

17ME563

Fifth Semester B.E. Degree Examination, Aug./Sept.2020 Automation and Robotics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- a. Define Automation. What do you mean by Error detection and Error recovery in an automated system? (10 Marks)
 - b. Write an explanatory note on:
 - i) Digital to analog converters
 - ii) Hardware components for automation.

(10 Marks)

OR

- 2 a. Explain with a neat sketch Feed forward control. (06 Marks)
 - b. What is ADC? Explain three phases in ADC.

(06 Marks)

c. Discuss the input/output devices for discrete data.

(08 Marks)

Module-2

- 3 a. What is Automated Production Line? Explain three configurations used in APL with figures.
 (10 Marks)
 - b. What is Storage buffers? Mention any four reasons why storage buffers are used in APL.

 (10 Marks)

OR

- 4 a. Discuss the problem areas in analysis and design of automated production lines. (08 Marks)
 - b. Write short note on the following:
 - i) Automatic Identification Methods
 - ii) Barcode Technology.

(12 Marks)

Module-3

- a. With neat sketches explain the cylindrical and Jointed-Arm robot configurations. (10 Marks)
 - o. Giving suitable examples, explain Industrial applications of Robot.

(10 Marks)

OR

6 a. Write an explanatory note on various generations of robots.

(08 Marks)

- b. Write short note on:
 - i) End effectors
 - ii) Sensors in robotics
 - iii) Robot Accuracy and Repeatability.

(12 Marks)

7 a. Explain positions orientations and frames with respect to special descrip	ptions. (08 Marks)
 a. Explain positions orientations and frames with respect to special descriptions. b. With the help of a suitable example, explain the operators: i) Translations 	
ii) Rotations iii) Transformations.	(12 Marks)
OR 8 a. Clearly explain with neat sketches the manipulator kinematics.	(12 Marks)
b. Write an explanatory note on actuator space and joint space.	(08 Marks)
Module-5	
9 a. Explain clearly the levels of Robot programming.b. Discuss requirements of robot programming language.	(10 Marks) (10 Marks)
OR	
Write short note on the following: a. Off-line programming system	2
b. Problems in robot programming languages	
c. Issues in OLP systemsd. Sub tasks in OLP systems.	(20 Marks)

2 of 2	