O.P.Code: 23ME0349 | R23 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year II Semester Regular Examinations April-2026
AUTOMATION AND ROBOTICS
(Civil Engineering)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions **10 x 2 = 20** Marks)

1	a	State the difference between controller and control system.	CO1	L1	2M
	b	What is automatic control and also mention its merits and demerits?	CO1	L1	2M
	c	State the reasons to include buffer storage in production line.	CO2	L1	2M
	d	Write a short note on line balancing.	CO2	L3	2M
	e	Define industrial Robot.	CO3	L1	2M
	f	Name the commonly used robot configurations.	CO3	L1	2M
	g	Why kinematic study of the robot is important?	CO4	L1	2M
	h	What is translation transformation.	CO4	L1	2M
	i	What are the objectives of robot programming?	CO5	L1	2M
	j	Write any four common software packages in robot programming.	CO5	L3	2M

PART-B

(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	What is automatic control and also mention its merits and demerits?	CO1	L1	5M
	b	Explain types of production systems in manufacturing.	CO1	L2	5M
		OR			
3	a	Describe the role of sensors, actuators, and controllers in automation.	CO1	L2	5M
	b	Elucidate the applications of different automation types in manufacturing industries.	CO1	L2	5M

UNIT-II

4	a	Discuss the importance role of automated flow line.	CO2	L2	5M
	b	Explain briefly the methods used for transferring parts.	CO2	L2	5M
		OR			
5	a	Classify the various types of automated flow lines and explain any one in detail.	CO2	L2	5M
	b	Write the benefits and drawbacks of buffer storage.	CO2	L3	5M

UNIT-III

6	a	Classify robot configurations with neat sketches.	CO3	L2	5M
	b	Illustrate the functional line diagram of an industrial robot with neat sketch.	CO3	L3	
		OR			
7	a	Categorize the different types of robot joints with sketch.	CO3	L4	
	b	Write short notes on application of Cartesian and cylindrical robots.	CO3	L3	

UNIT-IV

8	a	Describe Denavit-Hartenberg (DH) parameters and their significance.	CO4	L2	
	b	Explain the manipulators kinematics with suitable example.	CO4	L2	
		OR			
9	a	Compare Lagrange-Euler and Newton Eluer manipulators formulation.	CO4	L4	
	b	Discuss the importance of velocity and acceleration in robotic manipulator.	CO4	L2	

UNIT-V

10	a	Define Robot program and explain the purpose of various methods used in robots programming	CO5	L1	
	b	Illustrate the installation steps of robot programming.	CO5	L3	
		OR			
11	a	Differentiate between online and offline robot programming methods.	CO5	L4	
	b	Discuss the importance of common software packages used for robot Programming.	CO5	L2	

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