U.S.N.										

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

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

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

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)		Analyze the operation of a right leg driven ECG amplifier for minimizing the common-mode signal between the body of the patient and the floating ground.	*CO1*	*PO2*	**06**
	b)		Explain the working of an isolation amplifiers with optical isolation	*CO1*	*PO2*	**06**
	c)		Explain about the components of a cardiac monitor and its working	*CO1*	*PO3*	**08**
			OR			
2	a)		Construct the differential amplifier circuit of a bio signal measurement and its working	*CO1*	*PO2*	**08**
	b)		Discuss the various methods used to detect and measure the pulse rate.	*CO2*	*PO3*	**12**
			UNIT - II			
3	a)		With a neat block diagram explain the working of ear oximeter.	*CO2*	*PO3*	**10**
	b)		Specify the need for blood gas analyzers in clinical applications. Explain in detail the setup of complete blood gas analyzers with a neat diagram.	*CO2*	*PO3*	**10**
			UNIT - III			
4	a)		Identify the basic requirements for any implantable circuit. Discuss the various types of implantable pacemakers.	*CO2*	*PO3*	**10**
	b)		Elaborate on the process involved in calculating cardiac output through thermal dilution technique.	*CO2*	*PO3*	**10**
			OR			

	5	a)	Specify the need for defibrillator and explain the working of DC defibrillator.	*CO2*	*PO3*	**10**
		b)	For what purpose nitrogen washout technique is employed? Explain its working principle.	*CO2*	*PO3*	**10**
			UNIT - IV			
	6	a)	How micro shock and micro shock are prevented?	*CO2*	*PO6*	**06**
		b)	Illustrate the application of ultrasound in therapeutic purpose.	*CO2*	*PO3*	**10**
		c)	List out the effects of ionizing radiation.	*CO2*	*PO6*	**04**
			UNIT - V			
	7	a)	Differentiate between humidifier, nebulizer and aspirator.	*CO2*	*PO3*	**06**
		b)	Identify the commonly used membrane for hemodialysis and justify why it is used extensively.	*CO2*	*PO3*	**06**
		c)	With a neat functional diagram explain the positive pressure ventilator.	*CO2*	*PO3*	**08**

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