

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2018**

**Subject Code:2161712**

**Date:08/05/2018**

**Subject Name:Bio-Potential Instrumentation**

**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) Discuss Cell structure. **03**  
(b) List out classification of biomedical instruments and discuss. **04**  
(c) Explain Major systems of the body in detail. **07**  
Major systems of the body
- Q.2** (a) List out Op-amp ideal properties. **03**  
(b) Discuss Types of Noises. **04**  
(c) Explain Chopper stabilized amplifiers in detail. **07**  
OR  
(c) Explain Electrical activity of excitable cells in detail. **07**
- Q.3** (a) Discuss the electrode-electrolyte interface. **03**  
(b) Discuss the electrode skin interface and Motion artifact . **04**  
(c) Explain electro-conduction system of the heart . **07**  
OR
- Q.3** (a) Discuss Nernst equation. **03**  
(b) Discuss commercial medical instrumentation development process. **04**  
(c) Explain The standard lead system in detail. **07**
- Q.4** (a) What are ECG Noises? Explain. **03**  
(b) Discuss Organization of the nervous system. **04**  
(c) Explain structure and function of the central nervous system . **07**  
OR
- Q.4** (a) Explain use of ultrasonic equipment for brain function measurement. **03**  
(b) Explain use of cranial x-rays for brain function measurement **04**  
(c) Discuss ECG machines and maintenance in detail. **07**
- Q.5** (a) Write down EEG system specification. **03**  
(b) Explain EEG system with block diagram . **04**  
(c) Discuss EEG electrodes and the 1-20 system. **07**  
OR
- Q.5** (a) Explain typical EEG system artifacts. **03**  
(b) List and discuss Important susceptibility parameters. **04**  
(c) Discuss Electrical- Safety codes and standards. **07**

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