

**R09**

**Code No: C0607**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**M.Tech I Semester Examinations March/April-2011**

**BIOMEDICAL INSTRUMENTATION**

**(DIGITAL SYSTEMS & COMPUTER ELECTRONICS)**

**Time: 3hours**

**Max.Marks:60**

**Answer any five questions**

**All questions carry equal marks**

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1. a. Discuss on the various generalized dynamic characteristics of Medical Instruments using suitable expressions and figures  
b. Explain various problems encountered with measurements from Human beings and how it can overcome. [12]
2. a. Explain with suitable figures for the conduction through Nerve to neuromuscular junction  
b. With suitable diagrams explain the various bioelectric potentials generated from a typical cell [12]
3. Define the terms with suitable figures
  - a. Action potentials
  - b. strength duration curve
  - c. Refractory periods
  - d. Repolarisation & depolarisation[12]
4. a. Explain the electrical conduction of the heart with suitable figures.  
b. Discuss on the specifications of ECG machine and its practical importance. [12]
5. a. With a suitable block diagram explain the Blood flow measurement.  
b. Discuss with suitable figures on standard 12 lead configuration for ECG. [12]
6. a. discuss the need for defibrillator and explain in detail with suitable figures.  
b. With suitable circuit explain the shortwave diathermy unit and its applications. [12]
7. a. Explain the principle of dialysis with suitable figures.  
b. With suitable figures explain the construction details of the hollow fiber and parallel flow dialyser. [12]
8. a. With suitable block diagram explain the function of EMG machine and discuss on the audio recording system in EMG.  
b. Discuss on the EMG signal generation and application of stimulus and its strength one after the others with suitable figures. [12]

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