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15ME563

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Automation and Robotics

Time: 3 hrs.

Max. Marks: 80

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

Module-1

1 a. A major automobile industry involved in the manufacture of 4-wheelrs, plans for the automation. Suggest about the ten automation strategies. **(08 Marks)**
   b. Briefly explain automated manufacturing system with its components and sketches. **(08 Marks)**

OR

2 a. Explain the types of FMS systems. **(08 Marks)**
   b. Explain the advantages and benefits of FMS. **(08 Marks)**

Module-2

3 a. Classify the Robots, based on their physical configuration with sketch, joints used, work volume covered. **(12 Marks)**
   b. With respect to robot define the following:
      i) Degrees of freedom
      ii) Work volume. **(04 Marks)**

OR

4 a. What are the 3 types of drives used in Robot? Explain with their relative advantages and disadvantages. **(10 Marks)**
   b. With respect to robot define the following:
      i) Special resolution
      ii) Repeatability
      iii) Accuracy. **(06 Marks)**

Module-3

5 a. What is block diagram approach? Explain with basic elements. **(08 Marks)**
   b. What are the functions of controllers in automation and robotics? Briefly explain any 3 types of controllers. **(08 Marks)**

OR

6 a. How potentiometer and encoders are used in automation system? Explain the concept of these two. **(08 Marks)**
   b. Explain briefly different actuators or drives used in automation system. **(08 Marks)**

Module-4

7 a. Explain major uses of sensors. **(08 Marks)**
   b. Explain the types of sensors used in Robotics. **(08 Marks)**

OR

8   Explain the functions of each parts of Machine Vision System.   (16 Marks)

Module-5

9   a.   Explain briefly the areas of present and future robots where technology progress with respect to robot is taking place.   (08 Marks)

b.   Write a note on:
   i)   Robot Mechanical Design features
   ii)   Telepresence and related technology.   (08 Marks)

OR

10   a.   What are the areas of AI presently research is taking place? Explain briefly.   (08 Marks)
b.   Discuss few LISP commands and atoms used in programming.   (08 Marks)

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