GUJARAT TECHNOLOGICAL UNIVERSITY
ME – SEMESTER II (OLD) – • EXAMINATION – SUMMER 2016

Subject Code: 1720803   **Date:19/05/2016**

Subject Name: Robotic Engineering

Time:10:30 am to 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)**	Enlist different types of drives used in robotic system. Explain each in detail.	**07**
	(b)	Discuss advantages and disadvantages of Cartesian robots over other geometric configuration of robots.	**07**
Q.2	**(a)**	Explain in detail "D-H representation of forward kinematics" with algorithm.	**07**
	(b)	Explain 'Roll, Pitch & Yaw (RPY)' angle configuration	**07**
		OR	
	(b)	Explain "Different types of Gripper Mechanisms".	**07**
Q.3	**(a)**	Give basic types of encoders used in robotic control system. Explain each in detail.	**07**
	(b)	Write short note on – "Proximity and range sensors".	**07**
		OR	
Q.3	**(a)**	Compare hard automation and soft automation.	**07**
	(b)	Describe image processing and analysis in detail for robotic vision system.	**07**
Q.4	**(a)**	Discuss in details on different commands used in robot programming.	**07**
	(b)	Explain robot language structure in detail	**07**
		OR	
Q.4	**(a)**	Explain in detail "Robot centered cell" with its layout.	**07**
	(b)	Explain stepper motor control system.	**07**
Q.5	**(a)**	Explain Robot Application in "Material Transfer & Machine Loading / Un Loading System".	**07**
	(b)	Explain "Error Detection and Recovery"in robot cell design.	**07**
		OR	
Q.5	**(a)**	Define Trajectory planning.	**07**
	(b)	Explain model based control for robot manipulator.	**07**

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