

2063  
B.E. (Biotechnology) Fifth Semester  
BIO-515: Bio-Instrumentation

Time allowed: 3 Hours

Max. Marks: 50

*NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.*  
x-x-x

- I. Answer the following briefly:-
- What is unipolar pacing?
  - Define evoked potential.
  - Explain briefly virtual instrumentation with example.
  - What does QRS in ECG represent?
  - Differentiate between spin-spin and spin-lattice relaxation
  - Give advantages of invasive blood pressure monitoring.
  - Give some examples of optical transducer.
  - Define the term - phases in EMG
  - What is nuclear precession?
  - Define attenuation coefficient.

(5x2)

UNIT - I

- II. Explain the basic principle, placement of electrode and waveforms obtained in EEG. (10)
- III. Give a detailed account of principle, working and applications of Fourier Transform Infrared Spectroscopy. (10)
- IV. Describe the static and dynamic characteristics of a system. (10)

UNIT - II

- V. Explain the generation and transmission of nerve impulse. Discuss the role of refractory period. (10)
- VI. a) With the help of suitable block diagram elucidate the working of a capacitive discharge defibrillator. Give the waveform of output pulse.

Contd.....P/2

(2)

- b) What are the various operating modes of the pacemaker? Explain ventricular synchronous demand pacemaker in detail. (2x5)
- VII. a) Give a detailed account of the imaging of internal structure with computed tomography.
- b) Explain the basic principle and the components of the audiometer in evoked potential audiometry. (2x5)

x-x-x