Reg. No. : | | | | | | | | | | |

Question Paper Code: 39508

B.E. / B.Tech. DEGREE EXAMINATION, AUGUST 2021

Elective

Electronics and Instrumentation Engineering

01UEI908 - ROBOTICS AND AUTOMATION

(Regulation 2013)

Duration: 1:45 hour Maximum: 50 Marks

PART A - (10 x 2 = 20 Marks)

(Answer any ten of the following questions)

1. What is meant by degrees of freedom?
2. What is meant by gearing ratio?
3. Draw the functional blocks of machine vision system.
4. Define Robot manipulators.
5. Name various end-effectors of the robot that are used for industrial applications.
6. Give the basic types of robot programming languages.
7. Compare forward and reverse kinematics.
8. What are the methods of robot programming?
9. What is meant by assembly and its configuration?
10. What are the factors to be considered for selection of robot?
11. Find the spatial resolution of sliding joints with a full range of 0.5m and 8-bit storage capacity?
12. What is meant by gearing ratio?
13. Draw the functional blocks of machine vision system.

14. Define Robot manipulators.

15. Name various end-effectors of the robot that are used for industrial applications.

PART – B (3 x 10= 30 Marks)

(Answer any three of the following questions)

16. Illustrate the different robot configurations used in industries with its merit and applications. (10)

17. Derive an expression for the rotation of robot arm in Denavit–Hartenberg representation. (10)

18. Explain in detail about the rotating co ordinate systems of robot arm dynamics. (10)

19. Discuss about homogeneous transformations used for robot kinematics equation solving with 3D space point. (10)

20. Explain briefly about Parts Presentation methods for robotic assembly automation. (10)