

**II B.Tech I Semester Supplementary Examinations, May 2005**  
**BIO-ELECTRICITY AND ELECTRODES**  
**(Bio-Medical Engineering)**

**Time: 3 hours**

**Max Marks: 80**

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

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1. Describe the electric equivalent circuit of axon. Add a note on membrane conductance.
2. Give an account of generation and propagation of an impulse in unmyelinated and myelinated nerve fibers.
3. (a) Explain the conduction system of heart with a neat sketch?  
(b) Explain about normal pacemaker of heart?
4. Define “lead”? Explain the ECG leads with neat circuit diagrams.
5. What are the bioelectric sources used in volume conductor fields?
6. (a) Draw the equivalent circuits and explain the circuit properties of needle and micro Electrodes?  
(b) Mention the important characteristics of above two electrodes?
7. (a) Explain using the necessary waveform as to how surface electrodes are used to get the ElectroMyoGram?  
(b) Interpret the EMG as a case of neuromuscular transmission waveform.
8. What are the alpha and beta rhythms in EEG? Give their normal frequency range. How is EEG used in disorders like Epilepsy for early detection?

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