KUMARAGURU
college of technology
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B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2023

(Regulation 2018)

Fifth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U18EIE0004: Robotics and Flexible Automation

COURSE OUTCOMES

CO1: Describe the major concepts, components and applications of robotics.
CO2: Analyse the transformation in different types of robots.
CO3: Apply the fundamnental concepts of robotics path planning and work space.
CO4: Describe the evaluation and work strategies.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Sketch the components of a robot system.	CO1	[K2]
2.	Define the term robot end effectors and give examples.	CO1	[K1]
3.	What are the characteristics of SCARA robot?	CO2	[K2]
4.	State the importance of homogeneous transformation.	CO2	[K2]
5.	Outline the important features of SCARA robot	CO3	[K2]
6.	Highlight few advantages of Pick and place robots	CO3	[K2]
7.	List the importance of vision sensor.	CO4	[K1]
8.	Summarize the importance of data acquisition in flexible automation	CO4	[K2]
9.	Write on robot application for arc welding	CO5	[K2]
10.	What are the social aspects of robotics?	CO5	[K1]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.		Classify different types of drives of actuation of robot joints with neat diagram.	16	CO1	[K2]
12.		Develop the direct kinematics solution of a robot with two degrees of freedom.	16	CO2	[K3]
13.	a)	Write a simple program for pick and place robot.	6	CO3	[K4]
	b)	Survey the steps in trajectory planning.	10	CO3	[K4]

14.	a)	Distinguish Flexible Automation and Robotic technology.	8	CO4	[K4]
	b)	Analyze the flexibility of robotization plan.	8	CO4	[K4]

15. Summarize on General considerations in robot material handling and robot in material transfer applications. 16 CO5 [K2]

16. Explain the different types of configuration of industrial robots with neat sketches. 16 CO1 [K5]

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