

CBCS SCHEME

18ME732

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Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024

Automation and Robotics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the levels of automation with neat sketch. (10 Marks)
b. What is Automation? Explain basic elements of an automated system. (10 Marks)

OR

- 2 a. What is the difference between a continuous variable and discrete variable? (05 Marks)
b. Illustrate feed forward control system and adaptive control system. (08 Marks)
c. Briefly describe the capabilities of computer control system. (07 Marks)

Module-2

- 3 a. What is an automated production line? Explain general configuration of an automated production line and its system configuration. (10 Marks)
b. Explain the analysis of automated assembly system. (10 Marks)

OR

- 4 a. Name the six categories of AIDC technologies. Explain briefly. (10 Marks)
b. Explain briefly bar code and RFID. (10 Marks)

Module-3

- 5 a. What is an Industrial Robot? Explain common robot configuration with a neat diagram. (12 Marks)
b. Explain wrist configuration of a robot with neat sketch. (04 Marks)
c. Define the following: (i) Resolution (ii) Work volume (04 Marks)

OR

- 6 a. Name the four categories of Robot control System. Explain briefly. (08 Marks)
b. What are the characteristics of Robotic Application? (08 Marks)
c. Write notes on: (i) Lead through programming (ii) Motion programming (04 Marks)

Module-4

- 7 a. Describe positions, orientation and frames as related to manipulator. (10 Marks)
b. Illustrate the interpolation used to map points between frames as operators using translation and rotation. (10 Marks)

OR

- 8 a. Explain X-Y-Z fixed angles of a robotic frame. (10 Marks)
b. Explain with a neat sketch frames with standard name in a robot. (10 Marks)

Module-5

- 9 a. Explain the levels of Robot Programming. (10 Marks)
b. List and explain requirements of a robot programming language. (10 Marks)

OR

- 10 a. Explain Automatic subtask in OLP system. (10 Marks)
b. What are the problems peculiar to Robot Programming? Explain. (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.