

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2018

ANALYTICAL AND DIAGNOSTIC EQUIPMENTS

[Time : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define the term sensitivity.
2. State the principle of colorimeter.
3. Name any two temperature transducers.
4. List the isolators used in medical systems.
5. Give any two applications of EMG.

(5×2 = 10)

PART — B

(Maximum marks : 30)

II Answer any *five* of the following questions. Each question carries 6 marks.

1. Explain the block diagram of digital oscilloscopes.
2. Describe the working of circular chart recorder.
3. Explain haemoglobin meter with block diagram.
4. Explain the construction of PO<sub>2</sub> electrode with sketch.
5. Distinguish between invasive and non - invasive BP measurement. Also give examples.
6. Summarize the exercise stress testing protocols using treadmill.
7. Describe the working of Electromyograph with block diagram.

(5×6 = 30)

## PART — C

(Maximum marks : 60)

(Answer *one* full question from each unit. Each full question carries 15 marks.)

## UNIT — I

- III (a) Describe the measurement of frequency and time period using oscilloscopes.  
(b) Summarize the working of galvanometer.

OR

- IV (a) Describe the working of X-Y recorder.  
(b) Explain the principle and working of analog oscilloscopes.

## UNIT — II

- V (a) Explain catheter tip electrodes for measurement of  $pO_2$  and  $pCO_2$ .  
(b) Summarize the working of prism monochromators.

OR

- VI (a) Describe the block diagram of blood gas analyzer.  
(b) Explain the block diagram of pH meter.

## UNIT — III

- VII (a) Explain the principle and working of Electromagnetic blood flow meter with a neat sketch.  
(b) Explain BP measurement using sphygmomanometer.

OR

- VIII (a) Summarize the working of Coulter blood cell counter with block diagram.  
(b) Identify and explain any two respiratory sensing methods.

## UNIT — IV

- IX (a) Explain the optical isolation technique used in medical systems.  
(b) List the requirements of amplifiers used in biopotential recording.

OR

- X (a) Illustrate the bipolar limb lead configurations for recording ECG.  
(b) Explain the working of EEG recorder with block diagram.
-