U.S.N.										

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

Autonomous Institute Affiliated to VTU

September / October 2023 Semester End Main Examinations

Programme: B.E. **Semester: IV**
Branch: Medical Electronics Engineering **Duration: 3 hrs.**
Course Code: 22MD4PCDTE **Max Marks: 100**
Course: DIAGNOSTIC AND THERAPEUTIC EQUIPMENTS **Date: 22.09.2023**

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)	Discuss any three Bio-signals characteristics in terms of frequency and amplitude ranges.	CO1	PO2	**10**
	b)	What is the need for bio-amplifier? Explain right leg driven ECG amplifier.	CO2	PO2	**10**
		OR			
2	a)	With relevant Circuit explain the principle of isolation amplifier.	CO2	PO2	**06**
	b)	Discuss how to make a measurement of body temperature.	CO2	PO3	**06**
	c)	With a necessary block diagram explain bedside patient monitoring system.	CO3	PO3	**08**
		UNIT - II			
3	a)	Discuss skin reflectance oximeter and intravascular oximeter working principles.	CO3	PO3	**12**
	b)	Explicate the working principle of Ultrasonic blood flow meters.	CO3	PO3	**08**
		UNIT - III			
4	a)	Elucidate the Cardiac Pacemakers-Need, types and functional characteristics.	CO2	PO2	**12**
	b)	Describe the different types of defibrillators, and in detail explain any one type of defibrillator function.	CO2	PO2	**08**
		OR			
5	a)	Discuss the Measurement of continuous cardiac output derived from the aortic pressure waveform.	CO2	PO2	**08**
	b)	What is the working principle of Pulmonary Function analyzer? How is Pulmonary function measurement can be made?	CO2	PO2	**12**

			UNIT - IV			
	6	a)	Discuss the functioning of Short-wave diathermy and ultrasonic diathermy.	*CO2*	*PO2*	**08**
		b)	Highlight the points to face the Electric shock hazards, Leakage currents while designing of Biomedical equipments.	*CO2*	*PO6*	**06**
		c)	What are the Ethical issues need to be considered in the design of Biomedical Instruments.	*CO2*	*PO6*	**06**
			UNIT - V			
	7	a)	List the different types of Hemodialysis and explain the principle of artificial kidney.	*CO2*	*PO2*	**10**
		b)	Mention different types and explain the working principle of any one type of Respiratory aid.	*CO2*	*PO3*	**10**

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