Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 1725001 **Date: 02-12-2014**

Subject Name: Robotics and Artificial Intelligence

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 the various types of gripper mechanism with neat sketch.	**07**
	(b)	Explain the different applications of AI in manufacturing and the use of different softwares in AI.	**07**
Q.2	**(a)**	Explain in detail ñD-H representation of forward kinematicsò with algorithm.	**07**
	(b)	Define Robot. Compare hard automation and soft automation	**07**
		OR	
	(b)	What do you mean by robot configuration? List out them & Give at least one industrial application of each configuration. Explain the XYZ configuration.	**07**
Q.3	**(a)**	Classify the types of the cost. Explain the different cost by taking industrial examples.	**07**
	(b)	Enlist robot cell layouts. Compare ñRobot centered cellò and ñInline robot cellò.	**07**
		OR	
Q.3	**(a)**	What is the Importance of the Interlocks? Explain different types of Interlocks & their uses in detail.	**07**
	(b)	List out & Explain the methods of economic analysis for Robot selection/purchase in detail with industrial examples.	**07**
Q.4	**(a)**	Discuss the factors of consideration while selecting the gripper for the robot.	**07**
	(b)	Enlist the use of sensors in robotics. Also List & Explain the seven Desirable Features of Sensors.	**07**
		OR	
Q.4	**(a)**	Explain with neat sketch Vidicon tube in Machine Vision Systemò.	**07**
	(b)	Explain ñLead Through Programming Methodsò.	**07**
Q.5	**(a)**	List out the assumptions made for solving AI problems. Compare AI versus Natural Intelligence.	**07**
	(b)	What is heuristic function? Give & explain the importance of heuristic function by taking a real life application.	**07**
		OR	
Q.5	**(a)**	List out the heuristic search techniques. Explain any one technique by taking a real life problem.	**07**
	(b)	Solve 8-puzzle problem using Breadth -First Search.	**07**

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