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18MR651

Sixth Semester B.E. Degree Examination, July/August 2022 Automation and 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 with a neat sketch, explain the basic elements of an automated system. (10 Marks)
 b. State and explain the advanced automation functions. (10 Marks)

OR

- 2 a. With the help of a block diagram, explain the various levels of automation. (10 Marks)
 b. Explain the different types of sensors and actuators used in automated systems. (10 Marks)

Module-2

- 3 a. With a neat sketch, explain the general configuration of an automated production line. (10 Marks)
 b. Sketch and explain the part delivery system used in automation. (10 Marks)

OR

- 4 a. What is AIDC technology? Explain the six different AIDC technologies. (10 Marks)
 b. Explain the following AIDC technologies:
 i) Machine vision ii) Optical character recognition. (10 Marks)

Module-3

- 5 a. Define Robot sketch and explain the various types of robot configurations. (12 Marks)
 b. Explain briefly the Industrial applications of robots. (08 Marks)

OR

- 6 a. With a neat sketch, explain the types of robot control system. (10 Marks)
 b. Write a note on the following: i) End effectors ii) Sensors in robots. (10 Marks)

Module-4

- 7 a. Explain briefly about, positions, orientations and frames for the robot manipulation. (15 Marks)
 b. Write a note on taught and predefined orientations of the robot manipulator. (05 Marks)

OR

- 8 a. With a neat sketch, explain the convention for affixing frames to links for Robot links. (10 Marks)
 b. Briefly explain about actuator space, joint space and Cartesian space related to Robots. (10 Marks)

Module-5

- 9 a. State and explain the three levels of robot programming. (10 Marks)
 b. Explain the different central issues in offline programming systems. (10 Marks)

OR

- 10 a. Explain the requirements of a robot programming language. (10 Marks)
 b. Explain the problems particular to robot programming languages. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42.8 50, will be treated as malpractice.