U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E. **Semester: VII**

Branch: Mechanical Engineering **Duration: 3 hrs.**

Course Code: 22ME7PCMCT **Max Marks: 100**

Course: Mechatronics

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Define Mechatronics? and draw a neat diagram of a generalized measurement system showing its elements.	CO1	PO1	**06**
	b)	Describe the working of washing machine control System with a block diagram.	CO1	PO1	**10**
	c)	Differentiate between open loop and closed loop systems.	CO1	PO1	**04**
		OR			
2	a)	Define the terms (i) Calibration (ii) Measurement(iii) Error	CO1	PO1	**06**
	b)	Describe with a block diagram components of mechatronics system with example.	CO1	PO1	**08**
	c)	List the objectives and advantages of mechatronics systems.	CO1	PO2	**06**
		UNIT - II			
3	a)	Discuss the Static and Dynamic characteristic of Transducer.	CO2	PO1	**10**
	b)	Explain Eddy Current proximity sensors with a sketches	CO2	PO1	**10**
		OR			
4	a)	Describe the working of Hall effect sensor with neat sketches	CO2	PO1	**10**
	b)	Explain piezo electric and pyro electric sensors with a sketches	CO2	PO1	**10**
		UNIT - III			
5	a)	Define signal conditioning? what are the necessity for signal conditioning.	CO3	PO1	**06**
	b)	How operational amplifier is represented? What is meant by inverting and Non inverting op - amps.	CO3	PO1	**08**

		c)	Describe in detail the process of conversion of analog to digital signals.	*CO3*	*PO1*	**06**
			OR			
	6	a)	Describe with block diagram data acquisition system with example.	*CO3*	*PO1*	**10**
		b)	Explain different types of multiplexers.	*CO3*	*PO1*	**10**
			UNIT - IV			
	7	a)	With a block diagram explain the working PWM controller for DC motor	*CO4*	*PO1*	**10**
		b)	Discuss Working principle of TRIAC along with V-I characteristics	*CO4*	*PO1*	**10**
			OR			
	8	a)	Discuss Working principle of Thyristors along with V-I characteristics	*CO4*	*PO1*	**10**
		b)	What is the function and applications of SCR and TRIAC?	*CO4*	*PO1*	**10**
			UNIT - V			
	9	a)	Define Artificial intelligence and Explain AI significance in mechatronics.	*CO5*	*PO1*	**10**
		b)	Discuss the terms perception and cognition in AI	*CO5*	*PO1*	**10**
			OR			
	10	a	To realize the significance of artificial intelligence analysis any one mechatronic case studies in detail.	*CO5*	*PO2*	**10**
		b	Discuss the terms Reasoning and learning in AI.	*CO5*	*PO1*	**10**

****