U.S.N.										

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

Autonomous Institute Affiliated to VTU

April 2024 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Electronics and Instrumentation Engineering **Duration: 3 hrs.**
Course Code: 23EI3PCSMT **Max Marks: 100**
Course: Sensors and Measurements Techniques

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)	Define the term "Measurement", and discuss the functional elements of a Measurement system.		*CO1*	*PO1*	**10**
	b)	Elucidate the various errors in the measurement with suitable example.		*CO1*	*PO1*	**06**
	c)	Differentiate between following: (i) Accuracy and Precision. (ii) Resolution and Threshold		*CO1*	*PO1*	**04**
			UNIT - II			
2	a)	Discuss the construction and operation of LVDT for the measurement of displacement.		*CO2*	*PO2*	**10**
	b)	Describe how strain gauge can be used for the pressure measurement.		*CO2*	*PO2*	**10**
			OR			
3	a)	Derive an expression for Hall effect and mention its application in the measurement system.		*CO2*	*PO2*	**10**
	b)	Describe the working principle of Piezoelectric effect, discuss how this can be used for the measurements.		*CO2*	*PO2*	**10**
			UNIT - III			
4	a)	Illustrate the working of fibre-optic interferometric microphone with suitable diagram.		*CO3*	*PO3*	**10**
	b)	Explain the working principle of Scintillation detector with suitable diagram.		*CO3*	*PO3*	**10**
			OR			

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	5	a)	Differentiate between humidity and moisture. Describe the working of Hygrometers.	*CO3*	*PO3*	**10**
		b)	Explain the working principle of Ionization detectors with suitable diagram.	*CO3*	*PO3*	**10**
			UNIT - IV			
	6	a)	Explain the characteristics and operational principles of RTD and Thermistor	*CO4*	*PO3*	**10**
		b)	Describe the significance of optical temperature sensors and explain Fluoroptic and Interferometric sensors in detail.	*CO4*	*PO3*	**10**
			UNIT - V			
	7	a)	Explain two-wire 4-20mA analog data transmission for coupling sensors to control and monitor devices in the process industry	*CO5*	*PO2*	**10**
		b)	Describe the Sources and coupling of transmitted noise. Explain how additive and multiplicative noise can be removed	*CO5*	*PO2*	**10**

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