Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – SUMMER • 2014

Subject code: 1720803 **Date: 20-06-2014**

Subject Name: Robotic Engineering

Time: 02:30 pm - 05:00 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)**	Explain different Robot configuration with figure.	**07**
	(b)	Explain following terms in brief for Robot: Spatial Resolution, Accuracy, Repeatability, Work Volume, Compliance.	**07**
Q.2	**(a)**	What is Denavit-Hartenberg (D-H) representation? Explain D-H parameter for forward kinematics of Robot.	**07**
	(b)	Explain Configuration of Robot Controller.	**07**
		OR	
	(b)	Explain Homogeneous transformations in Robot kinematics.	**07**
Q.3	**(a)**	Explain different factors which influence the design and selection of grippers.	**07**
	(b)	Enlist different drives used in Robotic system. Explain each in detail.	**07**
		OR	
Q.3	**(a)**	Give basic types of encoders used in robotic control system. Explain each in detail.	**07**
	(b)	Write short notes on Proximity and Range sensors.	**07**
Q.4	**(a)**	Describe Image Processing and Analysis in detail for Robotic vision system.	**07**
	(b)	Explain Analog to Digital signal conversion for machine vision system.	**07**
		OR	
Q.4	**(a)**	Explain different ways of Lead through programming methods and also gives its limitations.	**07**
	(b)	Explain Robot Language Structure in detail.	**07**
Q.5	**(a)**	Explain IN-LINE ROBOT CELL DESIGN.	**07**
	(b)	Explain ñError Detection and Recoveryò in robot cell design.	**07**
		OR	
Q.5	**(a)**	Explain ñRemote Centered Compliance (RCC) device for assembly operation.	**07**
	(b)	Write Short notes on ñRobot Intelligenceò.	**07**

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