Reg. No.												

Question Paper Code	12320

B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

Fifth Semester

Mechanical Engineering

(Common to Seventh Semester - Production Engineering)

20MEPC502 - ROBOTICS

(Regulations2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	List out the factors to be considered while selecting the robot.	*2,K1,CO1*
2.	Classify the Joint Notations.	*2,K2,CO1*
3.	Comparison between DC motors and stepper motors.	*2,K2,CO2*
4.	Give some examples of tool as robot end effector.	*2,K2,CO2*
5.	Identify the two types of position encoders.	*2,K2,CO3*
6.	Mention the different image processing techniques.	*2,K1,CO3*
7.	Difference between forward and reverse kinematics.	*2,K2,CO4*
8.	Define VAL.	*2,K1,CO4*
9.	Define EUAC method.	*2,K1,CO5*
10.	Differentiate palletizing and depalletizing.	*2,K2,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the four basic robot configurations classified according to the coordinate.	*13,K2,CO1*
		OR	
	b)	Explain the main Robot anatomy with neat sketch.	*13,K2,CO1*
12.	a)	Discuss about the salient features of stepper and servo motor with limitations.	*13,K2,CO2*
		OR	
	b)	Classify five types of grippers in detail with a neat sketch.	*13,K2,CO2*
13.	a)	Summarize the working principle of any two of the Range sensing technique.	*13,K2,CO3*
		OR	
	b)	Elaborate in detail about the different stages of machine vision system.	*13,K2,CO3*

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

14. a) Demonstrate the forward and reverse kinematics transformation of RR manipulator with two degree of freedom. *13,K2,CO4*

OR

b) Discuss on the capabilities and limitations of lead-through programming methods. *13,K2,CO4*

15. a) Classify in detail about the economic analysis of robot. *13,K2,CO5*

OR

b) Discuss about the applications of robot in a manufacturing industry with a neat sketch. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) Sketch and Explain the joint notation scheme. *15,K2,CO6*

OR

b) Illustrate the design and selection of various grippers in robotics. *15,K2,CO6*