CBCS SCHEME

18MT71

Seventh Semester B.E. Degree Examination, Jan./Feb. 2023
Industrial Robotics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

1. a. Define Automation. Explain different types of Industrial Automation. **(10 Marks)**
   b. Describe history of Robotics. **(10 Marks)**

OR

2. a. Define a Robot. Classify Robots based on their configurations. **(10 Marks)**
   b. Write a short note on Applications of Robots in Industries. **(10 Marks)**

Module-2

3. a. Write a short note on different types of drive systems used in Robots. **(10 Marks)**
   b. Explain Robot Anatomy and different types of joints used in Industrial Robots. **(10 Marks)**

OR

4. a. With neat diagrams, explain common Robot work cell layouts. **(10 Marks)**
   b. List out and describe considerations in selection and design of Robot Grippers. **(10 Marks)**

Module-3

5. a. Derive the mathematical model and transfer function equation for spring mass damper system. **(10 Marks)**
   b. Explain different position sensors used in Robots. **(10 Marks)**

OR

6. a. Explain different functions of sensors in Robots. **(10 Marks)**
   b. Write a short note on different types of motors used in Robots. **(10 Marks)**

Module-4

7. a. With the help of block diagram, explain functions and steps involved in machine vision system. **(10 Marks)**
   b. With a case study, describe the application of machine vision system in Robotics. **(10 Marks)**

OR

8. a. What are proximity sensors? Explain the working of proximity sensors. **(10 Marks)**
   b. Classify Tactile sensors. With a neat figure, explain the working of Force Sensor. **(10 Marks)**

Module-5

9. a. Explain capabilities and limitations of lead through programming. **(10 Marks)**
   b. Write a short note on different generations of Robot Programming Languages. **(10 Marks)**

OR

10. a. Describe different methods used in robot programming. **(10 Marks)**
    b. Explain the following terms used in robot programming:
       (i) Motion Interpolation
       (ii) Wait, signal and delay
       (iii) Branching **(10 Marks)**

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