

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.