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10MAR13

First Semester M.Tech. Degree Examination, December 2011
Robotics for Industrial Automation

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions.

- 1 a. Discuss the automation and robotics. (08 Marks)
b. Explain with neat sketches four common robot configurations. (12 Marks)

- 2 a. Discuss general description of robot manipulator. (10 Marks)
b. Explain representation of links using Denavit Hartenberg parameters. (10 Marks)

- 3 a. Explain and obtain link transformation matrices. (10 Marks)
b. Discuss Geometrical approach to inverse kinematics. (10 Marks)

- 4 a. Discuss General structures of robotic workspaces. (10 Marks)
b. Explain the two basic structures of trajectory interpolators. (10 Marks)

- 5 a. Obtain equations for kinetic and potential energy of a robot manipulator. (20 Marks)

- 6 a. Discuss various robot teaching methods. (10 Marks)
b. Explain briefly the WAIT, SIGNAL and DELAY commands. (10 Marks)

- 7 a. Explain briefly the proximity and range sensors. (10 Marks)
b. List and explain the techniques used to reduce the magnitude of the image processing problem. (10 Marks)

- 8 a. List the industrial applications of robot. (10 Marks)
b. Discuss characteristics of future robot tasks. (10 Marks)

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important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

