

**B.TECH INSTRUMENTATION AND ELECTRONICS ENGINEERING THIRD YEAR
SECOND SEMESTER - 2018
BIOMEDICAL INSTRUMENTATION**

(ELECTIVE II)

Tme: Three hours

Full Marks: 100

Answer any five questions

All questions carry equal marks.

1. With the help of a characteristic curve explain the activities of a Bio-cell and write down the name of the characteristic curve. What is a Biopotential? Name six types of Biopotential sources. What is an artifact?
2. Name the basic invasive types of Biopotential electrodes? Draw the equivalent circuits of a skin and Biopotential electrode interface, (i) for single electrode system and (ii) for two electrodes system. With the help of schematic diagram describe the construction and operations of various type surface electrodes and microelectrodes.
3. With the help of a neat block diagram describe the functions of Heart and Lung in Cardio-Vascular circulation. Discuss briefly about activity of 'AV' and 'SA' nodes.
4. With the help of a neat block diagram describe the principle of operation of an ECG Machine and hence also discuss normal types of Lead connections. Discuss and draw a neat circuit diagram of Wilson's augmented unipolar limb leads and unipolar chest leads system What do you mean by Systolic and Diastolic blood pressure?
5. With the help of a neat block diagram describe the principle of operations of an X-ray machine in detail that is used for Medical purpose.
6. Why artificial pacing is needed? State the various types of pacing modes and describe their principles briefly. With the help of a block diagram showing the components of the circuitry of an artificial pacemaker, discuss the principles of operation of each block.