Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 1720909 **Date: 04-01-2014**

Subject Name: Quality Control and Reliability

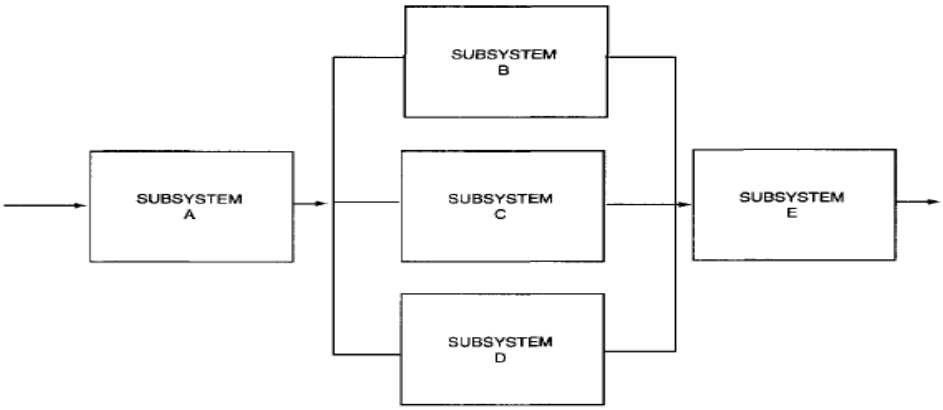
Time: 10.30 am – 01.00 pm **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	What is Quality? Explain Deming's 14 points quality management philosophy in brief.	**07**
	(b)	Compare TQM with ISO 9000.	**07**
Q.2	**(a)**	Discuss Taguchi philosophy with flow chart.	**07**
	(b)	Explain basic principles of TQM philosophy for doing business on following aspects; (i) satisfying customer (ii) satisfying supplier.	**07**
		OR	
	(b)	Justify the role of Quality circle for improvement of quality of product, process and employee motivation.	**07**
Q.3	**(a)**	Discuss the step by step process of quality planning in brief.	**07**
	(b)	Discuss following fundamental area to quality costs: (i) Non Conformance (ii) Conformance	**07**
		OR	
Q.3	**(a)**	List and explain techniques for analysis of quality costs.	**07**
	(b)	What is quality audit? Discuss approaches to quality auditing.	**07**
Q.4	**(a)**	Write a short note on ISO 9001 series.	**07**
	(b)	Explain the role of semi markov processes in determining systems availability and reliability in brief.	**07**
		OR	
Q.4	**(a)**	Explain bath-tub distribution and its significance in terms of reliability in industry.	**07**
	(b)	By giving suitable industrial case study, briefly discuss the role and importance of Cause and effect diagram.	**07**
Q.5	**(a)**	Write a short note on reliability block diagram.	**07**
	(b)	Calculate the system reliability of whole system as shown in fig. Each block represents individual reliability with RA = 0.99, RB = 0.90, RC = 0.95, RD = 0.93, RE = 0.92.	**07**

`



OR

Q.5 **(a)** Explain following with illustrations and examples: **07**

(i) CuSum charts (ii) Shewhart charts

(b) The data in Table were obtained by opening randomly selected crates from each shipment and counting the number of bruised peaches. There are 250 peaches per crate. Construct the np control charts and give your comments. **07**

Shipment Number	Bruised Peaches	Shipment Number	Bruised Peaches
1	20	16	23
2	28	17	27
3	24	18	28
4	21	19	31
5	32	20	27
6	33	21	30
7	31	22	23
8	29	23	23
9	30	24	27
10	34	25	35
11	32	26	29
12	24	27	23
13	29	28	23
14	27	29	30
15	37	30	28

****