

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII(OLD) • EXAMINATION – WINTER 2016

Subject Code: 171705**Date: 18/11/2016****Subject Name: Instrumentation for Bio Medical Application (Department Elective - I)****Time: 10:30 AM to 01:00 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) Enlist various systems of human body. Explain GI (Gastrointestinal) system in detail. **07**
- (b) What is Bioelectrode? Explain their different types. **07**
- Q.2** (a) Draw the Block diagram of ECG machine and explain each block **07**
- (b) Explain ECG Lead system in detail. Discuss Eithoven Triangle. **07**
- OR**
- (b) Explain following terms; **07**
- i) Significant figures
- ii) Error categories
- iii) SNR (Signal to Noise ratio)
- Q.3** (a) What is the importance of measurement of Blood pressure in the diagnosis of cardiovascular disease? Enlist various techniques to measure Blood Pressure. Explain any one of them **07**
- (b) Write a short note in Defibrillators **07**
- OR**
- Q.3** (a) Give the names of medical laboratory instruments. Explain any one in detail. **07**
- (b) What is the significance of blood flow meter? Explain any one in detail. **07**
- Q.4** (a) Explain the EEG machine with neat diagram. **07**
- (b) Explain the working of heart lung machine with neat diagram. **07**
- OR**
- Q.4** (a) What is pacemaker? Enlist different types of artificial pacemaker. Explain any one of them in detail. **07**
- (b) Write a short note in intermittent positive pressure breathing therapy **07**
- Q.5** (a) Draw and describe the function of human heart. Obtain and draw its electrical activity on graph. **07**
- (b) What are the basic functions of kidney? Explain the components of haemodialysis machine with neat block diagram. **07**
- OR**
- Q.5** (a) Discuss the properties of medical ultrasound. Explain different modes of ultrasound scan. **07**
- (b) List out the desirable characteristic of a Bioelectric amplifier. Draw and explain differential bioelectric amplifier circuit **07**
