CBCS SCHEME

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18MR651

Sixth Semester B.E. Degree Examination, Dec.2023/Jan.2024
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 the types of automation with a sketch. **(10 Marks)**

b. Differentiate between process industries and discrete manufacturing industries. **(10 Marks)**

OR

2 a. What is control system? Explain the two types of control systems used in automated systems. **(10 Marks)**

b. With a neat sketch, explain the working of a ADC (Analog to Digital Converters). **(10 Marks)**

Module-2

3 a. Sketch and explain rotary and segmented in line configuration of an automated production line. **(10 Marks)**

b. How automated assembly systems are classified? Explain Carousel assembly system. **(10 Marks)**

OR

4 a. Explain briefly about linear bar codes and two dimensional barcodes as AIDC technology. **(10 Marks)**

b. Write a note on ;

(i) Bar code reader

(ii) Bar code printers **(10 Marks)**

Module-3

5 a. Define a robot. Explain the various components of a robot. **(10 Marks)**

b. Explain the different types of robotic grippers. **(10 Marks)**

OR

6 a. Write a note on the following :

(i) Robot accuracy

(ii) Robot repeatability **(10 Marks)**

b. Briefly explain about the types of sensors used in robots. **(10 Marks)**

Module-4

7 a. Explain with an example the translational and rotational operators used for robots. **(10 Marks)**

b. Explain briefly about Euler parameters for representation of robot orientation. **(10 Marks)**

OR

8		With a neat sketch, explain the following related to robot manipulator kinematics:	
	a.	Link description	
	b.	Link Connection description.	(20 Marks)

Module-5

9	a.	State explain the three categories of explicit robot programming languages.	(10 Marks)
	b.	Explain briefly about off line programming system used for a robot.	(10 Marks)

OR

10	a.	Explain the problems peculiar to robot programming languages.	(10 Marks)
	b.	State and explain briefly the requirements of a robot programming language.	(10 Marks)

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