

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII EXAMINATION – WINTER 2015

Subject Code: 171705**Date:04/12/2015****Subject Name: Instrumentation for Bio Medical Application****Time: 10:30am to 1:00pm****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) Discuss “Human body as the control system”. Draw neat diagram of Gastrointestinal (Digestive) system. **07**
- (b) What is bioelectricity? Explain electro-conduction system of the heart. **07**
- Q.2** (a) Explain following terms; **07**
- i) Significant figures
 - ii) Error categories
 - iii) SNR (Signal to Noise ratio)
- (b) What is Bioelectrode? Explain their different types. **07**
- OR**
- (b) List out the desirable characteristic of a Bioelectric amplifier. Draw and explain differential bioelectric amplifier circuit. **07**
- Q.3** (a) Explain the different ECG leads. Also discuss the common artifacts in ECG recording and suggest the solution to eliminate those artifacts. **07**
- (b) What is the importance of blood pressure measurement? Explain the Auscultatory and Oscillometric methods in detail. **07**
- OR**
- Q.3** (a) Explain the EEG machine with neat diagram. **07**
- (b) Give the difference between direct and indirect blood pressure measurement techniques. Explain one of the direct methods in detail. **07**
- Q.4** (a) Discuss the significance of blood flow measurement. Also explain electromagnetic blood flow meter in detail. **07**
- (b) What is fibrillation? Explain the working of DC defibrillator with its circuit diagram. **07**
- OR**
- Q.4** (a) Give detail classification of pacemaker. Also discuss demand type pacemaker in detail. **07**
- (b) Explain the working of heart lung machine with neat diagram. **07**
- Q.5** (a) List out the various organs related to respiratory system. Also discuss spirometer in detail. **07**
- (b) What is ICU? List out the equipments available in ICU. Also discuss one of them in detail. **07**
- OR**
- Q.5** (a) Explain the colorimeter with its basic principle of operation. **07**
- (b) List out the properties of medical ultrasound. Explain A-Scan mode in detail with its clinical application. **07**
