Q.P. Code: 18ME0337

R18

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech IV Year I Semester Regular Examinations February-2022

MECHATRONICS & ROBOTICS

(Mechanical Engineering)

Time: 3 hours | Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	a	List out Functions of thermocouple.	L1	2M
	b	What is the importance of protection scheme?	L1	2M
	c	What are the functions of robots?	L1	2M
	d	Define joint coordinates.	L1	2M
	e	List the programming languages in robotics.	L1	2M

PART-B

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

UNIT-I

2	a	Define control system. Explain about control systems.	L1	5M
	b	Explain the open loop control system with neat sketch in detail.	L3	5M
		OR		
3	a	What is evaluation of mechatronics?	L1	5M
	b	List the various benefits and applications of Mechatronics.	L3	5M

UNIT-II

4	a	Elaborate components of an hydraulic system with neat sketch.	L3	5M
	b	Describe the basic components of pneumatic system with neat diagram.	L2	5M
		OR		
5	a	What is coupling? Classify the couplings in detail.	L2	5M
	b	What is the function of protection scheme? Describe working principle of circuit breaker with neat sketch.	L3	5M

UNIT-III

6	a	What are the supporting elements include in microcontrollers with block diagram.	L3	5M
	b	How does micro controller work?	L2	5M
		OR		
7	a	Define robot. With neat sketch, explain the robot anatomy.	L3	6M
	b	List the different types of joints used in robots with neat sketch.	L3	4M

UNIT-IV

8		With help of a suitable example, explain the operators: (i) Translation (ii) Rotation (iii) Transformation	L2	10M
		OR		
9		Derive forward and reverse transformation of 2-Degree of freedom arm.	L4	10M

UNIT-V

10		Classify various programming languages used computer controlled robots.	L2	10M
		OR		
11		What is path planning? Explain the need for path planning.	L1	10M

END