R07

Set No. 2

II B.Tech II Semester Examinations,April/May 2012
BIOTRANSDUCERS AND APPLICATIONS
Bio-Medical Engineering

Time: 3 hours

Max Marks: 80

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

1. (a) Describe the importance of korotkoff sounds for measuring pressure.

   (b) Explain the method where the pressure is measured with the help of korotkoff sound. [8+8]

2. (a) Illustrate with neat sketch that the two point calibration will not reduce the nonlinearities for mid- scale measurements.

   (b) Define midpoint calibration. Explain the procedure of mid point calibration in measuring system. [8+8]

3. With neat circuit diagrams, explain integrator and differentiator circuits needed in telemetry systems. [16]

4. (a) Derive the temperature voltage characteristics for a P-N junction diode.

   (b) Derive the sensitivity relation for thermistor. [8+8]

5. What is the physics behind ultrasound waves? An ultrasound wave propagating in human tissue has a frequency of 9.1 MHz calculate the wavelength? [16]

6. Discuss about the functioning of a catheter tip electromagnetic intra vascular probe and its electronic system. [16]

7. Describe the various types of displacement transducers that can be used in vitro and in vivo. [16]

8. Explain the terms CMRR and common mode signal. What are the common mode noise in ECG signal? Explain how an ideal differential amplifier eliminates commom mode signal. [16]

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