

B.Tech. V Semester (Main/Back) Examination, Nov. /Dec. - 2017
Electronics & Communication Engg.
5EC6.1A Biomedical Instrumentation

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates :

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. Write and Explain the description of neural, muscular, cardiovascular and respiratory systems of human body subsystems along with their electrical and mechanical activities in detail. (16)

OR

1. a) Explain the Principles and classification of transducers for Bio-medical applications. (10)
b) What is the Selection criteria for transducers and electrodes. (6)

Unit - II

2. a) What do you mean by Electrical activity of excitable cells. Explain. (8)
b) Write a technical note on ECG in detail. (8)

OR

2. Explain following terms incorporated with Cardiovascular system Measurement
- a) Blood pressure (4)
 - b) Blood flow (4)
 - c) Cardiac output (4)
 - d) Cardiac rate (4)

Unit - III

3. a) Explain the working principle for measurement of partial pressure of Oxygen (P_{O2}) in the blood and describe suitable scheme for it. (10)
- b) Explain the working principle of Spectrophotometers. (6)

OR

3. Write short notes on:

- a) Diagnostic X-Rays (5)
- b) MRI (5)
- c) Ultrasonography (6)

Unit - IV

4. a) What are the various elements of an Intensive Care Unit (I.C.U)? Explain each element in brief. (8)
- b) Explain various methods of electrical accident prevention in medical instrumentation systems. (8)

OR

4. What is the requirement of Therapeutic and Prosthetic Devices. Explain the working of cardiac pacemakers, defibrillators in detail. (16)

Unit - V

5. a) What do you understand by Atrial abnormalities. Explain in detail. (10)
- b) Write and explain the advantages of remote data recording and management. (6)

OR

5. a) Write a short note on Ventricular enlargement. (4)
- b) Write and explain Clinical applications of EEG, EMG and ERG. (12)

