CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐

15MT71

Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020
Industrial Robotics

Time: 3 hrs.   Max. Marks: 80

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

Module-1

1   a. Define Automation. Explain three types of automation.   **(08 Marks)**
    b. List the types of robot drive systems. Give the comparison between the three.   **(08 Marks)**

OR

2   a. Define i) Spatial resolution   ii) Accuracy   iii) Repeatability   iv) Compliance.
                                                                                  (08 Marks)
    b. With a neat sketch, explain robot configurations.   **(08 Marks)**

Module-2

3   a. Develop kinematics using homogenous transformations for scaling, translation and rotation with example.   **(08 Marks)**
    b. Write a note on Gripper mechanisms of mechanical gripper.   **(08 Marks)**

OR

4   a. Explain in brief : i) Vaccum grippers   ii) Magnetic grippers.   **(08 Marks)**
    b. List the sensors used in robotics. Explain in brief tactile and proximity range sensors.
                                                                                  (08 Marks)

Module-3

5   a. With a neat sketch, explain the machine vision system.   **(08 Marks)**
    b. Explain in brief lead through method of programming robot.   **(08 Marks)**

OR

6   a. Write a note on WAIT , SIGNAL , DELAY commands.   **(08 Marks)**
    b. Explain various methods of Knowledge representation in Artificial Intelligence (AI).
                                                                                  (08 Marks)

Module-4

7   a. Explain in detail robot cell layouts.   **(08 Marks)**
    b. What are the functions of Work cell controller? Explain.   **(08 Marks)**

OR

8   a. How robot cycle time analysis is done? Explain.   **(08 Marks)**
    b. Write a short notes on : i) Electro Mechanical Relays   ii) Programmable Controllers.
                                                                                  (08 Marks)

Module-5

9   a. Write a note on i) Spot welding   ii) Continuous arc welding.   **(08 Marks)**
    b. Explain briefly part presentation methods in Robot Assembly Operation.   **(08 Marks)**

OR

10 a. List and explain Robot Assembly Operations.   **(08 Marks)**
    b. How robots can be used to Perform Inspection? Explain.   **(08 Marks)**

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