

QP-39074



Solution

1. (a) Explanation of primary and secondary transducers – 2 marks
Examples primary and secondary transducers– 1.5X2 = 3 marks
 - (b) What is motion artefact– 3 marks
How it can be minimized– 2 marks
 - (c) Definition of biosensor– 1 mark
Classification of biosensor– 4 mark
 - (d) pH electrode diagram– 2 marks
pH electrode explanation– 3 marks
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2. (a) Explanation of the basic principle of strain gage– 3 marks.
Deriving the equation for gage factor of strain gage– 7 marks
 - (b) (i) First-order system explanation– 2 marks.
First-order system example– 3 marks.
(ii) Second-order system explanation – 2 marks.
Second-order system example – 3 marks.
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3. (a) pO₂ electrode diagram – 04 marks.
pO₂ electrode explanation – 06 marks.
 - (b) Construction of LVDT diagram – 02 marks
Construction of LVDT explanation- 02 marks.
Circuit diagram of LVDT – 02 marks
Circuit diagram of LVDT explanation – 04 marks.
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4. (a) What is a thermocouple – 02 marks.
Laws governing the thermocouple – 08 marks.
 - (b) Electrode-skin equivalent circuit diagram – 04 marks.
Electrode-skin interface equivalent circuit explanation – 06 marks.
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5. (a) What is an catalytic biosensor - 03 marks.
Explanation of one example of catalytic biosensor – 07 marks.
 - (b) Photon sensors –10 Marks to be distributed among various photon sensors.

02

6 Attempt **any four** of the following:

(a) Immunosensor explanation – 05 marks.

(b) Microelectrodes explanation (with diagrams) – 05 marks.

(c) ISFET diagram – 02 marks.

ISFET explanation – 03 marks.

(d) Elastic strain gage diagram - 02 marks.

Elastic strain gage explanation - 03 marks.

(e) Any one medical application of fiber optics – 05 marks.