U.S.N.										

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

Autonomous Institute Affiliated to VTU

June / July 2024 Semester End Make-Up Examinations

Programme: B.E. **Semester: III**
Branch: Medical Electronics Engineering **Duration: 3 hrs.**
Course Code: 23MD3PCBSM **Max Marks: 100**
Course: Biomedical Sensors and Measurements

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)	Identify and explain the static characteristics that are extremely important for all the sensors.	CO1	PO1	**12**
	b)	Discuss the schemes based on which the applications of instruments are classified.	CO1	PO1	**08**
		UNIT - II			
2	a)	Describe the general idea on which the bridge circuits operate.	CO2	PO2	**10**
	b)	Highlight the working principle of linear variable differential Transformer(LVDT).	CO2	PO2	**10**
		OR			
3	a)	Specify the setup required to perform invasive blood pressure measurement and explain the circuit.	CO2	PO2	**10**
	b)	Discuss the classification of sensors and provide an example for each class.	CO2	PO2	**10**
		UNIT - III			
4	a)	Enumerate the advantages of thermistor over thermocouple and RTD.	CO2	PO2	**06**
	b)	Illustrate any two applications of photoresistor with working circuits.	CO3	PO3	**08**
	c)	Specify the features of the commonly used materials in RTD and types of RTD.	CO3	PO3	**06**
		OR			
5	a)	Elaborate on the working principle, construction and advantages of fingertip pulse oximetry.	CO3	PO3	**12**
	b)	Justify the role of transistors as temperature sensors.	CO3	PO3	**08**

			UNIT - IV			
	6	a)	Discuss the origin of bioelectric signals and name the significant biosignals.	*CO2*	*PO2*	**09**
		b)	Mention the effects of artefacts on ECG recordings.	*CO2*	*PO2*	**06**
		c)	Discuss the 10-20 system for placement of EEG electrodes.	*CO2*	*PO2*	**05**
			UNIT - V			
	7	a)	Classify chemical sensors according to the property of analytes.	*CO2*	*PO2*	**12**
		b)	Discuss the detection of glucose using Clark electrode.	*CO2*	*PO2*	**08**

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