

Fundamentals of Neuroscience

Neuroscience · Answer Key · 12 Questions

1. Which part of the neuron is primarily responsible for receiving incoming signals from other neurons?

- A) Axon terminal
- B) Dendrites**
- C) Myelin sheath
- D) Soma

2. What is the gap between two neurons where neurotransmitters are released called?

- A) Node of Ranvier
- B) Synaptic cleft**
- C) Dendritic spine
- D) Axon hillock

3. Which ion is most responsible for the depolarization phase of an action potential?

- A) Sodium (Na⁺)**
- B) Potassium (K⁺)
- C) Calcium (Ca²⁺)
- D) Chloride (Cl⁻)

4. What is the function of the myelin sheath in the nervous system?

- A) To produce neurotransmitters
- B) To insulate axons and increase signal conduction speed**
- C) To process sensory information in the brain
- D) To protect the blood-brain barrier

5. Which lobe of the cerebral cortex is primarily associated with visual processing?

- A) Frontal lobe
- B) Temporal lobe
- C) Parietal lobe
- D) Occipital lobe**

6. What is the main function of the cerebellum?

- A) Regulation of heart rate
- B) Coordination of movement and balance**
- C) Processing of language
- D) Formation of long-term memories

7. Which neurotransmitter is most directly involved in the regulation of mood, sleep, and appetite?

- A) Dopamine
- B) Serotonin**
- C) Glutamate
- D) GABA

8. The 'fight or flight' response is primarily mediated by which division of the nervous system?

- A) Parasympathetic nervous system
- B) Sympathetic nervous system**
- C) Somatic nervous system
- D) Enteric nervous system

9. Where is the cell body (soma) of a neuron located?

- A) In the axon terminal
- B) Within the synaptic vesicle
- C) Surrounding the nucleus**
- D) Inside the myelin sheath

10. Which brain structure acts as the primary relay station for sensory information traveling to the cerebral cortex?

- A) Thalamus**
- B) Hypothalamus
- C) Amygdala
- D) Hippocampus

11. What occurs during the repolarization phase of an action potential?

- A) Sodium channels open
- B) Potassium ions exit the neuron**
- C) Calcium ions enter the neuron
- D) The cell becomes more negative than its resting potential

12. Which part of the brain is most closely associated with the formation of new declarative memories?

- A) Brainstem
- B) Hippocampus**
- C) Cerebellum
- D) Corpus callosum