U.S.N.										

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

Autonomous Institute Affiliated to VTU

January 2024 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Mechanical Engineering **Duration: 3 hrs.**
Course Code: 20ME7DCMCT **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.

			CO	PO	Marks
		UNIT - I			
1	a)	Explain Constituents of a mechatronics system with a block diagram.	*CO1*	*PO1*	**10**
	b)	Write about the Mechatronics approach in tool monitoring systems. And briefly explain steps followed in an indirect tool monitoring system.	*CO1*	*PO1*	**10**
		UNIT - II			
2	a)	Explain with an example the working of 6-bit binary weighted resister DAC.	*CO2*	*PO2*	**10**
	b)	Define the role of sensors and actuators in the context of MEMS.	*CO2*	*PO1*	**10**
		OR			
3	a)	Explain the following terminologies with an example i) Dead band / Dead time ii) Reproducibility / Repeatability iii) Resolution /Sensitivity iv) Range & Span	*CO2*	*PO1*	**08**
	b)	What is a relay? mention its applications. List Types of Relays.	*CO2*	*PO1*	**10**
	c)	What Makes Contactors Different from Relays	*CO2*	*PO1*	**02**
		UNIT - III			
4	a)	What is the principle of working of a DC Motor and list Advantages and Disadvantages of brushless DC motor?	*CO2*	*PO1*	**10**
	b)	What Is a Cam and Follower Mechanism?Explain different types of Cam Based on the Shape.	*CO2*	*PO1*	**10**
		UNIT - IV			
5	a)	With a neat Sketch explain sliding spool valve of hydraulic system.	*CO3*		**10**
	b)	Mention types of the directional control valve and tabulate their actuation methods using standard symbols.	*CO3*	*PO1*	**10**

			OR			
	6	a)	Sketch and explain the working of pilot operated check valve.	*CO3*	*PO1*	**10**
		b)	Draw a Schematic of a Package lifting system for LED TVs, Explain its working mechanism also draw its hydraulic circuit.	*CO4*	*PO1*	**10**
			UNIT - V			
	7	a)	Sketch and explain Basic Components of Pneumatic System.	*CO6*	*PO1*	**10**
		b)	Sketch and explain the construction and working of Air filter and water trap.	*CO6*	*PO1*	**10**

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