Code: 9A03702

R09

B.Tech IV Year I Semester (R09) Regular & Supplementary Examinations December 2015

AUTOMATION & ROBOTICS

(Common to ME & MCT)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

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1 Describe the hardware components for automation and process control.

2 (a) Explain robot configurations.
(b) Discuss different joints in robots.

3 What is qualitative analysis of automated flow lines?

4 Draw and explain the composite homogeneous transformation algorithm.

5 Explain assembly process, systems line and line balancing methods.

6 (a) How the pneumatic actuators are useful in robotic applications? Explain.
(b) What is the role of proximity sensors in robotics?

7 (a) Explain the cubic polynomial fit of joint space scheme.
(b) Let the initial position of a joint is 15 degrees and nal position is 75 degrees. The duration to reach final position is 3 seconds. Design the joint trajectory considering the cubic polynomial fit.

8 Write about robot applications in material handling and material transfer.

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