S.E - IV Sem - Biomed.
Transducers and Sensors for
Medical Application
5 pm to 6:00 pm   13/5/16

Q.P. Code : 534202

(18)   [Total Marks :80

N.B. : (1) Question No. 01 is compulsory.
(2) Attempt any **three** questions out of remaining **five** questions
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume suitable data if necessary, stating your assumption.
(5) Answers to questions should be grouped together.

1. Attempt any four
(a) What is Biosensor? Give classification of Biosensor.   5
(b) Explain Accuracy & Resolution.   5
(c) Explain Electrode- Electrolyte interface.   5
(d) What is motion Artifacts? How can it be minimized?   5
(e) Explain with neat diagram any one application of piezoelectric   5
transducer.

2. (a) Describe with suitable example the following: 12
I.   Zero Order System
II.   First Order System
III. Second Order System
(b) Explain generalized instrumentation system with the help of block diagram. 8

3. (a) Explain basic principle of strain gauge and derive the equation for gauge 10
factor.
(b) Explain with suitable diagram the construction and working of LVDT.   10
Draw the block diagram of phase shift detection system. Give one
application of LVDT.

4. (a) What is thermocouple? Explain with neat sketches laws governing   10
thermocouple. State its advantages and applications.
(b) What is half cell potential? How it is measured? What is over potential? 10
What are the types of over potential?

5. (a) Draw & explain electrical equivalent circuit of electrode skin interface. 10
(b) Explain transcutaneous measurement of arterial oxygen tension.   10

6. Attempt any four
(a) Explain in detail affinity sensor
(b) Write short note on pCO2 electrode.   5
(c) Explain in detail ISFET   5
(d) Fiber Optic pressure transducer.   5
(e) Distinguish between potentiometric and amperometric sensors.   5

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