

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII (OLD) EXAMINATION – WINTER 2018****Subject Code: 171705****Date: 15/11/2018****Subject Name: Instrumentation For Bio Medical Application****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) Draw and explain gastrointestinal system in detail. **07**  
(b) “Body as a control system”. Justify the statement. Draw block diagram of biomedical measurement system. **07**
- Q.2** (a) Explain the electrical activity of the heart. Draw suitable waveform **07**  
(b) Explain ECG Lead system in detail. Discuss Eithoven Triangle. **07**
- OR**
- (b) Explain heart circulatory system with relevant diagram **07**
- Q.3** (a) List out different measurement errors and suggest remedies for each of them. **07**  
(b) Brief about various categories of measurement errors. **07**
- OR**
- Q.3** (a) Write a short note in Defibrillators **07**  
(b) What is the significance of blood flow meter? Explain any one in detail. **07**
- Q.4** (a) Define noise, signal to noise ratio, noise factor and noise figure. **07**  
(b) Explain in detail surface electrodes with necessary diagram **07**
- OR**
- Q.4** (a) Explain the EEG machine with neat diagram. **07**  
(b) Explain difference between X-ray and CAT scan imaging. Brief about CAT scan imaging **07**
- Q.5** (a) What is the prime objective of Signal conditioning? Explain it briefly with engineering justification. **07**  
(b) What are the basic functions of kidney? Explain the components of haemodialysis machine with neat block diagram. **07**
- OR**
- Q.5** (a) Explain the working of heart lung machine with neat diagram. **07**  
(b) Write a short note in intermittent positive pressure breathing therapy **07**

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