

**III B.Tech II Semester Supplementary Examinations, Apr/May 2006**  
**PRINCIPLES OF BIO-MEDICAL INSTRUMENTATION**  
**(Electronics & Instrumentation Engineering)**

**Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) With the help of a neat diagram explain the relationship between the action potential and muscle contraction.  
(b) What is stimulus threshold? Explain the terms absolute refractory period and relative refractory period. [6+10]
2. (a) With the help of a neat block diagram explain the principle of operation of heart lung machine.  
(b) Explain how the ECG wave form helps in assessing the functioning of the heart. [8+8]
3. (a) Draw the circuit diagram of an ECG isolation amplifier and explain its working.  
(b) Explain the principle of operation of a biomedical pre amplifier with neat diagram. [8+8]
4. (a) Discuss the physiological phenomena responsible for the generation of EMG signal.  
(b) Give the normal amplitude and frequency range of the EMG signal . [10+6]
5. (a) Discuss the various lead configurations of ECG recording.  
(b) Give the six positions of the chest electrodes used in the precordial lead system. [10+6]
6. (a) What is the origin of the physiological parameter (EEG signal) measured by the EEG machine.  
(b) Give the various frequency bands usually specified for EEG signals [8+8]
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. [10+6]
8. (a) Define bio telemetry? Explain the importance of biotelemetry in the modern world.  
(b) What are the uses of biotelemetry. [8+8]

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