

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 172005

Date: 29/11/2011

Subject Name: Robotics

Time: 10.30 am-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.

- Q.1** (a) Define Robot anatomy. Explain Spherical configuration of robot and its work envelope. **07**
(b) Give applications of robotics. What will be its future applications? **07**

- Q.2** (a) Explain lead through programming of robot. **07**
(b) Explain robot programming using teach pendent. **07**

OR

- (b) Explain off-line programming of robot. **07**

- Q.3** (a) Explain forward kinematics of robot. **07**
(b) Using D-H representation derive the matrix for Cylindrical configuration of robot. **07**

OR

- Q.3** (a) Explain inverse kinematics of robot. **07**
(b) Using D-H representation derive the matrix for Cartesian configuration of robot. **07**

- Q.4** (a) Explain Open loop control system. **07**
(b) Explain PID Control System. **07**

OR

- Q.4** (a) Explain Closed loop control system. **07**
(b) Explain types of motion control systems. **07**

- Q.5** (a) Explain tactile and acoustic sensor working with its applications. **07**
(b) What is the end effector? What are its types? Explain working and applications of electromagnetic gripper. **07**

OR

- Q.5** (a) What is machine vision? What are the applications of machine vision in robotics? **07**
(b) Explain Capacitive and Laser sensor working with its applications. **07**
