

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2130303****Date: 04/06/2019****Subject Name: Bioelectric Potential and Measurement Techniques****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
<b>Q.1</b>	(a) Enlist various Sources of bioelectric potentials in human body.	<b>03</b>
	(b) What are the Importance of Continuous Monitoring of Bioelectric signals?	<b>04</b>
	(c) Explain generation & Propagation of Action Potential across Cell membrane with necessary Diagram.	<b>07</b>
<b>Q.2</b>	(a) Give the Normal values of heart rate, Systolic Blood Pressure & Diastolic Blood Pressure.	<b>03</b>
	(b) What do you mean by half-cell potential?	<b>04</b>
	(c) Explain Conduction system of human heart with necessary Diagram.	<b>07</b>
<b>OR</b>		
	(c) What do you mean by prosthetic devices? Explain functional electrical stimulation and applications.	<b>07</b>
<b>Q.3</b>	(a) Give Characteristics & Occurrence of heart Sound.	<b>03</b>
	(b) Write a Brief Note on Cardiac cycle.	<b>04</b>
	(c) Design and explain a block diagram of EEG measurement device.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) Give frequency range of delta, alpha, beta, gamma and theta waves of EEG.	<b>03</b>
	(b) Draw neat wave Form of ECG. Give significance of ECG.	<b>04</b>
	(c) Illustrate and explain the 10-20 lead system for EEG measurement.	<b>07</b>
<b>Q.4</b>	(a) What are the major equipment of Intensive Care Units (ICU)?	<b>03</b>
	(b) What is Fibrillation? Write a Brief Note on Defibrillator.	<b>04</b>
	(c) Describe the EMG acquisition with necessary block diagram.	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) What is Cardiac Output? And Give the Equation for measurement of Cardiac output.	<b>03</b>
	(b) Differentiate between Bradycardia & Tachycardia. Explain Function of cardiac Pacemaker.	<b>04</b>
	(c) Explain the nerve impulse transmission through Spinal cord with necessary diagrams.	<b>07</b>
<b>Q.5</b>	(a) Give Full form of TENS, SA node & AV node.	<b>03</b>
	(b) Explain Basic Instrumentation of Sphygmomanometer.	<b>04</b>
	(c) Enlist & Explain problems encountered in measurement of Living System.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) Define: Transducer, Accuracy & Resolution.	<b>03</b>
	(b) Enlist various types of electrodes and their applications.	<b>04</b>
	(c) Give Detail Classification of Transducers. And Explain Piezoelectric Transduction Phenomena.	<b>07</b>

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