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18MR651

Sixth Semester B.E. Degree Examination, Jan./Feb. 2023
Automation and Industrial Robotics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

1 a. Define Automation. Explain basic elements of Automated System, with block diagram. **(10 Marks)**
   b. What is the difference between a Closed loop control system and Open loop control system? **(10 Marks)**

OR

2 a. Explain levels of Automation. **(10 Marks)**
   b. What is a Sensor? Differentiate between analog and discrete sensor, passive and active sensor. **(10 Marks)**

Module-2

3 a. With neat diagram, explain Walking beam mechanism. **(10 Marks)**
   b. What is Storage Buffer? Why Storage buffers are required in automated production lines? **(10 Marks)**

OR

4 a. Explain different components of parts delivery system. **(10 Marks)**
   b. List and briefly explain the AIDC technologies. **(10 Marks)**

Module-3

5 a. With sketches, explain different types of joints used in robots. **(10 Marks)**
   b. Which are Robot Configurations? Explain Cartesians Coordinate robot with sketch. **(10 Marks)**

OR

6 a. List and explain application of Industrial Robots. **(10 Marks)**
   b. Briefly explain Asimov's laws of Robotics and define Dynamic Stabilization of Robot. **(10 Marks)**

Module-4

7 a. Write a note on Description of a position and description of an Orientation. **(10 Marks)**
   b. What is Mapping? Write a note on mappings involving translated frames. **(10 Marks)**

OR

8 a. Write a note on Actuator space, Joint space and Cartesian space. **(10 Marks)**
   b. Explain the Link - Frame attachment procedure. **(10 Marks)**

Module-5

9 a. Explain the levels of Robot Programming, with example. **(10 Marks)**
   b. How do you classify Robot Programming Languages? Explain Task – Level Programming Languages. **(10 Marks)**

OR

10 a. List out the requirements of a Robot Programming Language and explain briefly. **(10 Marks)**
    b. What are the central issues in OLP system? Briefly explain. **(10 Marks)**

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