U.S.N.										

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

Autonomous Institute Affiliated to VTU

October 2024 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Electronics and Instrumentation Engineering **Duration: 3 hrs.**
Course Code: 23EI4PCTNI **Max Marks: 100**
Course: Transducers and Instrumentation

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

		MODULE - I	CO	PO	Marks
1	a)	Define and differentiate accuracy and precision.	CO1	PO1	**05**
	b)	Illustrate with block diagram, the functional elements of an instrument system.	CO1	PO1	**10**
	c)	List the differences between active and passive sensors with example.	CO1	PO1	**05**
		MODULE - II			
2	a)	Show that flow rate is related to the induced emf in electromagnetic flow meter. Also, mention its advantages and applications.	CO2	PO2	**10**
	b)	Discuss the main features and interactions of the components in a Rotameter, specifically the tapered tube and the float, and how do they contribute to precise flow measurement?	CO2	PO2	**10**
		OR			
3	a)	Apply the design elements of an Orifice Plate Flow Meter to real-world circumstances to demonstrate its operating principles.	CO2	PO2	**10**
	b)	Apply the principles of energy conservation to arrive at Bernoulli's equation, taking into account the work done by pressure, gravitational forces, and the fluid element's kinetic energy.	CO2	PO2	**10**
		MODULE- III			
4	a)	Describe the operational principles of RTD and Thermistors.	CO3	PO2	**10**
	b)	List the different types of thermocouples and elucidate its characteristics.	CO3	PO2	**10**

			MODULE - IV			
	5	a)	Discuss the measuring principle of Bourdon tube pressure gauge for measuring pressure of a gas or liquid.	*CO4*	*PO2*	**10**
		b)	Describe with a neat sketch the working of McLeod Vacuum Gauge	*CO4*	*PO2*	**10**
			OR			
	6	a)	Mention the different types of elastic pressure gauges. Discuss the working of diaphragm-based pressure measurement	*CO4*	*PO2*	**10**
		b)	Depict and describe the application of a dead weight tester.	*CO4*	*PO2*	**10**
			MODULE - V			
	7	a)	Illustrate the IBM IoT conceptual framework for collecting data at remote locations into a database or data store. Identify the necessary services and processes for managing, acquiring, organizing, and analyzing the data.	*CO4*	*PO3*	**12**
		b)	Outline the step-by-step process for designing a cloud-based home automation system, including a framework that describes each component's function within the system.	*CO4*	*PO3*	**08**

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