

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-IV • EXAMINATION – WINTER 2013****Subject Code: 1410302****Date: 30-12-2013****Subject Name: Physiological 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.

- Q.1** (a) Explain cardiac cycle with neat diagram and correlate it to ECG pattern. **07**
 (b) Explain Endocytosis and Exocytosis and its relevance to functioning of body. **07**
- Q.2** (a) Explain human nervous system with diagram. Show precisely which part of nervous system effects which part of body. **07**
 (b) With help of sensory tract, motor tract and muscle spindle explain physiological control system for knee reflex. **07**
- OR**
- (b) Explain different types of electrodes with metallurgical properties and their uses. **07**
- Q.3** (a) Explain Pressure transducer used in biomedical applications. **07**
 (b) Explain capacitance type transducer used in biomedical applications. **07**
- OR**
- Q.3** (a) Explain functioning of heart as pump. Also explain how heart works as pump without electricity. **07**
 (b) Explain structure of eye. Show EOG and ERG waveforms and how to obtain them. Also show their voltage levels. What is significance of both and specify any correlation. **07**
- Q.4** (a) Explain EEG waveforms with neat diagram and voltage levels. Explain different types of waveforms. **07**
 (b) Explain action potential and membrane potential with neat diagram. **07**
- OR**
- Q.4** (a) Explain structure of muscle also explain how nerves control muscle contraction and relaxation with diagram. How EMG is acquired. **07**
 (b) Explain mechanism of respiration with help of gases. **07**
- Q.5** (a) Explain capacitive interference in detail and shielding technique. **07**
 (b) Explain Inductive interference in detail and shielding technique. **07**
- OR**
- Q.5** (a) In testing circuit with CRO explain how ground loop interference comes into effect and ways to reduce it. **07**
 (b) Explain external and internal respiration with neat diagram. **07**
