

End Semester Examinations - 2015-16 Even Semester - May 2016

14ME3030 Industrial Robotics

Set A

Time : 3 hrs
Total Marks: 100

1. (a) Classify robots in detail. Explain four robot configurations with their designations, merits and demerits with neat sketches. [12]
(b) Briefly discuss the historical developments in the robotics. [8]

OR
2. (a) Discuss various drives used in robots with a neat diagrams. [12]
(b) What are the robot motions, explain. [8]
3. (a) Discuss on homogeneous transformations. [5]
(b) Derive an expression for the representation of a Pure Rotation about X-axis with required assumptions. Find the coordinates of a point P (3,4,5)^T relative to the reference frame after a rotation of 30° about X-axis and translation of 10 units along x and y axes respectively. [15]

OR
4. (a) Briefly explain the various mechanical grippers with neat sketches. [10]
(b) Explain the working of passive grippers and pneumatic grippers with neat diagrams. [10]
5. (a) Discuss the working of Inductive and Hall-Effect type proximity sensor with a neat sketches. [14]
(b) Explain the principle of operation of Optical Proximity sensor with a neat sketch [6]

OR
6. (a) Explain in detail the components of a machine vision system with a suitable block diagram and sketches if any. [12]
(b) Discuss about the illumination techniques. [8]
7. (a) Illustrate various types of robot programming methods and also list their capabilities and limitations. [10]
(b) Explain VAL robot programming Language with an example. [10]

OR
8. (a) State artificial intelligence and discuss about the components of AI. [14]
(b) List various application of artificial intelligence in various fields. [6]
9. (a) Explain the machine loading and unloading application of robot in any three production operations with their design features. [10]
(b) Describe the application of robot in arc-welding and state the technical considerations in arc-welding applications. [10]

Wishing you All the Best