Code :R7411306

R7

IV B.Tech I Semester(R07) Supplementary Examinations, May/June 2011
ROBOTICS & AUTOMATION
(Electronics & Control Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

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1. (a) What is an automation? Briefly explain the types of industrial automation.
   (b) Classify the robots by co-ordinate system.

2. (a) Briefly explain the different types of drivers.
   (b) Explain magnetic fibre optic sensor.

3. (a) Write a short note on electronic manipulator.
   (b) Explain the basic control block diagram for robot manipulation.

4. Establish the dynamic model of a one-axis robot (inverted pendulum) with long-range Euler formulation.

5. (a) Write the advantages and disadvantages of hydraulic actuators.
   (b) Explain the considerations in gripper selection and design.

6. (a) Briefly explain Hill-climbing techniques.
   (b) For the point 3i+7j+5k perform the following operations.
      i. Rotate 30^0 about the X-axis
      ii. Translate 8 units along the y-axis
      iii. Rotate 30^0 about X, then translate 6 along y
      iv. Translate 6 along y, then rotate 30^0 about X.

7. (a) What are the constraints for planning joint interpolated trajectory.
   (b) Briefly explain end effector and sensor commands.

8. (a) Explain the applications of robots in non manufacturing side.
   (b) Write short notes on multiple robots.

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