80684

B.Tech. Examination (Under CBCS)
ROBOTICS ENGINEERING AND AUTOMATION
(EIC-408) Scheme 2010

Time: 3 Hours]   [Max. Marks: 75

Note: *PART-A is compulsory and in PART-B, four questions out of six are to be attempted. Assume relevant data/fig., if not provided.*

PART-A (All the questions in this part are compulsory)

1. (a) Differentiate between Repeatability, Resolution and Accuracy.

   (b) Define base and tool coordinate systems.

   (c) Name the important specifications of an industrial robot.

   (d) What is meant by Pitch, Yaw and Roll?

   (e) Classify the robot as per the type of control and mobility.

   (f) How have robots developed and how sophisticated might they be in the future?

   (g) What is end effect? Give two examples.

   (h) What are the limitations of on-line and off-line robot programming?

   (i) What is the area of applications of image processing in the field of robotics?

   (j) What are the salient features of a servo motor used in Robot?

                                              $(2 \times 10 = 20)$

PART-B

2. Explain the direct kinematics of Six-axis Robot. (10)

3. Explain chaining operation in Robotics. (10)

4. Explain robot dynamics using Lagrangian mechanics. (10)

5. (a) Explain different types of Sensors used in Robotics. (5)
   (b) Explain different methods of Robot Programming. (5)

6. Write short note on
   (a) Fuzzy Logic Control in Robotics. (5)
   (b) Trajectory Planning. (5)

7. (a) Explain different types of Matrices used in Robotics. (5)
   (b) Explain Denavit-Hartenberg Algorithm. (5)

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