Code No: NR221104 **NR**

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

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the static characteristics of a medical instrumentation system.
   (b) What are the different types of noise that appear in a practical measurement system?
2. (a) Explain the principle and measurement of temperature using a thermocouple.
   (b) What are the medical applications of thermistors. Explain in detail.
3. Explain the method of linearization in a thermistor thermometer. With a neat circuit diagram explain the linearized thermistor temperature measuring circuit.
4. (a) Explain working principles of various inductive transducers.
   (b) A thin constantan wire stretched taut has a length of 30mm and a cross sectional area of $0.01 m m^2$ the resistance is 1.5 Ω . The force applied to the wire is increased such that the length is increased by 10 mm and the cross-sectional area decreases by $0.0027 m m^2$ find the change in resistance.
5. Write short notes on
   (a) Elastic transducer
   (b) Capacitive transducer.
   (c) Optical transducer.
6. How do you measure blood pressure? What are the methods and explain them in brief?
7. Explain the principle of an ultrasonic Doppler blood flow meter. What are its advantages over other techniques?
8. (a) Explain the principle behind bioelectric amplifiers.
   (b) Write about differentiator circuit with neat schematic and derive the equation for the output voltage.

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