

CBCS SCHEME

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18MT651

Sixth Semester B.E. Degree Examination, July/August 2022 Robotics and Automation

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Briefly explain different configuration of Robots. (10 Marks)
- b. With a neat sketch, explain Robot parts and functions associated with a robotic system. (10 Marks)

OR

- 2 a. Explain six different technical specifications associated with robots. (10 Marks)
- b. Define degrees of freedom. With a neat sketch, explain the degrees of freedom associated with body and wrist of a polar coordinate robot. (10 Marks)

Module-2

- 3 a. Explain the advantages and limitations of Hydraulic drive systems. (10 Marks)
- b. Describe the various types of drive systems for Robots. (10 Marks)

OR

- 4 a. What are tactile sensors? Describe the various transduction methods. (10 Marks)
- b. With a neat block diagram, explain functions of machine vision. (10 Marks)

Module-3

- 5 a. Define End Effectors. Explain different types. (10 Marks)
- b. Explain the consideration and check list to be adopted in selection of Grippers. (10 Marks)

OR

- 6 a. Explain the components of pneumatic force control. (10 Marks)
- b. Explain the advantages and disadvantages of all types of Grippers. (10 Marks)

Module-4

- 7 a. Explain the different types of Automation Systems. (10 Marks)
- b. Briefly explain different controllers used in Industrial Automation. (10 Marks)

OR

- 8 a. Explain the safety in Robotics Systems and explain three levels of safety. (10 Marks)
- b. Explain the difference between open loop and closed loop control system with examples. (10 Marks)

Module-5

- 9 a. Explain the design considerations in Material Handling. (10 Marks)
- b. Explain the various technologies involved in automatic identification and data capture. (10 Marks)

OR

- 10 a. Explain various types of Material Handling Equipments. (10 Marks)
- b. Explain the following: (i) Pick and place operation (ii) Palletizing and Related operations (10 Marks)

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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.