**Chapter 12 Pre-Test A**

**Multiple Choice**

*Identify the choice that best completes the statement or answers the question.*

**\_\_\_\_ 1.** Which part of a neuron receives an impulse from the previous neuron?

|  |  |
| --- | --- |
| **a.** | axon |
| **b.** | dendrite |
| **c.** | cell body |
| **d.** | axoplasm |

**\_\_\_\_ 2.** Which of the following is the fatty insulating layer that surrounds white matter but is absent in grey matter?

|  |  |
| --- | --- |
| **a.** | myelin |
| **b.** | synapse |
| **c.** | axoplasm |
| **d.** | axomembrane |

**\_\_\_\_ 3.** The neurotransmitter released by the sympathetic neurons is

|  |  |
| --- | --- |
| **a.** | dopamine. |
| **b.** | endorphin. |
| **c.** | acetylcholine. |
| **d.** | norepinephrine. |

**\_\_\_\_ 4.** The spaces between the Schwann cells of a neuron are known as

|  |  |
| --- | --- |
| **a.** | axons. |
| **b.** | synapses. |
| **c.** | dendrites. |
| **d.** | nodes of Ranvier. |

**\_\_\_\_ 5.** Which of the following division of the nervous system is related to the fight-or-flight response?

|  |  |
| --- | --- |
| **a.** | central nervous system |
| **b.** | somatic nervous system |
| **c.** | sympathetic nervous system |
| **d.** | parasympathetic nervous system |

**\_\_\_\_ 6.** What would be the resting membrane potential of a neuron expressed in millivolts?

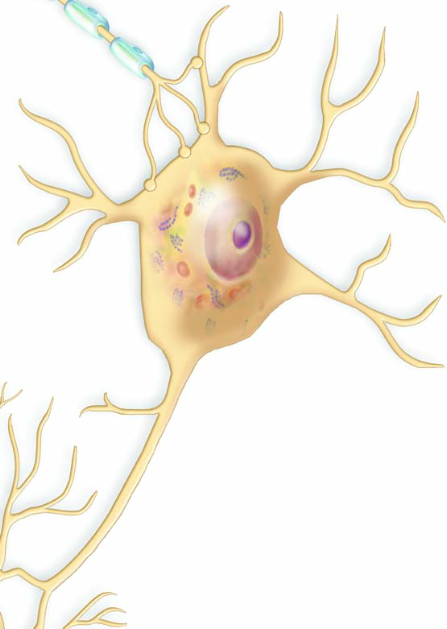
|  |  |
| --- | --- |
| **a.** | –70 mV |
| **b.** | –35 mV |
| **c.** | +35 mV |
| **d.** | +70 mV |

**\_\_\_\_ 7.** The cell membrane of a neuron cannot be stimulated to undergo an action potential

|  |  |
| --- | --- |
| **a.** | if the threshold potential has been exceeded. |
| **b.** | after a resting potential has been established. |
| **c.** | during the refractory period when repolarization is occurring. |
| **d.** | during the refractory period when depolarization is occurring. |

**\_\_\_\_ 8.** What role does calcium ion play in the transmission of a nerve impulse from one neuron to the next?

|  |  |
| --- | --- |
| **a.** | it causes the exocytosis of neurotransmitters |
| **b.** | it transmits the impulse across the synaptic cleft |
| **c.** | it combines with receptors in the post-synaptic membrane |
| **d.** | it breaks down neurotransmitter remaining in the synaptic cleft |



**\_\_\_\_ 9. Use the diagram above to answer the next question.**

What role does this cell perform?

|  |  |
| --- | --- |
| **a.** | conducts nerve impulses away from glands |
| **b.** | conducts nerve impulses toward an effector |
| **c.** | conducts nerve impulses between two neurons |
| **d.** | conducts nerve impulses away from a sensory receptor in the skin |

**\_\_\_\_ 10. Use the diagram above to answer the next question.**

If an action potential is generated in the dendrite of this cell, which of these actions will occur next?

|  |  |
| --- | --- |
| **a.** | stimulation of a motor neuron |
| **b.** | depolarization in the axon of an interneuron |
| **c.** | depolarization in the axon of a sensory neuron |
| **d.** | release of neurotransmitter from an axon terminal |

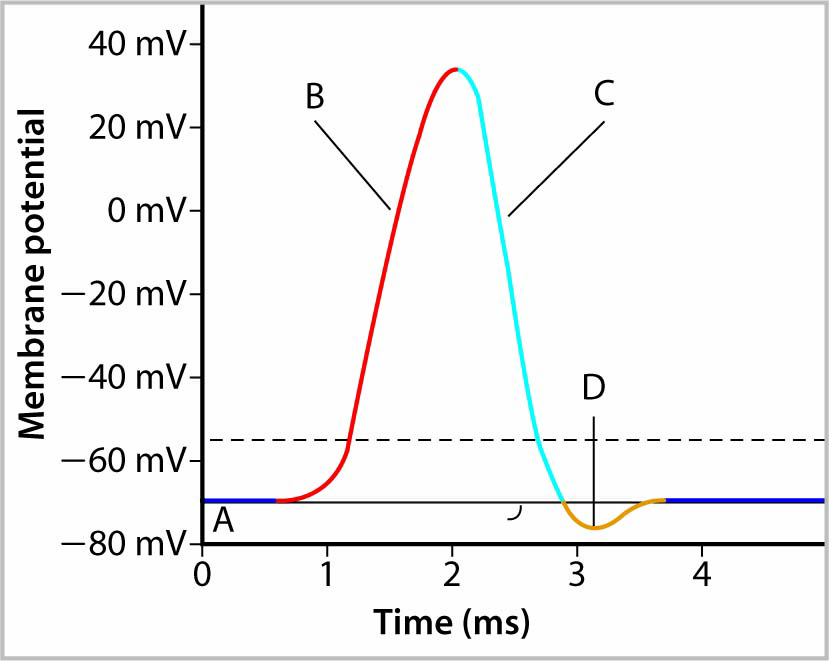
**\_\_\_\_ 11. Use the diagram above to answer the next question.**

When an action potential reaches the end of this cell, which of the following events will occur?

|  |  |
| --- | --- |
| **a.** | an effector will be stimulated and the muscle will respond |
| **b.** | neurotransmitter will be released and will bind to receptors in an interneuron |
| **c.** | neurotransmitter will be released and will bind to receptors in a motor neuron |
| **d.** | neurotransmitter will be released and will bind to receptors in a sensory neuron |

**\_\_\_\_ 12.** How is the structure of a sensory neuron related to its function?

|  |  |
| --- | --- |
| **a.** | A long axon can reach from a receptor to the spinal cord. |
| **b.** | A long dendrite can reach from a receptor to the spinal cord. |
| **c.** | Large proteins ensure the axoplasm remains negatively charged at all times. |
| **d.** | Receptors in the post-synaptic membrane can bind with specific neurotransmitters. |



**\_\_\_\_ 13. Use the graph above to answer the next question.**

During which indicated period is depolarization occurring?

|  |  |
| --- | --- |
| **a.** | A |
| **b.** | B |
| **c.** | C |
| **d.** | D |

**\_\_\_\_ 14. Use the graph above to answer the next question.**

During which indicated interval do potassium ions rapidly exit the axoplasm?

|  |  |
| --- | --- |
| **a.** | A |
| **b.** | B |
| **c.** | C |
| **d.** | D |

**\_\_\_\_ 15. Use the graph above to answer the next question.**

At which point on the graph do potassium gates close?

|  |  |
| --- | --- |
| **a.** | at the beginning of interval A |
| **b.** | at the beginning of interval B |
| **c.** | at the beginning of interval C |
| **d.** | at the beginning of interval D |

**\_\_\_\_ 16.** Scientists A.L. Hodgkin and A.F. Huxley experimented with the neurons of the squid*.* The squid has very long non-myelinated neurons. They inserted tiny electrodes into the neurons and measured nerve impulse transmission. Which of the following types of transmission would they have observed?

|  |  |
| --- | --- |
| **a.** | transmission would have been saltatory but faster than in humans |
| **b.** | transmission would have been saltatory and slower than in humans |
| **c.** | transmission would have been non-saltatory but faster than in humans |
| **d.** | transmission would have been non-saltatory and slower than in humans |

**\_\_\_\_ 17.** Which of the following processes will occur if enzymes are absent in the synaptic cleft?

|  |  |
| --- | --- |
| **a.** | sodium channels in the neuron will remain open |
| **b.** | potassium channels in the neuron will remain closed |
| **c.** | action potentials will continue to occur in the adjacent neuron |
| **d.** | neurotransmitters will break down before reaching the receptor site |

**\_\_\_\_ 18.** Which of the following outcomes will likely occur if acetylcholinesterase is not present in a synaptic cleft?

|  |  |
| --- | --- |
| **a.** | acetylcholine will not bind to receptor sites |
| **b.** | a sympathetic response will continue to persist |
| **c.** | a parasympathetic response will continue to persist |
| **d.** | the neuron on the other side of the synapse will not depolarize |

**\_\_\_\_ 19.** Under which of the following conditions would the medulla oblongata respond?

|  |  |
| --- | --- |
| **a.** | when a person is choking |
| **b.** | when a person is kicking a soccer ball |
| **c.** | when a person is watching a television show |
| **d.** | when a person is performing a math calculation |

**\_\_\_\_ 20.** Which of the following conditions would result if heavy metal ions altered the cell membrane proteins of a neuron?

|  |  |
| --- | --- |
| **a.** | Schwann cells will be denatured |
| **b.** | sodium will not cross the cell membrane |
| **c.** | potassium will not cross the cell membrane |
| **d.** | the sodium-potassium pump will not operate |

**\_\_\_\_ 21.** Which of the following parts of the brain is responsible for sorting and integrating sensory information from the eyes and ears?

|  |  |
| --- | --- |
| **a.** | thalamus |
| **b.** | cerebrum |
| **c.** | cerebellum |
| **d.** | corpus callosum |



**\_\_\_\_ 22. Use the diagram above to answer the next question.**

Which of the following types of nerve transmission occurs in this neuron?

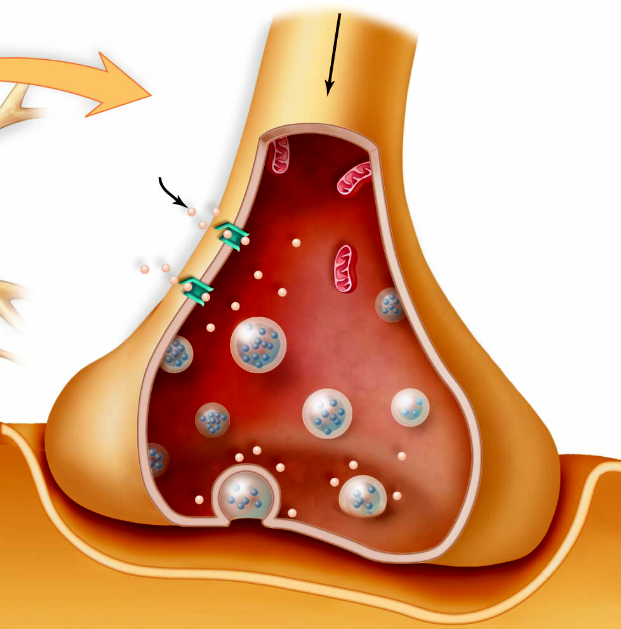
|  |  |
| --- | --- |
| **a.** | relatively fast and between nodes |
| **b.** | relatively slow and between nodes |
| **c.** | toward the central nervous system |
| **d.** | away from the central nervous system |

**\_\_\_\_ 23.** Which stage of a nerve impulse immediately follows the opening of sodium channels?

|  |  |
| --- | --- |
| **a.** | repolarization |
| **b.** | depolarization |
| **c.** | resting potential |
| **d.** | refractory period |

**\_\_\_\_ 24.** Which of the following transmits information from an axon?

|  |  |
| --- | --- |
| **a.** | a dendrite |
| **b.** | a cell body |
| **c.** | calcium ions |
| **d.** | neurotransmitter |



**\_\_\_\_ 25. Use the diagram above to answer the next question.**

Which of the following conditions would result if norepinephrine remained bound to receptors in this region?

|  |  |
| --- | --- |
| **a.** | secretions of pepsin would increase |
| **b.** | systolic blood pressure would decrease |
| **c.** | acetylcholine would be released from the axon terminal |
| **d.** | stretch receptors in alveoli would be stimulated more frequently |

**Chapter 12 Pre-Test A**

**Answer Section**

**MULTIPLE CHOICE**

**1.** ANS: B PTS: 1 DIF: K REF: 12

OBJ: Nervous System LOC: C11-1 TOP: 12.1

KEY: Nervous Tissue

**2.** ANS: A PTS: 1 DIF: K REF: 12

OBJ: Nervous System LOC: C11-4 TOP: 12.1

KEY: Nervous Tissue

**3.** ANS: D PTS: 1 DIF: K REF: 12

OBJ: Nervous System LOC: C12-5 TOP: 12.4

KEY: Peripheral Nervous System

**4.** ANS: D PTS: 1 DIF: K REF: 12

OBJ: Nervous System LOC: C11-4 TOP: 12.1

KEY: Nervous Tissue

**5.** ANS: C PTS: 1 DIF: K REF: 12

OBJ: Nervous System LOC: C12-5 TOP: 12.4

KEY: Peripheral Nervous System

**6.** ANS: A PTS: 1 DIF: K REF: 12

OBJ: Nervous System LOC: C11-3 TOP: 12.2

KEY: Nerve Impulse Transmission

**7.** ANS: C PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-3 TOP: 12.3

KEY: Nerve Impulse Transmission

**8.** ANS: A PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-5 TOP: 12.2

KEY: Nerve Impulse Transmission

**9.** ANS: C PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-1 TOP: 12.1

KEY: Nervous Tissue

**10.** ANS: B PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-1 TOP: 12.1

KEY: Nervous Tissue

**11.** ANS: C PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-1 TOP: 12.1

KEY: Nervous Tissue

**12.** ANS: B PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-2 TOP: 12.1

KEY: Nervous Tissue

**13.** ANS: B PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-3 TOP: 12.2

KEY: Nerve Impulse Transmission

**14.** ANS: C PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-3 TOP: 12.2

KEY: Nerve Impulse Transmission

**15.** ANS: D PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-3 TOP: 12.2

KEY: Nerve Impulse Transmission

**16.** ANS: D PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-4 TOP: 12.1

KEY: Nervous Tissue

**17.** ANS: C PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-7 TOP: 12.2

KEY: Nerve Impulse Transmission

**18.** ANS: C PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-5 TOP: 12.4

KEY: Peripheral Nervous System

**19.** ANS: A PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C12-2 TOP: 12.3

KEY: Central Nervous System

**20.** ANS: D PTS: 1 DIF: HMP REF: 12

OBJ: Nervous System LOC: C11-3 TOP: 12.2

KEY: Nerve Impulse Transmission

**21.** ANS: A PTS: 1 DIF: K REF: 12

OBJ: Nervous System LOC: C12-2 TOP: 12.3

KEY: Central Nervous System

**22.** ANS: A PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-4 TOP: 12.1

KEY: Nervous Tissue

**23.** ANS: B PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-3 TOP: 12.2

KEY: Nerve Impulse Transmission

**24.** ANS: D PTS: 1 DIF: U REF: 12

OBJ: Nervous System LOC: C11-6 TOP: 12.2

KEY: Nerve Impulse Transmission

**25.** ANS: D PTS: 1 DIF: HMP REF: 12

OBJ: Nervous System LOC: C12-5 TOP: 12.4

KEY: Peripheral Nervous System