U.S.N.										

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

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: VI**
Branch: Electronics and Instrumentation Engineering **Duration: 3 hrs.**
Course Code: 19EI6PE3BM **Max Marks: 100**
Course: BIO MEDICAL INSTRUMENTATION **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.

UNIT - I

1	a)	With help of a neat diagram explain the general instrumentation system employed in medical field	**07**
	b)	Briefly discuss how bio potential waveforms are generated at cellular level with relevant diagram	**08**
	c)	For the surface electrode in presence of electrode jelly explain the electrode tissue interface with relevant diagram	**05**

OR

2	a)	List and explain the general constraints in design of medical instrumentation system	**08**
	b)	Explain the working of different type of microelectrodes used for measurement of electrical activity of individual cell	**08**
	c)	With relevant circuit diagram explain the equivalent circuit diagram used for a pair of electrodes	**04**

UNIT - II

3	a)	With relevant waveform list the different amplitude and time intervals of normal ECG signals	**06**
	b)	Explain how EEG signals are analyzed using computer	**07**
	c)	Briefly explain the effects of electric current on human body	**07**

UNIT - III

4	a)	Explain the different sounds produced by mechanical events of heart cycle	**07**
	b)	By employing korot koff method explain how blood pressure is measured with relevant diagram	**08**
	c)	Why are pacemakers required? Explain the different types of pacemakers	**05**

OR

5	a)	With relevant diagram explain the bipolar lead configuration used in ECG	**07**

	b)	Explain the working of DC defibrillator with help of a neat diagram	**07**
	c)	By employing electromagnetic technique explain how blood flow is measured with help of a neat diagram	**06**

UNIT - IV

6	a)	Explain the different frequencies generated while measuring EEG also explain the placement of 10-20 electrodes.	**12**
	b)	Explain the interpretation of EEG and EMG.	**08**

UNIT - V

7	a)	Explain how signals are transmitted using single channel telemetry system with help of a neat diagram.	**10**
	b)	Explain how transmission of medical images and videos are transmitted using telemedicine technology.	**10**

****