

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY2026****Fourth Semester****Biomedical Engineering****UBMT24401 – BIOMEDICAL INSTRUMENTATION****Regulations - 2024****Duration : 3 Hrs****Maximum : 100
Marks****PART – A(ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	Define bio electric potential.	L1	1	2
2.	Point out the difference between polarizable and non polarizable electrodes.	L2	1	2
3.	Write about different artifacts encountered while recording ECG.	L2	2	2
4.	Clarify the concept montage system in EEG.	L2	2	2
5.	State the need for bio amplifier.	L2	3	2
6.	List the type of isolation amplifiers used in biomedical instrumentation.	L2	3	2
7.	Define systolic, diastolic and mean pressure? Mention its normal values.	L2	4	2
8.	Explain the term cardiac output.	L2	4	2
9.	Mention the clinical significance of PO ₂ and PCO ₂ in blood.	L2	5	2
10.	Give the application of spectrophotometer and colorimeter.	L3	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BTL	CO	Marks
11. a	i Describe the generation and features of action potential and Resting Potential.	L2	1	8
	ii Explain Electrode –Skin Interface with its equivalent circuit diagram	L2	1	8
	Or			
b	i Explain the construction and features of surface electrodes with examples.	L2	1	8
	ii Explain the various types of depth and needle electrodes used to measure EEG and EMG potentials.	L2	1	8
12. a	i Explain Einthoven triangle and describe how ECG lead configurations are employed.	L2	2	8
	ii Draw the block diagram of ECG machine and explain its working in detail.	L2	2	8
	Or			
b	i Describe the 10-20 electrode system used in EEG.	L2	2	8
	ii Draw EEG waveforms and explain in detail about each waveform.	L2	2	8
13. a	i Mention the disadvantages of differential amplifier over Instrumentation Amplifier.	L4	3	6
	ii Construct an Instrumentation amplifier using 3 op-amps and derive the general expression of the gain.	L4	3	10

Or

	b	Discuss about power line interference and explain the effects of power line interference in ECG signal and also discuss elimination techniques.	L4	3	16
14.	a	Analyze the methods used for respiration rate measurement.	L3	4	16
		Or			
	b	Discuss the principle and working of ultrasound blood flow meters	L3	4	16
15.	a	Explain in detail about blood gas analyzer with neat block diagram	L2	5	16
		Or			
	b	Illustrate in detail about blood cell counter with neat diagram.	L2	5	16
