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15ME563

## Fifth Semester B.E. Degree Examination, July/August 2022 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. Define automation. Explain the types of automation. (08 Marks)  
b. List and explain automation principle and strategies. (08 Marks)

OR

- 2 a. Explain basic components of FMS. (08 Marks)  
b. What is FMS? List and explain layouts of FMS. (08 Marks)

### Module-2

- 3 a. Define Robot. With a neat sketch explain any two configurations of robots. (10 Marks)  
b. Explain the manual and lead through programming in robot. (06 Marks)

OR

- 4 a. What are the technical features involved in the robots? (08 Marks)  
b. With a neat sketch, explain the end effectors. (08 Marks)

### Module-3

- 5 a. What do you mean by control system? Explain with block diagram, the types of controllers. (08 Marks)  
b. Explain with block diagram open loop and closed loop control system. (08 Marks)

OR

- 6 Explain: i) Potentiometer ii) Encoders. (16 Marks)

### Module-4

- 7 a. Explain the types of robotic sensors. (08 Marks)  
b. Explain in brief about robot sensing. (08 Marks)

OR

- 8 a. Explain with a block diagram, the different task performed in machine vision system. (08 Marks)  
b. List out the applications of robots in machine vision application. (08 Marks)

### Module-5

- 9 a. Explain with flow chart means-ends analysis. (08 Marks)  
b. List out the procedure followed in graph search technique. (08 Marks)

OR

- 10 a. What do you mean by artificial intelligence? Differentiate with programming without AI and programming with AI. What are the goals adopted in AI? (08 Marks)  
b. List and explain the application of AI. Differentiate between speech and voice recognition. (08 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.