

NAME \_\_\_\_\_

ROLLNO \_\_\_\_\_

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-2008**

**II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS  
BIO-TRANSDUCERS AND APPLICATIONS  
(BIO-MEDICAL ENGINEERING)**

**AUG/SEP-2008**

**MARK-3 HOUR  
MARK-80**

**ANSWER ANY FIVE QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.**

**MARK[16\*5=80]**

1. (a) Briefly explain the factors that will influence the design of a transducer.  
(b) What is amplitude and phase distortion and explain how they will influence the signal.
2. (a) Explain the principle and measurement of temperature using a thermocouple.  
(b) What are the medical applications of thermistors. Explain in detail.
3. (a) Write note on chemical thermometry.  
(b) Explain the terms:
  - i. Radiation thermometry.
  - ii. Clinical thermometry
4. Explain the construction of elastic strain gauge? What are the problems associated with the use of elastic resistance strain gauges how can you find such a small resistance.
5. Write short notes on
  - (a) Elastic transducer
  - (b) Capacitive transducer.
  - (c) Optical transducer.
6. Explain the principle of operation of fiber optic pressure transducers. List its advantages. Describe the application of force balance method of pressure measurement.
7. What is the use of dilution technique in medical diagnosis? Describe thermo dilution method.
8. What is a differential amplifier show a circuit symbol and the input output relation what is the unique property of the differential amplifier.