Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – WINTER 2015

Subject Code: 171906 Date:04/12/2015

Subject Name: Quality and Reliability Engineering (Department Elective-I)

Time: 10:30am to 1:00pm 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)**	(i). Give any two definitions of quality.	**02**
		(ii). Suggest the various dimensions, customers are influenced by in determining quality levels.	**05**
	(b)	(i). Name various tools and techniques of TQM.	**02**
		(iii). Discuss 5-S campaign as Kaizen Technique.	**05**
Q.2	**(a)**	Enumerate various principles of TQM	**07**
	(b)	(i). Define quality circles.	**02**
		(ii). Discuss organization structure of Quality Circles.	**05**
		OR	
	(b)	Discuss house of quality product planning matrix with reference to quality function deployment.	**07**
Q.3	**(a)**	(i). Discuss benefits of becoming ISO 9000 certified company.	**03**
		(ii). Enlist elements (clauses) of ISO-9000: 2000 quality management system.	**04**
	(b)	(i). Write short note on KANBAN system.	**04**
		(ii). Find flow through time and work in process inventory based on following data; No. of stations: 05, Cycle time per item for each work station: 05 minutes, Lot size: 10 units.	**03**
		OR	
Q.3	**(a)**	(i). Define standardization.	**02**
		(ii). Give overview of ISO 9000 series of standards.	**05**
	(b)	Write short note on ISO 14001 an environmental management system.	**07**
Q.4	**(a)**	(i). Discuss various costs associated with quality.	**04**
		(ii). Discuss ways of reducing cost of quality.	**03**
	(b)	Write short note on Just in Time Manufacturing depicting its flow chart.	**07**
		OR	
Q.4	**(a)**	(i). Define DOE and enlist the components of DOE.	**02**
		(ii). Discuss Taguchi Quality Loss Function.	**05**
Q.4	**(b)**	Discuss Juran's triology.	**07**
Q.5	**(a)**	(i). Define MTBF, MTTR and Random variable.	**03**
		(ii). Discuss reliability bathtub curve in brief with its sketch.	**04**

	(b)	(i). Gives Bayes' Theorem	**02**
		(ii). Mumbai Indians is your favorite team is in final playoff. You have assign probability of 50 % that they will win the championship. Past records shows that when teams win the championship, they win the first game of series 60 % of the time. When they loss the series, they win the first game 20 % of the time. The first game is over and your team has lost. What is the probability that they will win the series?	**05**

OR

Q.5	**(a)**	Explain Venn diagram of probability with its application.	**07**
	(b)	Write short note on Six sigma technique.	**07**

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