STUDY GUIDE: Nervous system, Nerve Impulse Transmission and Reflex Arc
Chapter 48

KEY TERMS

neuron | ganglia | synaptic terminal
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cell body | nerve | synaptic cleft
dendrite | nerve impulse | neurotransmitter 7
axon | resting potential | postsynaptic membrane
glial cells | membrane potential | acetylcholine
myelin sheath | equilibrium potential | endorphins
nodes of Ranvier | threshold | dopamine
Schwann cell | all-or-none response | serotonin
synapse | action potential | receptor
sensory neuron | voltage-gated(sensitive) | effector
motor neuron | channel | reflex arc
interneuron | sodium-potassium pump | dorsal-root ganglion
astrocytes | refractory period | synapse
blood-brain barrier | | 

QUESTIONS

1. Describe the structure of a typical neuron and, using a diagram point out the axon, dendrite, cell body, and myelin sheath. Indicate the path of information flow and point out a synapse and neuromuscular joint.

2. Explain how a nerve impulse is conducted along the neuron, using the terms stimulus, threshold, membrane potential, action potential, voltage-sensitive channel, all-or-none response and refractory period.

3. Discuss the basis for the polarization of the nerve cell membrane, considering the relative amounts of sodium, potassium, and negatively charged ions inside and outside the neuron, and state whether the outside of the resting neuron is charged positively or negatively with respect to the inside.

4. Explain in some detail how an impulse is transmitted(propagated) along a neuron fiber; specify which ions move and in what order when the fiber is stimulated, and explain what is meant by voltage-sensitive channels. Using a diagram, Explain how the nerve impulse is propagated along the neuron.

5. Explain how diffusion, electrostatic attraction, and the sodium-potassium pump act to reestablish the original ionic balance and keep the neuron functioning.

6. Using a diagram, identify the synaptic terminal, the presynaptic membrane, postsynaptic membrane, and synaptic cleft. Describe the events occurring at a synapse when an action potential arrives, and explain how the impulse is transmitted across the synapse and what must happen for an action potential to be induced in the postsynaptic neuron.

7. Name three transmitter substances(neurotransmitters).

8. Using a diagram, Trace the flow of information through a reflex arc.