Paper Code: EIC-802	**Roll No.**									

B.Tech.
(SEM VIII) EVEN SEMESTER EXAMINATION2015-16
BIOMEDICAL INSTRUMENTATION

[Time: 3 hrs.] **[Max. Marks: 100]**

Note: - Attempt all questions.

1. Attempt any four parts of the following: - **[5x4=20]**

(a) What are Bioelectricpotentials? Explain different types of leads and electrodes used for measuring these potentials.
(b) What is EEG? Why is it much more difficult to recognize than ECG? How can certain characteristic EEG waveforms be related to sleep?
(c) Define and explain resting and action potentials.
(d) Explain with the help of a general block diagram the various elements of the man-instrument system.
(e) Isolation amplifiers are invariably used in all biomedical recorders such as ECG, EEG and EMG. Why?
(f) Differentiate between body surface electrodes and needle electrodes.

2. Attempt any four parts of the following: - **[5x4=20]**

(a) Explain the operation of a pacemaker and why it is needed.
(b) Explain main parts of Electrocardiogram. How you can determine the heart rate?
(c) What are the elements of Intensive Care Monitoring Unit. Also explain patient monitoring displays.
(d) Discuss the ultrasonic method of blood flow measurement.
(e) Differentiate between Pacemakers and Difibrillators.
(f) Explain Calibration and Reparability of patient monitoring equipment.

3. Attempt any two parts of the following: - **[10x2=20]**

(a) How Neuronal firing measurements are made? Explain EPSP and IPSP.
(b) Discuss various respiratory therapy equipments. What are Nebulizers? Explain the working principle of ultrasonic nebulizer.

(c) Write short notes on following:
(i) Humidifiers
(ii) Nebulizers
(iii) Aspirators

4. Attempt any two parts of the following: - **[10x2=20]**

(a) Explain the working principle of Electro-retinogram with block diagram.
(b) Explain the principle of computerized axial tomography and compare its methods of visualizationwith conventional X-ray methods.
(c) With diagram elaborate Tonometer for eye pressure measurements.

5. Attempt any two parts of the following: - **[10x2=20]**

(a) How can telemetry be done for ECG measurements during exercise and from extended coronary care patients?
(b) What do you understand by myoelectric arms? Explain underlying principle with an example.
(c) Explain the components of a Biotelemetry system with the help of a neat labeled diagram.