Model Question Paper -1 with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

Fourth Semester B.E. Degree Examination
ROBOTICS AND AUTOMATION

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02. M – Marks, L – Bloom's Level, C – Course Outcomes

		Module -1	*Bloom's Taxonomy Level	Marks	CO
Q.01	a	Define Automation? Explain different types of Automation.	2	10	01
	b	Briefly explain advanced automation functions.	2	10	01
		OR			
Q.02	a	What is an industrial Robot. Explain common Robot configuration with sketch.	2	12	01
	b	Explain Asimov's laws of robotics.	2	08	01
		Module-2			
Q. 03	a	With neat sketch explain anatomy of robot.	2	10	01
	b	What is robot arm Dynamics? Write about forward and inverse dynamics?	2	10	02
		OR			
Q.04	a	With neat sketch explain robot control system.	2	10	01
	b	Describe any four controllers used in Robotic systems mentioning their respective transfer function.	2	10	02
		Module-3			
Q. 05	a	Describe the types of end effector & gripper mechanisms with simple sketches.	2	10	02
	b	Summarize the tools used as end effectors in robot applications.	2	05	01
	c	What are the differences between end effectors and grippers.	2	05	02
		OR			
Q. 06	a	Define sensors? What are the desirable features for sensor. Explain briefly.	2	10	02
	b	With neat sketch explain working principle of inductive proximity sensor.	2	6	02
	c	Briefly classify robot sensor.	2	4	03

Module-4					
Q. 07	a	What are the critical information required for task programming of Robot.	2	10	O3
	b	Define Robot programming briefly explain any three typers programming methods.	2	10	O3
OR					
Q. 08	a	What are the limitations of on-line and off-line robot programming	2	10	O3
	b	What are the requirements of good robot programming language. Explain briefly.	2	10	O3
Module-5					
Q. 09	a	Explain in detail about Automated Guided Vehicles in material handling system	2	15	O4
	b	Classify the different types of material handling operation.	2	05	O4
OR					
Q. 10	a	What are the important technical factors that should be considered in the choice of material handling equipment? Briefly discuss	2	10	O4
	b	What ASRS? Explain different types of ASRS.	2	10	O4

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.

CO s and POs

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
CO1	Moderate				Moderate							
CO2	Moderate	Moderate						low				
CO3	Moderate		Moderate		Moderate							
CO4					Low	Moderate						

Model Question Paper -2 with effect from 2022-23 (CBCS Scheme)

USN | | | | | | | | | | |

Fourth Semester B.E. Degree Examination
ROBOTICS AND AUTOMATION

TIME: 03 Hours **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.
02. M – Marks, L – Bloom's Level, C – Course Outcomes

		Module -1	*Bloom's Taxonomy Level	Marks	CO
Q.01	a	What is automation? Explain basic elements of automation system.	2	10	01
	b	Explain 5 levels of automation systems.	2	6	01
	c	What are the advantages and the limitation of automation system.	2	4	01
		OR			
Q.02	a	Define Robot. What are the advantage and application of industrial Robot.	2	8	01
	b	Explain Forward kinematics of manipulators with two degrees of freedom in LL Robot, RR Robot and TL Robot?	2	12	01
		Module-2			
Q. 03	a	Define work volume, Accuracy and repeatability of robot.	2	10	02
	b	What is an end effector? With neat sketch explain any 3 types of end effectors.	2	10	02
		OR			
Q.04	a	List different types of controllers employed for robot control. Explain any two of them.	2	10	02
	b	Explain the advantages of the following controllers: (a) PD Controller (b) PID Controller	2	10	02
		Module-3			
Q. 05	a	With neat sketch explain any three mechanical grippers.	2	10	02
	b	Discuss in detail the selection and design consideration of grippers in robots.	2	10	02
		OR			
Q. 06	a	With neat sketch explain construction and working principle of HALL – Effect sensor.	2	10	03
	b	With neat sketch explain ultrasonic proximity sensor and optical proximity sensor.	2	10	03

Module-4					
Q. 07	a	Explain lead - through programming methods in detail.	2	10	03
	b	Explain different ways by which robot teaching can be performed.	2	10	03
OR					
Q. 08	a	What are the application and limitations of lead-through methods.	2	10	03
	b	Explain manual and powered lead-through methods of robot programming.	2	10	03
Module-5					
Q. 09	a	Define material handling system and explain Principles of Material Handling.	2	10	04
	b	List and explain factors to be considered for to design material handling system.	2	10	04
OR					
Q. 10	a	Discuss various types of material handling equipment	2	10	04
	b	Explain different methods for automatic identification and data capture.	2	10	04

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.

CO s and POs

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
CO1	Moderate				Moderate							
CO2	Moderate	Moderate						low				
CO3	Moderate		Moderate		Moderate							
CO4					Low	Moderate						