Advanced Neuroscience Foundations

Neuroscience · Practice Test · 10 Questions

1. Which specific neurotransmitter is primarily responsible for the inhibitory signal in the adult mammalian central nervous system?

A) Glutamate
B) GABA
C) Acetylcholine
D) Dopamine

2. In the context of the action potential, what is the primary role of the refractory period?

A) To accelerate signal conduction speed
B) To prevent the impulse from traveling backwards
C) To initiate neurotransmitter release
D) To increase the threshold for synaptic firing

3. The Broca's area, essential for speech production, is anatomically located in which lobe of the cerebral cortex?

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

4. Which glial cell type is primarily responsible for forming the myelin sheath in the peripheral nervous system?

A) Astrocytes
B) Microglia
C) Schwann cells
D) Oligodendrocytes

5. What is the primary function of the hippocampus within the limbic system?

A) Regulation of body temperature
B) Processing of long-term memory
C) Control of heart rate
D) Regulation of circadian rhythms

6. Long-term potentiation (LTP) is a cellular mechanism most closely associated with which process?

A) Muscle contraction
B) Pain perception
C) Synaptic plasticity and memory formation
D) Auditory signal processing

7. The blood-brain barrier is composed primarily of which structure?

A) Dura mater
B) Endothelial cells with tight junctions
C) Cerebrospinal fluid
D) Myelinated axons

8. Which cranial nerve is responsible for the parasympathetic innervation of the heart, lungs, and digestive tract?

A) Trigeminal nerve
B) Facial nerve
C) Vagus nerve
D) Optic nerve

9. During a neural impulse, which ion flows into the neuron to cause depolarization?

A) Potassium
B) Chloride
C) Sodium
D) Magnesium

10. The primary visual cortex (V1) is located within which specific region of the brain?

A) Superior temporal gyrus
B) Calcarine fissure of the occipital lobe
C) Precentral gyrus
D) Insular cortex