

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII EXAMINATION – WINTER 2025

Subject Code:3171104

Date:20-11-2025

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) Draw and explain isolation amplifier.	07
Q.2 (a) Discuss the Ideal characteristics of an op-amp.	03
(b) Explain different types of noises.	04
(c) Explain Noise reduction by feedback and Noise reduction by signal averaging.	07
OR	
(c) Explain the types of the Possible Sensor Errors for Biomedical Instruments.	07
Q.3 (a) Draw only Network Equivalent Circuit Model of Bio Electrodes.	03
(b) Explain Network equivalent circuit of nerve.	04
(c) Differentiate Polarizable and Non-polarizable Electrodes.	07
OR	
Q.3 (a) Discuss: Cranial x-rays.	03
(b) Briefly explain action potential and resting potential.	04
(c) Explain the power distribution protection for the safety of patient.	07
Q.4 (a) What is EEG telemetry? Briefly explain it.	03
(b) Explain use of ultrasonic equipment for brain function measurement.	04
(c) Discuss EEG System Block diagram.	07
OR	
Q.4 (a) Define blood pressure and its types.	03
(b) Enlist the typical EEG system faults.	04
(c) Draw ECG Waveform and Analyze the same on the basis of the Segments and Intervals for abnormality detection.	07
Q.5 (a) Describe the use of MRI.	03
(b) Enlist various types of bioelectrical signals found in human body.	04
(c) Draw the block schematic of CT scan system and explain.	07
OR	
Q.5 (a) Discuss different shock hazards.	03
(b) Enlist the applications of PET Scan Technology.	04
(c) Describe the Physiological Effects of electricity on human body.	07
