

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020****Subject Code:2171102****Date:02/02/2021****Subject Name:Biomedical Instrumentation****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any **FOUR** questions out of **EIGHT** questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		<b>MARKS</b>
Q-1	(a) Define following terms: <i>Noise Factor</i> , <i>Noise Figure</i> and <i>Noise Temperature</i>	<b>03</b>
	(b) Write Medical measurement constrains.	<b>04</b>
	(c) Explain Compensation Techniques in detail.	<b>07</b>
Q-2	(a) Explain various noise reduction strategies.	<b>03</b>
	(b) With neat figures, explain the depolarization and repolarization process.	<b>04</b>
	(c) With the help of neat figure, explain the human heart functioning.	<b>07</b>
Q-3	(a) Define: Membrane. Discuss function of the respiratory system.	<b>03</b>
	(b) Explain electrode placement in international standardized 10/20 system for EEG Recording.	<b>04</b>
	(c) Explain General Medical Instrumentation system with block diagram.	<b>07</b>
Q-4	(a) Describe the basic approaches for protection against shock.	<b>03</b>
	(b) What is an instrumentation amplifier? State its utilities and applications.	<b>04</b>
	(c) Explain body surface electrodes in detail.	<b>07</b>
Q-5	(a) Give classification of EEG Rhythms with different frequency bands.	<b>03</b>
	(b) Discuss Cerebral Angiography.	<b>04</b>
	(c) Define Neuron. Explain ECG machine faults and solutions.	<b>07</b>
Q-6	(a) Discuss: Cranial x-rays	<b>03</b>
	(b) Enlist various types of bioelectrical signals found in human body.	<b>04</b>
	(c) Explain Macroshock Hazards in detail.	<b>07</b>
Q-7	(a) Explain the block diagram of EEG telemetry system.	<b>03</b>
	(b) Explain the organization of the nervous system.	<b>04</b>
	(c) Enlist various important susceptibility parameters for safety.	<b>07</b>
Q-8	(a) Discuss various types of Noise.	<b>03</b>
	(b) Enlist the typical EEG system faults.	<b>04</b>
	(c) Explain <i>Ground-Fault Circuit Interrupters</i> for protection in power distribution.	<b>07</b>

\*\*\*\*\*