CBCS SCHEME

21MT755

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2025
Robotics for Industry

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1   a. Define Robot (RIA & ISO). Explain the different types of robots.   **(12 Marks)**
    b. With a neat sketch, explain the parts & functions associated with a robotic system.
                                                                                        (08Marks)

OR

2   a. Describe the different configurations of robots along with their joint – notation scheme.
                                                                                        (10Marks)
    b. With neat sketch, illustrate the degrees of freedom associated with boy & wrist of a polar co-ordinate robot.   **(10 Marks)**

Module-2

3   a. With a neat sketch, explain the components of pneumatic drive systems.   **(10 Marks)**
    b. Discuss the working of range sensors with a neat diagram (Laser & ultrasonic). **(10 Marks)**

OR

4   a. Explain briefly how to determination of HP of motor & Gearing Ratio in the robot power sources.   **(10 Marks)**
    b. Explain briefly about the tactile sensors and proximity sensors?   **(10 Marks)**

Module-3

5   a. Illustrate the different types of mechanical gripper mechanisms / actuation methods with neat diagrams.   **(10 Marks)**
    b. Explain the concept of force control in robotics manipulator.   **(10 Marks)**

OR

6   a. Interpret the working of magnetic gripper & adhesive gripper with a diagram.   **(10 Marks)**
    b. Explain the consideration and check list to be adopted in selection of grippers. **(10 Marks)**

Module-4

7   a. Explain the methods of robot programming.   **(10 Marks)**
    b. Illustrate the wait signal and delay commands in robot programming.   **(10Marks)**

OR

8   a. Explain the capabilities and limitations of lead through methods.   **(10 Marks)**
    b. Illustrate motion interpolation and branching in robot programming.   **(10 Marks)**

Module-5

9   a. With a neat block diagram, explain the various elements of an automated system. **(10 Marks)**
    b. Explain the robots in assembly and inspection.   **(10 Marks)**

OR

10 a. Explain the safety in robotics systems and illustrate the three levels of safety. **(10Marks)**
    b. Elaborate on the advanced automation functions implemented in industrial automation.
                                                                                        (10Marks)

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