

The Nervous System: Formative Check

Time: 25 min. 6 questions.

Instructions

Answer all six questions using your knowledge of the structure and function of the nervous system. Show your reasoning for short answer questions and use complete sentences where appropriate. For the numeric question, show how you arrived at your final count.

Questions

1. Which neurotransmitter is broken down by cholinesterase after it has transmitted a signal across a synapse?

- A) Norepinephrine
- B) Acetylcholine
- C) Dopamine
- D) Serotonin

([Outcome](#))

2. Explain what is meant by the "all-or-none" response of a neuron, and describe how the nervous system communicates the intensity of a stimulus even though individual action potentials do not vary in size. ([Outcome](#))

3. True or false: The patellar reflex is an example of a reflex arc that depends on the organization of neurons into nerves. ([Outcome](#))

4. The specific outcome describing the principal structures of the central and peripheral nervous systems lists a set of structures and examples involved in regulating voluntary and involuntary body functions (cerebral hemispheres and lobes, cerebellum, pons, medulla oblongata, hypothalamus, spinal cord, sympathetic nervous system, parasympathetic nervous system, and sensory-somatic nervous system). Count the total number of distinct structures or systems named in this list. ([Outcome](#))

5. Which division of the autonomic nervous system prepares the body for a "fight-or-flight" response and acts together with the endocrine system during a stress response?

- A) Sympathetic nervous system
- B) Parasympathetic nervous system
- C) Somatic nervous system
- D) Cranial nervous system

([Outcome](#), [Outcome](#))

6. Compare how the nervous system and the endocrine system control physiological processes. Refer to the speed of onset and the duration of effect for each system. ([Outcome](#))

Curriculum coverage

Question	Outcome alias
1	Outcome
2	Outcome
3	Outcome

4	Outcome
5	Outcome, Outcome
6	Outcome

Answer key

1. B) Acetylcholine. Cholinesterase breaks down acetylcholine after it has carried a signal across the synapse ([Outcome](#)).
2. A neuron either fires a full action potential or does not fire at all; there is no partial response. The nervous system encodes stimulus intensity through the frequency of action potentials fired, not through the size of any single impulse ([Outcome](#)).
3. True. The patellar reflex is given as an example of a reflex arc, and reflex arcs arise from the organization of individual neurons into nerves ([Outcome](#)).
4. 9. The outcome names cerebral hemispheres and lobes, cerebellum, pons, medulla oblongata, hypothalamus, spinal cord, the sympathetic nervous system, the parasympathetic nervous system, and the sensory-somatic nervous system, for a total of nine structures or systems ([Outcome](#)).
5. A) Sympathetic nervous system. The sympathetic division is one of the two autonomic divisions identified alongside the parasympathetic division ([Outcome](#)), and it works together with the endocrine system, such as the adrenal gland, during stress ([Outcome](#)).
6. The nervous system produces rapid, short-lived responses through electrical and chemical signalling along neurons, while the endocrine system produces slower, longer-lasting responses through hormones released into the blood; the two systems act together to maintain homeostasis ([Outcome](#)).