

**II B.Tech II Semester Supplementary Examinations,
November/December 2005
BIO-TRANSDUCERS & APPLICATIONS
(Bio-Medical Engineering)**

Time: 3 hours

Max Marks: 80

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

1. (a) Define noise?
(b) Define about the sampling errors?
(c) Explain active and passive transducer? [3+5+8]
2. What is thermograph? Describe in detail with thermo graphic unit for medical use.
How it can be used in determination of disease? [2+8+6]
3. (a) Write note on chemical thermometry. [8]
(b) Explain the terms:
 - i. Radiation thermometry.
 - ii. Clinical thermometry[4+4]
4. Describe in detail the operation of a carrier amplifier and phase sensitive detector for L.V.D.T with block diagrams [16]
5. (a) Explain the differentiation and integration techniques that are used to measure distance related parameters
(b) Explain the operation of piezoelectric transducers. Mention its applications [8+8]
6. Give the theoretical basis of plethysmographic method for measurement of cardiac output also the circuit diagram for the instrumentation required for online monitoring of cardiac output? [16]
7. (a) With necessary schematic and equations explain the theory behind electro-magnetic method of flow measurement.
(b) Describe the problems encountered in flow probes. [8+8]
8. What are the features of a differential amplifier used in biomedical instrumentation? How the linearity and the frequency response of the amplifier are improved? [8+4+4]
