

**II B.Tech II Semester Supplementary Examinations, April/May 2005**  
**BIO-MEDICAL INSTRUMENTATION**  
**(Bio-Medical Engineering)**

**Time: 3 hours**

**Max Marks: 70**

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

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1. (a) Explain about
  - i. Needle electrodes and
  - ii. Microelectrodes with neat diagrams.(b) With the help of equivalent circuits explain about Electrode-Electrolyte interface for single electrode and two electrodes.
2. (a) What are active and passive transducers. Give examples.  
(b) With a neat diagram explain how a piezoelectric transducer is used as a arterial pressure sensor.
3. (a) What is meant by non-linearity in a transducer? How does it affect the sensitivity of it.  
(b) Explain the measurement of blood PH using electrodes.
4. (a) With a neat circuit diagram explain the operation of an instrumentation amplifier. Give the gain calculations.  
(b) Write short notes on dot meter recorders.
5. (a) Define CMRR? Give its importance in biosignal amplifiers.  
(b) Draw the circuit diagram of an ECG isolation amplifier and explain its operation. Also mention a few applications of it.
6. (a) Write short notes on blood gas analysers and give a few applications.  
(b) With a neat circuit diagram explain the principle of operation of a flame photometer.
7. (a) Discuss the relative merits and demerits of various dia-theory units.  
(b) Explain how a patient is monitored inside an ICCU.
8. (a) Give different types of exchangers? Explain about a heat exchanger.  
(b) With a neat diagram explain the operation of a Bubble oxy generator.

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