TED (15) – 6213
(Revision – 2015)

A23 - 02732

Reg.No……..
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE , APRIL – 2023

BIOMEDICAL INSTRUMENTS

(Maximum Marks : 100) (Time : 3 hours)

PART – A
(Maximum Marks : 10)

Marks

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

1. Define Action Potential of a cell.
2. List any two types of electrodes used for ECG measurement.
3. State the need of ventilator.
4. Define Macro shock.
5. Name the frequency regions of EEG waveform.

(5x2=10)

PART – B
(Maximum Marks : 30)

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

1. Explain the working principle of peizo electric arterial pulse receptor.
2. Describe the process of recording EMG with the help of a block diagram.
3. List any four functions of haemodialysis machine.
4. Explain the block diagram of a Bio telemetry system.
5. List the criteria for selecting biomedical transducers.
6. Draw a typical ECG waveform and explain its different parts.
7. Compare implantable and external pacemakers.

(5x6=30)

PART – C

(Maximum Marks : 60)

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

UNIT – I

III. (a) Explain the working principle of photo electric pulse transducer. (8)

(b) Explain the indirect method of blood pressure measurement. (7)

OR

IV. (a) Explain the working principle of strain gauge type respiration sensor. (7)

(b) Explain the working principle of electromagnetic blood flow meter. (8)

UNIT – II

V. (a) Explain the lead systems used for the measurement of ECG. (9)

(b) Explain the different types of electrodes used for EEG measurement. (6)

OR

VI. (a) Describe the block diagram of an ECG machine. (9)

(b) Explain the different types of electrodes used for EMG measurement. (6)

UNIT –III

VII. (a) Explain the operation of a ventricular synchronous demand pacemaker. (8)

(b) Explain the working of an AC defibrillator. (7)

OR

VIII. (a) Explain the working principle of electrical conductivity blood cell counter. (8)

(b) Explain the working of Ultrasonic diathermy unit. (7)

UNIT – IV

IX. (a) Explain the components of NMR imaging system with the help of a block diagram. (9)

(b) List the precautions to be taken while handling biomedical instruments. (6)

OR

X. (a) Explain the construction and operation of an X-ray machine with block diagram. (9)

(b) Explain the different types of scanning methods in an ultrasonic imaging system. (6)

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