

**B.TECH DEGREE EXAMINATION MAY 2009**  
Branch Applied Electronics and Instrumentation/Electronics and Instrumentation  
**BIOMEDICAL INSTRUMENTATION (A,S)**  
(Improvement/Supplementary)

*Answer all the questions.*

**Part A**

*Each question carries 4 marks.*

1. Explain briefly about the principles of Generation of bio Electric potentials.
2. Explain the terms of conduction velocity and latency.
3. Draw the equivalent circuit of electrode skin interface and explain.
4. What are the classifications of biopotential electrodes? Explain polarisable electrodes.
5. Explain the working principle of EEG.
6. Explain the working principle of phono cardiography.
7. Draw the Block diagram of EOG machine and explain.
8. Explain the working of an auto analyzer. What are its uses?
9. What are the requirements of a blood pump?
10. What are pacemakers? Explain.

**Part B**

*Each question carries 12 marks.*

11. (a) Draw EEG waveform and explain.  
(b) Explain in detail the Electrical Safety codes and standards for electrical equipments.  
*Or*
12. (a) Describe the micro macro shock hazards.  
(b) Explain how power distribution and electrical equipment design are done.
13. With neat sketches, explain in detail about the Bio potential electrodes and its different types.  
*Or*
14. Explain in detail about the chemical sensors leads and electrodes and its types. What are the materials and properties of it.
15. Explain in detail the 12 lead system of measuring ECG with its working principle and clinical applications.  
*Or*
16. (a) Explain the working principle of EMG with its applications.  
(b) Explain the basic requirements of EEG amplifiers.
17. With neat sketches, explain the working principles of the following:  
(i) Electronic Bp monitors.  
(ii) Electocardioscope.  
*Or*
18. With neat diagrams, explain in detail about the following:  
(i) EEG machine and EMG machine.  
(ii) PH meter.
19. Explain in detail the different types of diathermy equipments. What are their applications?  
*Or*
20. Write short notes on :  
(a) Ventilators.  
(b) Humidifier.  
(c) Heart lung machine.