

**Code No: C0607**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD  
M.TECH I SEMESTER EXAMINATIONS APRIL/MAY-2012  
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) List and explain in detail various static characteristics desired in the design of a biomedical instrument.
- b) Give the block diagram of a typical bio-amplifier and explain its functions in detail.
2. List the important problems that we might encounter in the designing of a medical equipment and explain how the same can be eliminated.
3. Write brief notes on:
  - a) Internal electrodes
  - b) Biochemical electrodes
4. Explain the propagation of electric potential through nerve to neuro-muscular junction with neat sketches and relevant expressions.
5. Explain the Einthoven triangle and the standard 12-lead configurations and briefly describe how measurements are taken
- 6.a) Explain with neat sketches the electrical conduction system of the heart.
- b) List the different methods of measurement of blood pressure and with neat diagram explain any one method.
- 7.a) Describe the function of a Hemodialysis machine.
- b) With a neat block diagram explain the function of ventilators.
- 8.a) With neat sketches explain the electrode placement for EMG recording.
- b) Using a typical EMG record interpret the waveform and give the possible outcomes.

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