

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025*****Fourth Semester******Biomedical Engineering*****BM3491 - Biomedical Instrumentation*****Regulations - 2021******Duration : 3 Hrs******Maximum : 100 Marks******PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Define resting potential.	L1	1	2
2.	List the factors that are considered in the design of biomedical instrument system.	L1	1	2
3.	Outline the important bands of frequencies in EEG.	L2	2	2
4.	Compare unipolar and bipolar mode of EMG.	L2	2	2
5.	List the applications of bio amplifier.	L1	3	2
6.	What is power line interference?	L1	3	2
7.	Define systole and diastole.	L1	4	2
8.	List the methods used to measure pulse rate.	L1	4	2
9.	Recall about ISFET.	L1	5	2
10.	What are the two methods used for counting the blood?	L1	5	2

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

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a i Explain in detail about various types of electrodes used for the measurement of bio potential signals.	L2	1	8
	i Outline the generation and features of action potential and resting potential.	L2	1	8
	Or			
	b i Show the structure of a living cell of our body and explain in its constituents detail.	L2	1	8
	i Illustrate the working of skin interface impedance with suitable examples.	L2	1	8
12.	a Explain Einthoven triangle and describe how ECG lead configurations are employed.	L2	2	16
	Or			
	b Explain EEG measurement with 10-20 Electrode system.	L2	2	16

13.	a	Explain in detail about isolation amplifiers and how it's used in biomedical instrumentation?	L2	3	16
Or					
	b	Explain the effects of power line interference in ECG signal and also discuss elimination techniques.	L2	3	16
14.	a	Outline the various methods used for respiration rate measurement.	L2	4	16
Or					
	b	Infer the working principle of ultrasonic blood flow meters with neat diagram.	L2	4	16
15.	a	i Summarize about pCo ₂ , and pH sensor.	L2	5	8
		i Illustrate the working principle of colorimeter with neat sketch.	L2	5	8
Or					
	b	i Explain in detail about blood gas analyzer with neat block diagram.	L2	5	8
		i Illustrate the working principle of spectrophotometer. Discuss its applications in clinical laboratory.	L2	5	8