Nervous System
Study Guide

NEURON, IMPULSE, GENERATION AND REFLEX ARC

L.O. M – 1 Structure and Function of a Neuron

___ 1. Name the three main parts found in all neurons.
___ 2. What is the function of the dendrite?
___ 3. What is the function of the axon?
___ 4. What is the function of the cell body?
___ 5. Most long dendrites and axons are covered by white material called?
___ 6. The cells that make up this covering are called what?
___ 7. Intervals or gaps between the myelin sheath are called what?
___ 8. What is the function of the myelin sheaths?

L.O. M – 2 Types of Neurons

___ 1. Name three types of neurons.
___ 2. Which of the neurons carries messages inside the spinal column?
___ 3. Which carries messages from the brain to muscles or organs?
___ 4. What is the function of the sensory neuron?
___ 5. Contrast the length of the dendrites and axons in sensory and motor neurons.
___ 6. It is said that since motor neurons cause muscle fibers and glands to react, they do what to the muscle fibers or glands?
___ 7. Contrast the shape and location of cell bodies in sensory and motor neurons.
___ 8. Give another name for sensory and motor neurons.
___ 9. What are other names for interneurons

L.O. M – 3 Conduction Along a Neuron

___ 1. Movement of a message along a neuron is often called a nerve_____.
___ 2. What is the name of the instrument used in nerve impulse studies?
___ 3. What is the measurement used in this instrument?
___ 4. What is another name for the cytoplasm of a nerve fiber?
___ 5. What is the charge registered on the oscilloscope when the axon is not transmitting an impulse?
___ 6. What does the number on the oscilloscope reading mean?
___ 7. What does the negative sign mean?
___ 8. A reading of –60mv is called the_____.
___ 9. What is the normal ion distribution outside the axon during a resting potential?
___ 10. What is the distribution of ions in the axoplasm?
___ 11. What else is found in the axoplasm?
___ 12. How is the concentration of sodium and potassium maintained inside and outside the axon?
___ 13. How do you know that the sodium/potassium pump is an example of active

transport?

___ 14. When the axon is stimulated, the oscilloscope reading changes rapidly. This charge is called an ?
___ 15. What are the two parts of an action potential?
___ 16. What happens to the polarity during an upswing?
___ 17. Why does the sign change from negative to positive?
___ 18. What is happening to the ion concentration during the upswing?
___ 19. The change in the polarity from –60 to +40 is called a _____
___ 20. Immediately following the upswing, the polarity changes again, back to _____
___ 21. This portion of the action potential is called the _____.
___ 22. What causes the change in polarity?
___ 23. What is meant by repolarization?
___ 24. After the action potential is a period called the _____.
___ 25. What happens during the recovery phase?
___ 26. What is the "threshold"
___ 27. Explain the "all or none response"

L.O. M – 4 Myelinated Nerve Fiber

___ 1. What cells make up the myelinated fibers?
___ 2. How does the speed of conduction compare for myelinated and nonmyelinated fibers?
___ 3. Why are myelinated fibers so much faster at conducting impulses?
___ 4. Explain the nodes of Ranvier?

L.O. M – 5 Synapse Characteristics

___ 1. What is the ending of each branch of an axon called?
___ 2. The region between the synaptic ending of one neuron and the dendrite of another neuron is called the _____.
___ 3. Define the terms presynaptic membrane and postsynaptic membrane.
___ 4. What is the synaptic cleft?
___ 5. Chemicals called _____ carry messages across a synapse.
___ 6. Where is this chemical located prior to a nerve impulse?
___ 7. What ion is necessary for the neurotransmitter vesicle to move to the presynaptic cleft?
___ 8. What does the neurotransmitter bind to on the postsynaptic membrane?

L.O. M – 6 Impulse Across a Synapse

___ 1 . Nerve impulses traveling down the axon cause _____ ions to be released.
___ 2. How are the vesicles pulled to the edge of the presynaptic membrane?
___ 3. What happens when the vesicles merge with the membrane?
___ 4. The process that moves the neurotransmitter in the synaptic cleft is _____?
___ 5. Name two common neurotransmitter substances.

___ 6. Can one neurotransmitter bind to another neurotransmitter's receptor site?

L.O. M – 7 Neurotransmitters in Synaptic Cleft

___ 1. Give two ways in which neurotransmitters are cleaned out of the synaptic cleft.
___ 2. What substance breaks down Noradrenalin.
___ 3. What is the function of Acetylcholinesterase?
___ 4. What is the importance of cleaning out excess neurotransmitters from the synaptic cleft?
___ 5. What determines whether or not the postsynaptic membrane will "fire"?
___ 6. The term for the adding up of excitory and inhibitory impulses is _____.
___ 7. Explain two reasons why impulses can only travel in one direction across a synapse.

L.O. M – 8 Reflex Arc

___ 1. What is the advantage of performing a reflex action as opposed to waiting for the brain to control the action?
___ 2. Give at least 3 examples of reflex actions.
___ 3. Give two functions of the receptors in a reflex arc.
___ 4. What happens to the impulse after it is picked up by the receptor?
___ 5. What happens to the impulse within the spinal cord?
___ 6. The motor neuron carries the message to the organ or muscle which are also known as the _____.
___ 7. Be able to draw a brief diagram of the reflex arc and label the parts of it.