Seat No.: Enrolment No	Seat No.:	Enrolment No
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## GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VII EXAMINATION - WINTER 2015

Subject Code: 170306	Date:04/12/2015

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Subj	ject Name:	<b>Robotics and</b>	Artificial	Intelligence (	(Elective-1)

<b>Fime: 10:30am to 1</b> :	:00pm	<b>Total Marks: 70</b>

**Instructions:** 

1.	Attemp	ot all	questions
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- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.

Q.1	(a) (b)	Explain in detail complete anatomy of robot.  Define robot and explain various types of automation.	07 07
	(D)	Define robot and explain various types of automation.	U.
<b>Q.2</b>	<b>(a)</b>	Give classification of robots in terms of work envelop geometries.	07
	<b>(b)</b>	Explain vertical & horizontal stroke & reach with diagram.	07
		OR	
	<b>(b)</b>	Explain fundamental rotations & derive fundamental rotation matrix.	07
Q.3	(a)	Explain Pick & place operation.	07
	<b>(b)</b>	Define task planning. Explain task planner with block diagram.	07
		OR	
Q.3	(a)	Explain continuous path motion in detail.	07
	<b>(b)</b>	Explain 3 main approaches to robot programming along with their advantages & disadvantages.	07
Q.4	(a)	Explain applications of robotics in surgery with example.	07
	<b>(b)</b>	Elaborate on the Da Vinci Surgical System.	07
	( )	OR	
Q.4	(a)	Write a short note on Cyber Knife also compare it with Gamma Knife.	07
	<b>(b)</b>	Define artificial intelligence & its applications. Explain Turing & Total Turing test.	07
Q.5	(a)	What is knowledge representation? Explain various approaches to knowledge	07
		representation.	
	<b>(b)</b>	What is an expert system? Name different types & explain them.	07
		OR	
Q.5	(a)	What are the various properties that a knowledge representation system should	07
		possess? Discuss issues in knowledge representation.	

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**(b)** What is the need of data structures? Explain in detail sematic networks.

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