Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – MAY 2025

Date: 23-05-2025 **Time:** 01:00 pm –04:00 pm

School: SOE/SOCSE	**Program:** B. Tech-MEC/ISE	
Course Code: MEC3065	**Course Name:** Introduction to Robotics and Automation	
Semester: IV	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**
Marks	**24**	**24**	**26**	**26**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	What is robotics? Write two applications of robots.	**2 Marks**	**L1**	**CO2**
2.	Write down any four types of grippers used in Automated Industry.	**2 Marks**	**L1**	**CO2**
3.	What are the different uses of sensors in robotics?	**2 Marks**	**L1**	**CO2**
4.	Write the functions of Robotic Vision System.	**2 Marks**	**L1**	**CO2**
5.	Write 2 applications of mobility automation.	**2 Marks**	**L1**	**CO3**
6.	Explain the USA principle used in Automation.	**2 Marks**	**L1**	**CO3**
7.	Explain any 2 tools of automation.	**2 Marks**	**L1**	**CO3**
8.	Explain 2 categories of flexible manufacturing system.	**2 Marks**	**L1**	**CO4**
9.	Explain System flexibilities.	**2 Marks**	**L1**	**CO4**
10.	Write any 3 functions of computer control system of flexible manufacturing system.	**2 Marks**	**L1**	**CO4**

Part B

Answer the Questions. **Total Marks 80M**

11.	**a.**	List all the robots configurations and explain about Cartesian configuration with neat sketch and applications for the same. [10M]	**10 Marks**	**L2**	**CO 1**
	b.	List all types of grippers used in robots and explain the working of any four grippers. [10M]	**10 Marks**	**L2**	**CO 1**
		Or			
12.	**a.**	What is work volume with respect to robots. List and explain what are the factors which affect the size and shape of work volume for a given robot. [10M]	**10 Marks**	**L2**	**CO 1**
	b.	Explain about all the manipulator joints used in robots with proper sketch along with notations used for representation. [10M]	**10 Marks**	**L2**	**CO 1**
13.	**a.**	Explain in detail about all the functions of robotic vision system. [10M]	**10 Marks**	**L2**	**CO 2**
	b.	A type of proximity sensor which is used to detect metallic objects and detect magnetic losses due to eddy current that are generated on a conductive surface by an external magnetic field. Identify the type of sensor and explain with suitable diagram. [10M]	**10 Marks**	**L2**	**CO 2**
		Or			
14.	**a.**	A Robotic engineer is planning to measure distance between object and robot by using sound as medium, suggest him what sensor should he use and explain the working principle for the same with neat sketch. [10M]	**10 Marks**	**L2**	**CO 2**
	b.	Along with neat sketch, explain the working of robotic vision system or machine vision system with all the components of it. [10M]	**10 Marks**	**L2**	**CO 2**
15.		List all the types of Automation and explain in detail any two of the Automations with neat diagrams.	**20 Marks**	**L2**	**CO 3**
		Or			
16.		Explain how automation has evolved over the years. [10M] Also explain the applications of automation in various industries along with 3 advantages of it. [10M]	**20 Marks**	**L2**	**CO 3**
17.		Explain all types of Flexible Manufacturing Systems with neat Sketch. [15M] Write any 5 applications of flexible manufacturing system. [5M]	**20 Marks**	**L2**	**CO 4**
		Or			
18.		With suitable diagrams, List and Explain different types of flexible manufacturing system layouts.	**20 Marks**	**L2**	**CO 4**