

**CONTROL TASKS OF INDEPENDENT WORK № 1**  
**ELECTRICAL PHENOMENA IN EXCITABLE TISSUES**

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(Full Name)

Volgograd, 2024

# **INTRODUCTION TO THE SUBJECT. ELECTRICAL PHENOMENA IN EXCITABLE TISSUES**

## **Questions for short written answer**

1. Biological membranes, their structure and functions.

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2. Resting membrane potential, its origin.

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3. Active state of tissue. Action potential, its phases, their origin.

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4. Synapse, classification of synapses. Chemical synapses, structure. Mechanism of signal transmission in chemical excitatory synapses.

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5. Structural and functional organization of muscles. Physical and physiological properties of skeletal muscles.

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6. Myoneural synapse, its features. The concept of the potential of the end plate, its role in generating an action potential on the muscle membrane.

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**Terms dictionary**

Types of electrical responses:

Action potential – \_\_\_\_\_

Resting membrane potential – \_\_\_\_\_

Depolarization – \_\_\_\_\_

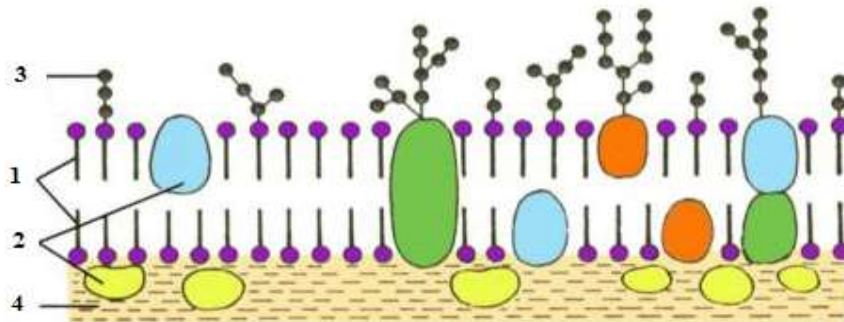
Repolarization – \_\_\_\_\_

Hyperpolarization – \_\_\_\_\_

Overshoot – \_\_\_\_\_

1. Sign the designations on diagram.

Diagram of biological membrane structure



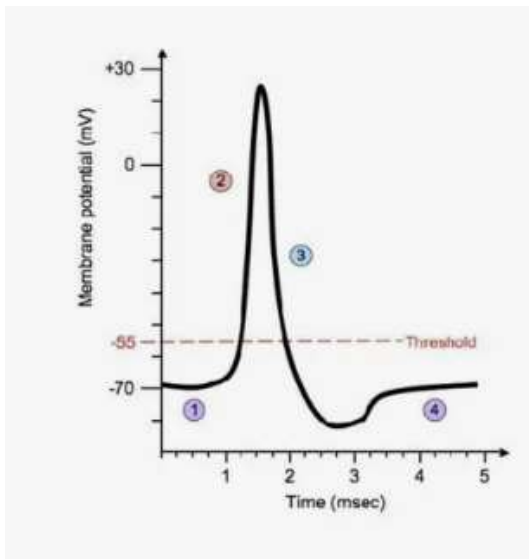
1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

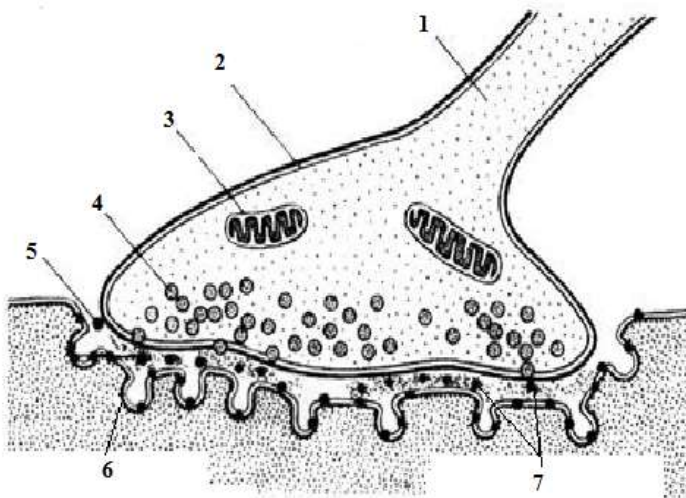
2. Sign the symbols shown on the graph.



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

3. Sign the synapse elements indicated by numbers on the diagram.

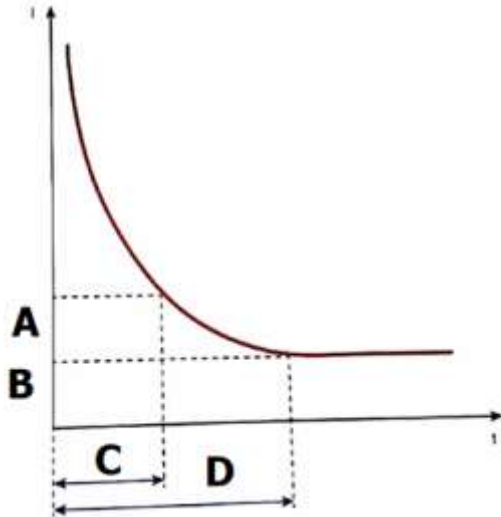
Synapse structure diagram



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_
6. \_\_\_\_\_
7. \_\_\_\_\_

4. Sign notation to the graph.

Force of stimulus	Duration of action
A	C
B	D



5. Describe types of nerve fibers.

Types of nerve fibers	Thickness	Presence of myelin	Excitation propagation mechanism	Excitation propagation velocity
A				
B				
C				

6. Law of isolated conduction of excitation \_\_\_\_\_

\_\_\_\_\_

7. Law of anatomical and physiological integrity of nerve \_\_\_\_\_

\_\_\_\_\_

8. Law of bilateral conduction of excitation \_\_\_\_\_

\_\_\_\_\_

Date: \_\_\_\_\_

Checked by (Full Name of Teacher): \_\_\_\_\_

Mark: \_\_\_\_\_

Signature of Teacher: \_\_\_\_\_