PART – A

(Answer all questions. Each question carries 4 marks. )

1. What is bioelectric potential. How it is generated?
2. What is Poiseuille’s Law linked to the blood flow rate?
3. What is a neuron? Explain briefly.
4. Mention limitations of MRI?
5. What is the difference among A, B and T-M scan modes in Ultrasound scanning?

PART – B

(Answer any one question from each Module. )

Module – I

6. a. Sketch the block schematic of a ECG machine. Explain its working.  
(10 Marks)
b. Draw the block diagram for set up for EMG recording. Explain in detail about the pre- amplifier circuit used. 
( 10 Marks )

7. a. Distinguish between bipolar and unipolar types of electrodes used in a ECG machine. How are they connected. Explain (10 Marks )
b. Draw the block schematic of a EEG machine. Explain each block in detail. (10 Marks)

Module – II

8. a. What is microwave diathermy. Explain with help of circuit diagram the working of a microwave diathermy machine (10 Marks )
b. Distinguish between analog and digital hearing aids. Explain the working of a digital hearing aid with the help of a block diagram (10 Marks)

9.
a. Explain the working of a Oximeter. Explain how the respiratory rate is measured. (10 mark)
b. Explain with neat diagram the working of a artificial Kidney machine (10 Marks)

Module - III

10.
a. Explain how the ECG and respiration are monitored through telemetry. (10 Marks)
b. What are the sources of electrical hazards. Explain about the precautions to be observed to prevent hazards. (10 Marks)

11.
a. Discuss about an implantable telemetry system for blood pressure and blood flow monitoring (10 Marks)
b. Discuss in detail about the transmission of analog physiological signals over telephone lines (10 Marks)

Module - IV

12.
a. Explain a NMR detection system with the help of a neat block diagram (10 Marks)
b. Draw the block diagram of basic X-ray machine. Explain each block in detail. (10 Marks)

13.
a. What are the principles of NMR Imaging systems. Explain one of the image reconstruction techniques for spatial discrimination and mapping of NMR signals. (10 Marks)
b. Discuss on DNA sequence analysis (10 Marks)