GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VIII(NEW) EXAMINATION – SUMMER 2019

Subject Code:2181706   **Date:09/05/2019**
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.**

			Marks
Q.1	**(a)**	Explain forward kinematics.	**03**
	(b)	Write a short note on inverse kinematic	**04**
	(c)	Explain D-H parameter.	**07**
Q.2	**(a)**	Explain Vacuum gripper.	**03**
	(b)	State and define various components of robots	**04**
	(c)	Explain the construction of LVDT used in robotics for displacement measurement.	**07**
		OR	
	(c)	Spot welding	**07**
Q.3	**(a)**	State Asimov's Law of Robotics	**03**
	(b)	Explain magnetic grippers. State its advantages.	**04**
	(c)	Explain any one electric drive system for robot.	**07**
		OR	
Q.3	**(a)**	Explain degree of freedom with suitable example.	**03**
	(b)	Explain mechanical gripper.	**04**
	(c)	Comparison between hydraulic and pneumatic actuator. Explain any one	**07**
Q.4	**(a)**	Explain the working principal of Time of Flight range sensor.	**03**
	(b)	Explain Any two robotic cell layouts.	**04**
	(c)	What is robot programming? Explain in detail various types of robot Programming	**07**
		OR	
Q.4	**(a)**	What is a Tactile Sensor?	**03**
	(b)	Explain the origin and history of Robotics in detail.	**04**
	(c)	Explain working of external and internal grippers with suitable illustration.	**07**
Q.5	**(a)**	Write a short note on force and torque sensor	**03**
	(b)	What is full form of SCARA? Explain SCARA.	**04**
	(c)	The coordinates of a point Pabc=(4,3,2)T in the body coordinates frame oabc are rotated through 45° about OZ axis. Determine the coordinates of the vector Pxyz with respect to base reference coordinate frame.	**07**
		OR	
Q.5	**(a)**	What is machine interference?	**03**
	(b)	Explain the use of optical sensors in robots	**04**
	(c)	Spray painting	**07**

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