

# CBCS Scheme



15ME563

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## Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018 Automation and Robotics

Time: 3 hrs.

Max. Marks: 80

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

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.

### Module-1

- 1 a. Define automation. Explain the types of automation. (10 Marks)  
b. List and explain the automation strategies. (06 Marks)

OR

- 2 a. List and explain the reasons for automation. (10 Marks)  
b. What is FMS? List the benefits of FMS. (06 Marks)

### Module-2

- 3 a. Define Robot. Explain the robot anatomy. (06 Marks)  
b. List the configurations of a robot. Explain any two with sketches. (10 Marks)

OR

- 4 a. With a suitable sketches, briefly explain any two end effectors. (08 Marks)  
b. Explain with sketches the types of joints used in robots. (08 Marks)

### Module-3

- 5 a. Explain the basic concepts of control systems. (04 Marks)  
b. What is block diagram? Explain its basic elements. (04 Marks)  
c. List the types of controllers. Explain ON-OFF controller. (08 Marks)

OR

- 6 a. Explain different position sensors used in robots. (08 Marks)  
b. Explain hydraulic and pneumatic actuators. (08 Marks)

### Module-4

- 7 a. What are tactile sensors? Explain any two type of tactile sensors. (10 Marks)  
b. Explain proximity and range sensors. (06 Marks)

OR

- 8 a. Explain sensing and digitizing image data related to machine vision system. (08 Marks)  
b. Explain image processing and analysis. (08 Marks)

### Module-5

- 9 Explain : (i) Mechanical design features. (16 Marks)  
(ii) Telepresence and related technologies.

OR

- 10 a. What is artificial intelligence? Explain the goals of artificial intelligence. (06 Marks)  
b. Explain artificial intelligence techniques. (10 Marks)

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