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CBCS SCHEME

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21ME71

Seventh Semester B.E./B.Tech. Degree Examination, June/July 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. Draw a neat block diagram of levels of Automation, showing its elements and explain their functions. **(10 Marks)**

b. Enumerate the error detection and recovery in an automated system. **(10 Marks)**

OR

2 a. What is the difference between a continuous variable and a discrete variable? **(10 Marks)**

b. Briefly describe the three phases of the analog to digital conversion. **(10 Marks)**

Module-2

3 a. With brief explanation state the three basic control functions that must be accomplished to operate an automated production line with storage buffer between the two stages. **(10 Marks)**

b. Enumerate the parts selector and orientation briefly. **(10 Marks)**

OR

4 a. Draw a neat diagram of any two fundamentals of automated assembly systems showing its elements and explain their functions. **(10 Marks)**

b. Name the categories of AIDC technologies. Enumerate briefly. **(10 Marks)**

Module-3

5 a. Name the four categories of a Robot Control System. Enumerate briefly. **(10 Marks)**

b. What is an Industrial Robot? Explain common robot configuration with a neat diagram. **(10 Marks)**

OR

6 a. Enumerate the wrist configuration of a robot with neat sketch. **(10 Marks)**

b. What are the characteristics of Robot Applications? **(10 Marks)**

Module-4

7 a. Explain the general categories of Robotic sensors and briefly explain any one of them. **(10 Marks)**

b. Explain the drives and control of hydraulic system for a robot arm. **(10 Marks)**

OR

8 a. Explain the manipulator of six possible lower pair joints of link description. **(10 Marks)**

b. Explain the proximity sensors with a neat diagram. **(10 Marks)**

Module-5

9 a. Explain the 3 levels of Robot Programming. **(10 Marks)**

b. Explain the requirement of Robot Programming Language. **(10 Marks)**

OR

10 a. Explain the following of central issues in OLP system :
i) User interface ii) Kinematic emulation iii) Path-Planning emulation **(10 Marks)**

b. List down and explain briefly the various automating subtasks in an off-line programming system. **(10 Marks)**

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