

23/11/13

S.E/IV/AM/CBGS/

Transducers & Sensors for medical Application.

OP Code : 5322

(18)

(3 Hours)

[Total Marks : 80

- N. B. : (1) Question No. 1 is compulsory.
 (2) Attempt any three questions out of remaining five.
 (3) Draw diagrams/sketches wherever necessary.
 (4) Figures to the right indicate full marks.
 (4) Use legible handwriting.

1. Attempt any four :-
 - (a) What is a Biosensor. Give classifications of Biosensor. 5
 - (b) Describe diaphragms & bourdon tubes. 5
 - (c) Explain Electrode Electrolyte interface. 5
 - (d) Explain accuracy & resolution. 5
 - (e) Explain radiation sensors. 5
2. (a) Differentiate between amperometric & potentiometric sensors. Explain example of amperometric sensors. 10
- (b) Explain construction and working principle of LVDT. 10
3. (a) Explain transcutaneous measurement of arterial oxygen tension. 10
- (b) Draw & explain electrical equivalent circuit of electrode-skin interface. 10
4. (a) Explain basic principle of strain gauge. Derive the equation for gauge factor. 10
- (b) Explain with the neat sketches the laws governing thermocouples. State it's advantages & applications. 10
5. (a) Explain the term immunosensor. Explain with a neat diagram working of any one immunosensor. 10
- (b) Explain generalised instrumentation system with the help of block diagram. 10
6. (a) Explain with diagram ISFET's 5
- (b) Explain in detail affinity sensors 5
- (c) Write a short note on RTD 5
- (d) Explain pCO₂ electrode in detail 5