

QP Code : 12419

Transducers & sensors For medical App

(3 Hours)

(17)

[Total Marks : 80

- N.B. : (1) Attempt any four questions out of the given six questions.
 (2) Figures to the right indicate full marks.
 (3) Assume suitable data if necessary, stating your assumptions.

1. Attempt any four :-

- (a) Explain different types of microelectrodes. 5
 (b) Describe diaphragms and bourdon tubes in short. 5
 (c) Explain the working of NTC and PTC with suitable characteristics 5
 (d) Differentiate between amperometric and potentiometric sensors. 5
 (e) What is motion artifact ? How is it minimized. 5
2. (a) What is half-cell potential ? How is it Measured ? What is overpotential ? What are the types of overpotential ? 10
 (b) Explain any four static characteristics giving suitable examples. 10
3. (a) Describe with suitable example the following :- 12
 (i) Zero order system
 (ii) First order system
 (iii) Second order system.
- (b) Explain Transcutaneous Measurement of arterial Oxygen tension. 8
4. (a) What is capacitive Transducer ? Explain how is it used to measure displacement with suitable diagram and necessary mathematical equations. 10
 (b) Classify biosensors. Explain catalytic biosensors in detail. 10
5. (a) What is meant by gauge factor ? Derive its formula. 10
 (b) What is thermocouple ? Explain with neat labelled diagrams the laws governing thermocouple. 10
6. (a) Explain Radiation Sensors 5
 (b) Write a short note on RTD 5
 (c) Explain pCO₂ electrode in detail. 10