

11/2/12



(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is compulsory.
 (2) Attempt any four questions out of remaining six questions.
 (3) Figures to the right indicate full marks.

1. Write short note on :- 20
 - (a) RTD
 - (b) Fibre optic temperature sensor
 - (c) PCO₂ electrode
 - (d) Piezoelectric transducer.

2. (a) What is difference between static and dynamic characteristics of transducer ? 10
 Define any four static characteristics with one example.
 (b) Explain with block diagram various factors considered for selecting a transducer 10
 for biomedical applications.

3. (a) Draw and explain electrical equivalent circuit of electrode-skin interface. 10
 (b) Explain first order and second order system with example. 10

4. (a) Explain with suitable diagram construction and working of LVDT. 10
 (b) How is Diaphragm is used to measure pressure ? 5
 (c) What is motion artifact ? How it is minimized ? 5

5. (a) Explain with neat sketches the laws governing thermocouples. State its advantages and applications. 10
 (b) Explain in detail two types of microelectrodes with suitable diagram.

6. (a) Classify biosensors. Explain catalytic biosensor in detail with applications. 10
 (b) What is basic principle of strain gauge ? Derive equation for Gauge factor. 10

7. (a) Explain working principle of ISFET with diagram. 10
 (b) What is overpotential ? Explain its types. 5
 (c) Write short note on :- 5
 - (i) Radiation sensor 5
 - (ii) Internal electrodes. 10