CBCS SCHEME

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17ME563

Fifth Semester B.E. Degree Examination, July/August 2021
Automation and Robotics

Time: 3 hrs. Max. Marks: 100

Note: ***Answer any FIVE full questions.***

C.M.R. INSTITUTE OF TECHNOLOGY BANGALORE - 37 CMR

1	a.	Define automation. Explain the basic elements of an automated system.	(08 Marks)
	b.	Explain the levels of automation.	(08 Marks)
	c.	What are the differences between a continuous variable and a discrete variable?	(04 Marks)
2	a.	Describe the steps in analog-to-digital conversion process with a block diagram.	(08 Marks)
	b.	Explain the sensors and actuators used in automation system.	(08 Marks)
	c.	Write a short note on input / output devices for discrete data.	(04 Marks)
3	a.	What is an automated production line? List the application of automated production lines.	(06 Marks)
	b.	Explain the part delivery systems used in automated assembly system.	(07 Marks)
	c.	Explain the system configurations in automated assembly systems.	(07 Marks)
4	a.	What is automatic identification and data capture technique?	(04 Marks)
	b.	Explain bar code technology used for AIDC with its types.	(08 Marks)
	c.	Write a short note on : (i) Magnetic strip (ii) Optical character recognition.	(08 Marks)
5	a.	Explain with neat sketches, the robot configurations.	(12 Marks)
	b.	Write a brief note on End Effectors in robots.	(08 Marks)
6	a.	Explain the briefly accuracy and repeatability as applied to robots.	(06 Marks)
	b.	Explain the ASIMOV's laws of robot.	(06 Marks)
	c.	Explain briefly different types of robots.	(08 Marks)
7	a.	List and explain the spatial descriptions of a robot.	(10 Marks)
	b.	Write a note on the following operators with matrix representation: (i) Translations (ii) Rotations. (iii) Transformations.	(10 Marks)
8	a.	Explain the transformation of free vectors.	(04 Marks)
	b.	Explain the link descriptions with two parameters.	(06 Marks)
	c.	Explain the methods of mapping for changing description frame to frame.	(10 Marks)
9	a.	Explain the levels of robot programming.	(10 Marks)
	b.	What are the requirements of robot programming language? Explain briefly.	(10 Marks)
10	a.	Explain the central issues in Off-Line Programming (OLP) system.	(10 Marks)
	b.	List and explain the automating subtask in OLP system.	(10 Marks)

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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.

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