

**CONTROL TASKS OF INDEPENDENT WORK № 2**  
**REGULATORY SYSTEMS OF THE HUMAN BODY**

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(Full Name)

Volgograd, 2024

## REGULATORY SYSTEMS OF THE HUMAN BODY

### Questions for short written answer

1. Neuron, its physiological properties, classification.

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2. Methods for studying the functions of central nervous system. Electroencephalography.

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3. Concept of reflex. Classification of reflexes. Main components of reflex arc.

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4. General plan of structure and basic properties of ANS. Sympathetic, parasympathetic, and metasympatetic divisions of the autonomic nervous system, their structural and functional differences.

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5. Two-neuron structure of efferent autonomic fibers. Ganglia of autonomic nervous system. Transmission of impulses in synapses of ANS. Adrenergic and cholinergic structures.

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6. Concept of glands of internal secretion (endocrine glands), endocrine and neuroendocrine systems. Concept of chemical nature of hormones (amino acid, protein, peptide, steroid).

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**Terms dictionary**

Central nervous system (CNS) – \_\_\_\_\_

Neuron – \_\_\_\_\_

Reflex – \_\_\_\_\_

Reflex arch – \_\_\_\_\_

Autonomic (vegetative) nervous system – \_\_\_\_\_

Sympathetic autonomic (vegetative) nervous system – \_\_\_\_\_

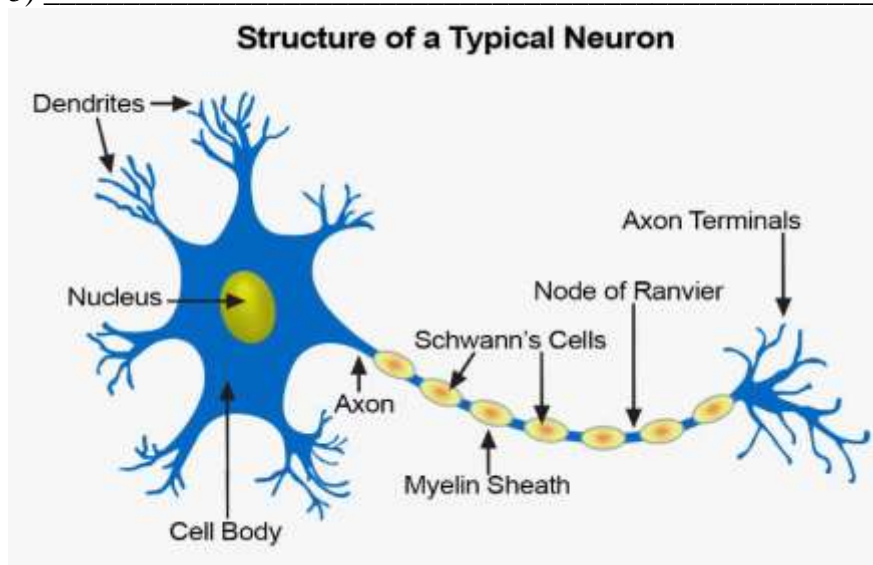
Parasympathetic autonomic (vegetative) nervous system – \_\_\_\_\_

Metasympathetic autonomic (vegetative) nervous system – \_\_\_\_\_

Endocrine system – \_\_\_\_\_

1. Specify the main parts of the neuron and their functions:

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_




The axon hillock is the part of the neuron from which the axon departs. At this point the neuron membrane has a number of features:

- Free from synapses
- Characteristic set of channels: a large number of fast potential-dependent Na-channels; Ca-channels; slow potential-dependent K-channels, fast potential-dependent K-channels, calcium-dependent K-channels.
- The resting potential is lower than in other parts of the neuron (about -60 mV), therefore:
- Depolarization threshold \_\_\_\_\_, than on other parts of the neuron;
- Excitability \_\_\_\_\_, than on other parts of the neuron.

2. Draw a flowchart of sympathetic part of autonomic system. Sign options for location of body of first neuron and ganglia.



3. Draw a flowchart of parasympathetic part of autonomic system. Sign options for location of body of first neuron and ganglia.



4. Correlate the type of nerve fiber and its characteristics

A) Parasympathetic preganglionic B) Parasympathetic postganglionic C) Sympathetic preganglionic D) Sympathetic postganglionic	<b>Location of the first neuron:</b> 1. C <sub>VII</sub> -L <sub>II</sub> = Jacobson center – preganglionic neurons – all organs and tissues. 2. Cranial nerves of the mesencephalic (III), bulbar (VII, IX, X) and sacral divisions. 3. Th II-Th IV – salivary glands 4. Th I-Th IV – heart.
	<b>Mediator and receptors:</b> 1. Neurotransmitter acetylcholine N-cholinergic receptors (blocked benzogeksony). 2. Norepinephrine, $\alpha$ - and $\beta$ -adrenergic receptors. 3. Neurotransmitter acetylcholine, muscarinic receptors.
	<b>Type of fiber:</b> 1. Type C, thin unmyelinated, cholinergic. 2. Type B, thin myelinated, cholinergic. 3. Type C, thin unmyelinated, adrenergic.

5. Fill the table «Influence of autonomic nervous system on the work of internal organs».

Organs	Sympathetic influences	Parasympathetic influences
Pupils		
Salivary glands		
Stomach:	Motility	
	Secretion	
Intestine:	Motility	
	Secretion	
Bronchi:	Lumen	
	Secretion	
Heart:	HR	
	Force of contractions	
	Conducting in atrioventricular node	
Vessels		
Urinary bladder		
Metabolism:	Glycogenolysis	
	Lipolysis	

**Practical work**  
**MAJOR ENDOCRINE GLANDS**

**Aim:** determining localization of the major endocrine glands.

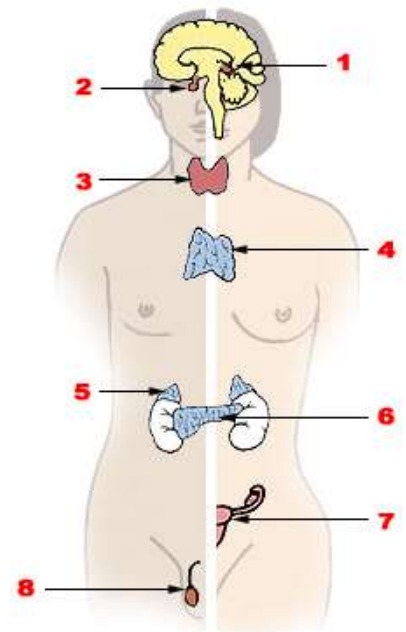
**Technique:**

Look at pic. 1 and write down major endocrine gland:

**Result:**

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

**Conclusion:**



Picture 1. Major endocrine glands.  
(Male – left, female – right).

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

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

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

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