

Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(CAD/CAM) (Sem.-3)

ROBOTICS

Subject Code : ME-505

Paper ID : [E1038]

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

- Q1 a) Write a note on different robot generations.
b) Classify robots according to the coordinate system and their actuation system. (10)
- Q2 a) Write a note on work cell design and control. (10)
b) Why is there a need for interfacing in robots? Discuss different means of robot-user interaction. (5, 5)
- Q3 a) Explain various arm structures used in robotics. (10)
b) Explain degree of freedom and degree of motion for a robot with a diagram. (10)
- Q4 a) Explain the Elements, types of drive and control systems of robots. (10)
b) What is a manipulator? What is meant by forward and inverse kinematics? Explain Forward kinematics of a 2R manipulator. (10)
- Q5 a) What are grippers and what are the types of grippers? Explain different mechanism used for a mechanical gripper. (10)
b) Explain the different factors governing the selection of a Gripper in robotics. (10)
- Q6 a) Write a note on external sensors of a robot. (10)
b) What are the aspects of motion planning in robotics? Write the methods for trajectory planning. (5)
c) Explain the steps involved in image processing in robotics. (5)
- Q7 a) What are the basic categories of robot programming languages? What are the requirements for a standard robot language? Explain Motion Programming in detail. (15)
b) Write a note on intelligent robots. (5)
- Q8 a) Explain various applications of robots in industries. (15)
b) Write a note on issues faced in implementation of Robotics in industry. (5)