

Printed Pages:

Paper Id:

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Sub Code: NBM-012

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B TECH
(SEM VI) THEORY EXAMINATION 2017-18
BIOELECTRICITY

Time: 3 Hours

Total Marks: 100

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.
2. Any special paper specific instruction.

SECTION A

- 1. Attempt all questions in brief. 2 x 10 = 20**
- a) Define the term membrane time and space constants?
 - b) Define Bioelectricity generation?
 - c) What is the difference between ECG and EMG?
 - d) State what is the significance Nernst Equation?
 - e) Define bioelectric signal?
 - f) Define EPSP and IPSP?
 - g) Draw the EMG waveform?
 - h) Define the characteristic of AV node and SA node?
 - i) What is Membrane conductance?
 - j) What is Einthoven's triangle?

SECTION B

- 2. Attempt any three of the following: 10 x 3 = 30**
- a) Explain different Bio potential and their characteristic?
 - b) Explain the refractory period characteristic of stimulus in detail?
 - c) Explain Hodgkin-Huxley Membrane Model. State how Hodgkin-Huxley membrane model explain conductance behavior of Sodium and Potassium.
 - d) Explain Electrical activity of skeletal muscles in detail?
 - e) Discuss different Electrodes for Surgery, Physiotherapy & Analytical instruments?

SECTION C

- 3. Attempt any one part of the following: 10 x 1 = 10**
- a) Explain how the bioelectricity generation is done at the cellular & sub cellular level?
 - b) Explain briefly about the various types of bioelectric signal that are found inside the human body?
- 4. Attempt any one part of the following: 10 x 1 = 10**
- a) What is Nernst Potential? Derive Nernst Equation?
 - b) Explain Electrical equivalent circuit of Axon in detail?
- 5. Attempt any one part of the following: 10 x 1 = 10**
- a) Describe electrical properties of receptors?
 - b) Write short notes on:
 - (i) Intensity frequency relationship.
 - (ii) Nerve conduction

6. Attempt any *one* part of the following: **10 x 1 = 10**

- a) Describe 12 lead ECG with neat diagram?
- b) Explain in detail neuromuscular transmission?

7. Attempt any *one* part of the following: **10 x 1 = 10**

- a) Explain Equivalent Circuit Properties of Needle & Micro Electrodes in detail?
- b) Write short notes on:
 - (i) Motor unit potential.
 - (ii) Electro-Electrolyte Interface