Code: 9A13701

R09

B.Tech IV Year I Semester (R09) Supplementary Examinations, May 2013
ROBOTICS AND AUTOMATION
(Common to EIE and E.Con.E)

Time: 3 hours   Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

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1. (a) Define automation and robotics. How are they related?
    (b) Discuss about the control system used in a robot.

2. (a) Explain various types of power sources used in a robot.
    (b) How is variable speed achieved in a robot?

3.   What is a manipulator? How is dynamic and force control achieved in it?

4. (a) What are end effectors?
    (b) Explain various types of end effectors used in robotics.

5.   Compare the difference between the representation of kinetic energy of the Lagrange-Euler and Newton-Euler equations of motion for a robot of any configuration.

6. (a) How is a kinematics multiple solution problems dealt in robotics?
    (b) What do you understand by a Jacobian work envelop.

7. (a) Discuss the problems faced in trajectory planning for a robot.
    (b) How is straight line motion achieved?

8. (a) How is selection of a robot done for any particular operation?
    (b) What type of machine interface is necessary for robots?

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