CBCS SCHEME

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21ME71

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026
Automation and Robotics

Time: 3 hrs. Max. Marks: 100

Note: *Answer any 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. Explain the basic elements of automated system with block diagram. (10 Marks)

b. With block diagram, explain the difference between open-loop system and closed-loop control system. (10 Marks)

OR

2 a. Explain the Error Detection and Recovery in an automated system. (10 Marks)

b. Explain the five levels of automation in control in manufacturing with block diagram. (10 Marks)

Module-2

3 a. Explain the fundamentals of Automated production line. (10 Marks)

b. Explain the Application of Automated production line. (10 Marks)

OR

4 a. Explain the fundamental of Automated Assembly System. (10 Marks)

b. Explain the Quantitative analysis of Assembly system. (10 Marks)

Module-3

5 a. Explain the five sensors in Robotics. (10 Marks)

b. Explain the robot accuracy and Repeatability. (10 Marks)

OR

6 a. With neat block diagram, explain the five common body and arm robot configuration. (10 Marks)

b. With neat sketch, explain the five types of joints commonly used in industrial robot. (10 Marks)

Module-4

7 a. Explain the fundamental difference between AC and DC type motors with diagram. (10 Marks)

b. Write the comparison between Hydraulic Pneumatic and Electric actuating system. (10 Marks)

OR

8 a. With example, explain Homogeneous transformation of robot for rotation and translation. (10 Marks)

b. Briefly explain forward and inverse kinematic of a robot. (10 Marks)

Module-5

9 a. List the levels of Robot Programming and explain Offline Robot Programming. (10 Marks)

b. Write the comparison between Powered Lead through and Manual Lead through programming. (10 Marks)

OR

10 a. Explain the World Coordinate System with neat diagram. (10 Marks)

b. Write a note on Robot Programming Language. (10 Marks)

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