relation with design quality and performance. **07**

OR

Q.4 (a) Explain the fault tree analysis for system failure with illustration. **07**

Q.4 (b) Explain the system availability and reliability. **07**

Q.5 (a) The following samples are inspected by attribute. A sample of 100 is inspected daily for continuously ten days. The samples are taken randomly from the daily production of 1000 pieces. compute the control limits for (i) P-chart and (ii) np-chart for given observations. **07**

Date;	1	2	3	4	5	6	7	8	9	10
Rejection;	18	12	06	15	02	20	14	10	08	06

(b) Discuss the effect of the following on the reliability of the product. (i) Defective design (ii) Manufacturing Defects (iii) Maintenance methodology. **07**

OR

Q.5 (a) The data for sample size and number of defectives are given below. Determine the control limits of fraction defectives. **07**

Sample No.	1	2	3	4	5	6	7	8	9	10
Sample size.	32	32	50	50	30	80	50	50	32	32
No. of defectives	2	3	3	2	1	4	2	0	2	1

(b) Discuss the quality control circle. **07**

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