RollNo. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APRIL/MAY 2025

ELECTRONICS AND COMMUNICATION ENGINEERING
EC5078 - ROBOTICS
(Regulation 2019)

Time: 3 hrs Max.Marks: 100

CO1	To introduce the relevance of this course to the existing technology through demonstrations, case studies, simulations, contributions of scientist, national/international policies with a futuristic vision along with socio-economic impact and issues.
CO2	To introduce the electronics and software aspects in the design of robots
CO3	To bring out the different languages for programming robot
CO4	To bring out the analysis and design procedures for synchronous and asynchronous Sequential circuits
CO5	To specify robot requirements in the industry
CO6	To introduce latest state of the art robots

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2 = 20 Marks)
(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
1	List the types of industrial robots.	2	1	LO
2	Define a robot.	2	1	LO
3	Write about the End Effector Camera Sensor.	2	2	LO
4	Outline 'Precision of movement'.	2	2	LO
5	What are Interlocks in Robotics?	2	3	LO
6	What are the advantages of ROS over other platform?	2	3	LO
7	Write the steps to design robot basic cell.	2	4	LO
8	What are the key components of robot cell.	2	4	LO
9	List the specific features of 'space robotics systems'.	2	5	LO
10	What is autonomous mobile robot?	2	5	LO

PART- B (5x 13 = 65 Marks)

Q.No.	Questions	Marks	CO	BL
11 (a)	Discuss in detail about Components and Various Generations of industrial Robots.	13	1	LO
	OR			
11 (b)	Explain the social and economic issues in industrial Robots with examples.	13	1	LO
12 (a)	Discuss in detail about Degrees of Freedom and Classifications of Robots.	13	2	LO
	OR			
12 (b)	Write about Robot Control through Vision Sensors & Robot Vision Locating Position.	13	2	LO
13 (a)	What are the two common methods of robot programming and explain it briefly.	13	3	IO
	OR			
13 (b)	Explain the characteristics of Robot level languages and characteristic of task level languages.	13	3	IO
14 (a)	Explain Robot Cell Design, Control and Remote Center compliance.	13	4	IO
	OR			
14 (b)	Illustrate Safety in Robotics with example.	13	4	IO
15 (a)	Explain about Advanced Robotics in aerobots & Next Generation Robots in detail.	13	5	LO
	OR			
15 (b)	Explain about Telepresence Robot & under water Robots in detail.	13	5	LO

PART- C (1x 15=15 Marks)

Q.No.	Questions	Marks	CO	BL
16.	Write a VAL program for pick and place operation on the conveyor system. It consists of two conveyors running parallel with centre distance of 600mm at same level. An industrial robot is fixed centrally between the conveyors. The robot is used to transfer work pieces from conveyer 1 to 2 at a constant speed. Draw a schematic view of the system. Assume all necessary dimension.	15	3	HO