

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-III • EXAMINATION – WINTER • 2014

Subject Code:2130303**Date:18/12/ 2014****Subject Name: Bioelectric Potential and Measurement Technique****Time:02.30 pm - 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.

- Q.1** (a) Describe the generation action potential with necessary diagrams. **07**
(b) Enlist and explain various Sources of bioelectric potentials in human body. **07**
- Q.2** (a) What do you mean by half-cell potential? Describe the method to measure half-cell potential with diagram. **07**
(b) List and define static characteristics of bioelectric signal. **07**
- OR**
- (b) List and define dynamic characteristics of bioelectric signal. **07**
- Q.3** (a) Explain the types of transducers on the basis of transduction principal. **07**
(b) Write a brief note on electrode-skin interface with neat diagrams. **07**
- OR**
- Q.3** (a) Give difference between active and passive transducers with necessary examples. **07**
(b) Draw and explain various types of electrodes. **07**
- Q.4** (a) Write a short note on generation of Electromyogram with necessary figure. **07**
(b) Explain the nerve impulse transmission through Spinal cord with necessary diagrams. **07**
- OR**
- Q.4** (a) Describe the process of propagation of electrical impulse through ion exchange. **07**
(b) Explain the conductive system of heart and various phases of action potential of ventricular muscle fiber cell. **07**
- Q.5** (a) Briefly describe the measurement technique of EMG signal. **07**
(b) Explain the therapeutic applications of bioelectrical potential measurement. **07**
- OR**
- Q.5** (a) Explain the requirement and advantages of automated diagnosis of bioelectrical signals. **07**
(b) Explain the einthoven's triangle with 12 lead ECG measurement system. **07**
