

IV B.Tech II Semester Supplementary Examinations, April/May 2005
PRINCIPLES OF BIO-MEDICAL INSTRUMENTATION
(Electronics & Instrumentation Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Draw the structure of a living cell of our body and explain its constituents.
(b) Discuss the different ways of transport of ions through the cell membrane
2. (a) Give the classification of heart sounds based on their origin and explain briefly about each.
(b) Explain how the heart sounds are measured or recorded?
3. (a) Give the salient features of needle electrodes.
(b) With necessary sketches explain how contact impedance varies with electrolyte concentration and time?
4. (a) What is bio-feedback instrumentation. Explain how it is used in ECG and EMG.
(b) What are the differences in amplification and bandwidth requirement of amplifiers for ECG and EMG?
5. (a) Explain in detail the genesis of the ECG signal.
(b) Draw and explain the Einthoven triangle and prove the Einthoven triangle.
6. (a) List out typical EEG recording artifacts.
(b) With a neat block diagram explain the principle of operation of an EEG telemetry system.
7. (a) Explain the fibrillation and defibrillation in the heart and hence explain the need for defibrillation with neat circuit diagrams.
(b) Discuss the computer analysis of ECG.
8. Write short notes on:
(a) Displays used in patient monitoring system.
(b) Calibration and repeatability of patient monitoring equipment.
