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15ME563

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022

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. Define automation. Explain the types of automation. (08 Marks)
b. List and explain the reasons for automation. (08 Marks)

OR

- 2 a. What is FMS? List the benefits of FMS. (08 Marks)
b. List and explain the automation strategies. (08 Marks)

Module-2

- 3 a. Define Robot. Explain the robot anatomy. (06 Marks)
b. List out the advantages and disadvantages of Robot. (06 Marks)
c. Write a short on end effectors. (04 Marks)

OR

- 4 a. Explain with sketches the types of joint used in robots. (08 Marks)
b. Briefly explain special resolution, accuracy and repeatability as applicable to robotics. (08 Marks)

Module-3

- 5 a. What is control system? Briefly explain any four controller used in robotic control. (10 Marks)
b. What is block diagram? Explain its basic elements. (06 Marks)

OR

- 6 a. Explain different position sensors used in robots. (10 Marks)
b. With schematic diagram explain stepper motor helps to move the robotic arm. (06 Marks)

Module-4

- 7 a. What are tactile sensors? Explain any two types of tactile sensors. (10 Marks)
b. With a neat sketch explain range sensor. (06 Marks)

OR

- 8 a. Explain sensing and digitizing image data related to machine vision system. (08 Marks)
b. Explain the segmentation technique and object Recognition. (08 Marks)

Module-5

- 9 a. Write a short note on : i) Robot intelligence
ii) Telepresence and related technologies. (08 Marks)
b. Explain : i) Mechanical design features
ii) Advanced sensor capabilities. (08 Marks)

OR

- 10 a. What is artificial intelligence? Explain the goals of artificial intelligence. (08 Marks)
b. Explain artificial intelligence techniques. (08 Marks)
