

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0916

Roll No.

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B.Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION 2010-11

BIO-MEDICAL ENGINEERING

Time : 3 Hours

Total Marks : 100

- Note :**
- (1) All questions carry equal marks.
 - (2) Answer all **five** questions selecting any **two** from each question.

1. (a) What are the various problems encountered in measuring a living system ? Explain artifacts.
(b) Explain polarization, depolarization, and repolarization. Explain and draw diagram for ECG, EEG.
(c) Differentiate between microelectrodes and body surface electrodes.
Find the capacitance of a microelectrode if the pipette radius is $0.2 \mu\text{m}$ and the inside tip radius is $0.15 \mu\text{m}$.
(2×10=20)
2. (a) Explain the Ultrasonic method of blood flow measurement. Discuss patient care and monitoring system.
(b) Explain the working principle of pacemaker and why it is needed.
Write short note on : Implantable Defibrillators.
(c) Explain Calibration and Reparability of patient monitoring equipment.
(2×10=20)
3. (a) Describe and explain measurement of Spirometer. Write short note on : Nebulizers.

- (b) Describe and explain about :
- (i) Aspirators
 - (ii) Ventilators
 - (iii) Humidifiers.
- (c) How Neuronal firing measurements are made ? Explain the difference b/w motor nerve and sensory nerve.

(2×10=20)

- (a) Explain the working principle of electro-retinogram with block diagram.

Explain Electro-oculogram.

- (b) Explain the principle of computerized axial tomography and compare its method of visualization with conventional X-Ray method.

- (c) Describe MRI with the help of a diagram. Write down its merits and demerits.

(2×10=20)

5. Write short notes on (any *four*) :—

- (a) Myoelectric Arm.
- (b) Laser application in Medicine.
- (c) Hearing Aid.
- (d) Implantable Units.
- (e) Telemetry for ECG measurements during exercise.

(4×5=20)