GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER– II(Old course) • EXAMINATION (Remedial) – WINTER- 2015

Subject Code: 1725001   **Date: 09/12/2015**

Subject Name: Robotics and Artificial Intelligence

Time:2:30 pm to 5:00 pm   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. Figures to the right indicate full marks.
4. **Notations/ symbols used have usual meanings.**

Q.1	**(a)**	What do you mean by robot configuration? List out them & Explain the POLAR configuration.	**07**
	(b)	Explain the various types of gripper mechanism with neat sketch.	**07**
Q.2	**(a)**	Define Robot. Compare hard automation and soft automation.	**07**
	(b)	Derive transformation matrix for Euler angles D-H representation of forward kinematics.	**07**

OR

	(b)	Explain Direct and Inverse kinematics with transformation matrix for two revolute joint robotic arm (2-DOF).	**07**
Q.3	**(a)**	List & Discuss the factors of consideration while selecting the gripper.	**07**
	(b)	Explain with neat sketch õCharged Coupled Device (CCD) in Machine Vision Systemö.	**07**

OR

Q.3	**(a)**	Explain application of robot in Spray coating. Also write benefits of it.	**07**
	(b)	Enlist the use of sensors in robotics. Also List & Explain the seven Desirable Features of Sensors.	**07**
Q.4	**(a)**	Enlist robot cell layouts. Compare õRobot centered cellö and õInline robot cellö.	**07**
	(b)	Explain õLead Through Programming Methodsö.	**07**

OR

Q.4	**(a)**	Classify the types of the cost. Also explain the life cycle of cash flows in capital investment project.	**07**
	(b)	Explain the different applications of AI in manufacturing and the use of different softwares in AI.	**07**
Q.5	**(a)**	What is AI problem? List out the task domains of AI. What kind of techniques will be useful for solving AI problems?	**07**
	(b)	List out the heuristic search techniques. Explain Hill climbing technique by taking a real life problem.	**07**

OR

Q.5	**(a)**	List and Explain the different problem characteristics.	**07**
	(b)	Compare Breadth-First search method with depth-First search method. Also give one example of each method.	**07**

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