

2122
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 questions briefly:-

- a) Explain briefly virtual instrumentation with example.
- b) What is accuracy and precision?
- c) What does QRS in ECG represent?
- d) Give advantages of invasive blood pressure monitoring.
- e) What is nuclear precession?
- f) Define attenuation coefficient.
- g) What do you understand by the term - Hearing level?
- h) What is nuclear precession?
- i) What is funny current?
- j) Explain briefly virtual instrumentation with example. (10x1)

UNIT - I

II. Explain the basic principle, placement of electrode and waveforms obtained in EEG. (10)

III. With suitable examples explain Fourier Transform Infrared Spectroscopy and its various applications. (10)

IV. a) Explain the basic principle and working of electromagnetic blood flowmeter.
b) Describe the process of cardiac output measurement using dye-dilution method. (2x5)

UNIT - II

V. a) Explain the imaging of internal structure with computed tomography.

b) Elucidate the magnetization and relaxation process in MRI. (2x5)

P.T.O.

- VI. a) Explain the working of pacemakers. Discuss any one pacing mode and battery used in pacemaker.
- b) Explain the basic principle, placement of electrode and waveforms obtained in EEG. (2x5)
- VII. a) Explain the reaction of electrode-body tissue interface. Describe different types of microelectrodes
- b) Explain graded potential, absolute refractory period and depolarization for non-pacemaker cardiac cells (2x5)

x-x-x