

# CBCS SCHEME

15ME563



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## Fifth Semester B.E. Degree Examination, Jan./Feb. 2021 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. A major automobile industry involved in the manufacture of 4-wheelers, plans for the automation. Suggest about the ten automation strategies. (08 Marks)
- b. Briefly explain automated manufacturing system with its components and sketches. (08 Marks)

OR

- 2 a. Explain the types of FMS systems. (08 Marks)
- b. Explain the advantages and benefits of FMS. (08 Marks)

### Module-2

- 3 a. Classify the Robots, based on their physical configuration with sketch, joints used, work volume covered. (12 Marks)
- b. With respect to robot define the following:
  - i) Degrees of freedom
  - ii) Work volume. (04 Marks)

OR

- 4 a. What are the 3 types of drives used in Robot? Explain with their relative advantages and disadvantages. (10 Marks)
- b. With respect to robot define the following:
  - i) Special resolution
  - ii) Repeatability
  - iii) Accuracy. (06 Marks)

### Module-3

- 5 a. What is block diagram approach? Explain with basic elements. (08 Marks)
- b. What are the functions of controllers in automation and robotics? Briefly explain any 3 types of controllers. (08 Marks)

OR

- 6 a. How potentiometer and encoders are used in automation system? Explain the concept of these two. (08 Marks)
- b. Explain briefly different actuators or drives used in automation system. (08 Marks)

### Module-4

- 7 a. Explain major uses of sensors. (08 Marks)
- b. Explain the types of sensors used in Robotics. (08 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.

OR

- 8 Explain the functions of each parts of Machine Vision System. (16 Marks)

**Module-5**

- 9 a. Explain briefly the areas of present and future robots where technology progress with respect to robot is taking place. (08 Marks)
- b. Write a note on:
- Robot Mechanical Design features
  - Telepresence and related technology. (08 Marks)

OR

- 10 a. What are the areas of AI presently research is taking place? Explain briefly. (08 Marks)
- b. Discuss few LISP commands and atoms used in programming. (08 Marks)

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