Seat No.:	Enrolment No.

Subject Code: 173402

**Subject Name: Industrial Robotics** 

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

## BE - SEMESTER-VII • EXAMINATION - WINTER 2013

Date: 28/11/2013

Time:10:30am-01:00pm Instructions:			•	Total Marks: 70	
		1. 2.	Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.		
Q.1	(a)	(i)	connected as a system.	04	
	<b>(b)</b>	(ii) (ii)	Explain briefly various types of mechanical joints used in robots	03 03 04	
Q.2	(a)	(i) (ii)		04 03	
	<b>(b)</b>	(i) (ii)	•	04 03	
	<b>(b)</b>	(i) (ii)	Explain briefly any two types of non-contact proximity sensors.	04	
Q.3	(a)		Discuss briefly the following operation covered under image processing:  1. Segmentation, 2. Smoothing, 3. Object recognition	07	
	<b>(b)</b>		What are the illumination techniques in industrial robot? Explain each. <b>OR</b>	07	
Q.3	(a) (b)	(i) (ii) (i)	What are the functions of robotic vision system and application? Explain briefly the following range sensing techniques: 1.Trangulation,	03 04 04	
		(ii)	<ul><li>2. Structured lighting approach.</li><li>What are the components of vision system? Show systematic circuit diagram.</li></ul>	03	
Q.4	<ul><li>(a)</li><li>(b)</li></ul>	(i) (ii)	1	04 03 07	
			OR		
Q.4	(a)	(i) (ii)		04 03	
	<b>(b)</b>		What is VAL programming? Explain with any one simple industrial example.	07	
Q.5	(a)		What do you mean by RGV and AGV? Why it is necessary to implement robots in industries.	07	
	<b>(b)</b>		What are the safety considerations for robot operation?  OR	07	
Q.5	(a) (b)		What is pay back method in robotic? Explain briefly.	07	
			Explain EUAC method and Rate of return method.	07	

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