

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3171104****Date:08-12-2023****Subject Name:Biomedical Electronics****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Write different medical measurement constraints.	03
	(b) Discuss the classification of the biomedical instruments in brief.	04
	(c) Explain Noise reduction by feedback and Noise reduction by signal averaging.	07
Q.2	(a) Discuss resting state potential.	03
	(b) Compare Polarizable and Non polarizable electrodes.	04
	(c) Explain internal electrodes in detail.	07
	OR	
	(c) Explain body surface electrodes with neat diagram.	07
Q.3	(a) What is ECG? Draw the waveform and mention its components.	03
	(b) Draw ECG read out device.	04
	(c) Explain the standard 12 lead system for ECG measurements in detail.	07
	OR	
Q.3	(a) Discuss ECG noise.	03
	(b) Discuss ECG signals with various points of voltage level.	04
	(c) Draw ECG waveform and Analyze the same on the basis of the segments and intervals for abnormality detection.	07
Q.4	(a) Mention various frequency ranges of EEG.	03
	(b) Draw 10-20 international system of electrode placement in EEG machine.	04
	(c) Discuss EEG System Block diagram.	07
	OR	
Q.4	(a) Describe EEG Sleep patterns.	03
	(b) With a neat diagram, explain structure of a neuron.	04
	(c) Explain the specific direct blood pressure measurement techniques.	07
Q.5	(a) Discuss Cranial X –Rays.	03
	(b) Explain basic approaches for protection against shock.	04
	(c) Draw the block schematic of CT scan system and explain.	07
	OR	
Q.5	(a) Describe the use of MRI.	03
	(b) Discuss different shock hazards.	04
	(c) Explain the MRI system.	07
