1. (a) Capacitive microphone sensor diagram— 2 marks
   Capacitive microphone sensor explanation— 3 marks
(b) Internal electrodes diagram— 2 marks
   Internal electrodes explanation— 3 marks
(c) pH electrode diagram— 2 marks
   pH electrode explanation— 3 marks
(d) First-order system explanation— 2 marks.
   First-order system example— 3 marks.

2. (a) Explanation of the basic principle of strain gage— 3 marks.
   Deriving the equation for gauge factor of strain gage— 7 marks
(b) Diagrams for various laws governing the thermocouple— 2 marks.
   Explanation for various laws governing the thermocouple— 6 marks.
   Giving advantages and disadvantages of thermocouples— 2 marks.

3. (a) DSO diagram— 04 marks.
   DSO 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.

4. (a) Generalized medical instrumentation system diagram— 04 marks.
   Generalized medical instrumentation system explanation— 06 marks.
(b) Electrode-skin equivalent circuit diagram— 04 marks.
   Electrode-skin interface equivalent circuit explanation— 06 marks.

5. (a) What is Immunosesnor— 03 marks.
   Explanation of one example of Immunosesnor— 07 marks.
(b) Dual slope integrating type digital voltmeter block diagram— 04 marks.
   Dual slope integrating type digital voltmeter explanation— 06 marks.
6 Attempt any four of the following:

(a) Any one medical application of fiber optics— 05 marks.

(b) True RMS responding voltmeter diagram— 02 marks.
    True RMS responding voltmeter explanation— 03 marks.

(c) ISFET diagram— 02 marks.
    ISFET explanation— 03 marks.

(d) Voltage versus current characteristics of NTC thermistor diagram— 2 marks.
    Voltage versus current characteristics of NTC thermistor explanation— 3 marks.

(e) Classification of biosensor— 05 marks.

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