SQ B10

TED (15) – 4241

(REVISION — 2015)

Reg. No.....

Signature .....

FOURTH SEMESTER DIPLOMA EXAMINATION IN BIOMEDICAL ENGINEERING — APRIL, 2017

ANALYTICAL AND DIAGNOSTIC EQUIPMENTS

[*Time* : 3 hours

(Maximum marks : 100)

PART — A

(Maximum marks : 10)

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Define accuracy.
2. Identify the different pH conditions.
3. State Doppler effect.
4. List the exercise protocols used for stress testing.
5. Define Phase angle of a periodic wave. (5×2=10)

PART — B

(Maximum marks : 30)

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

1. Explain the working of galvanometer.
2. State and derive Beer Lambert's law.
3. Explain the construction of PO_2 electrode.
4. Identify and explain any two temperature transducers.
5. Distinguish between invasive and non-invasive blood pressure measurements.
6. Describe the working of electromyograph with block diagram.
7. Identify the characteristics and requirements of amplifiers in the biomedical devises. (5×6=30)

Marks

PART — C

(Maximum marks : 60)

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

UNIT — I

III (a) Explain the principle and working of analog oscilloscopes. 8

(b) Summarize the working of circular chart recorder. 7

OR

IV (a) Describe the working of X-Y recorder with neat sketch. 8

(b) Illustrate with block diagram the measurement of AC and DC voltages in a digital multimeter. 7

UNIT — II

V (a) Summarize the working of auto analyzer with block diagram. 10

(b) Distinguish between prism and diffraction grating monochromator. 5

OR

VI (a) Explain the principle and working of pulse oximeter with block diagram. 8

(b) Summarize the working of flame photometer with diagram. 7

UNIT — III

VII (a) Explain the principle and working of Electromagnetic blood flow meter with a neat sketch. 9

(b) Describe the non-invasive BP measurement using sphygmomanometer. 6

OR

VIII (a) Summarize the working of Coulter blood cell counter with block diagram. 10

(b) Identify respiratory sensors and explain any two. 5

UNIT — IV

IX (a) Illustrate the electrode placement for EEG recording. 8

(b) Describe ambulatory ECG recording with block diagram. 7

OR

X (a) Describe with block diagram the working of basic ECG recorder. 8

(b) Explain the optical method of patient isolation in biomedical systems. 7

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