

Introduction to the Nervous System & Nervous Tissue

Required:

1. Describe the structural and functional organization of the nervous system using the following terms: CNS, PNS, spinal nerves, cranial nerves, brain, spinal cord, sensory, motor, somatic, autonomic, parasympathetic, and sympathetic.
2. Describe the three functions of the nervous system.
3. Describe the classes or types of neuroglial cells and their functions.
4. Draw and label all parts of a typical multipolar neuron. Discuss the functions of each part. Compare this to unipolar and bipolar neurons. Give body locations of each type.
5. Compare and contrast the functional classification of neurons as sensory (afferent), motor (efferent), and interneurons.
6. Define the term resting potential and describe the conditions which produce and maintain it in every neuron at rest.
7. Explain the changes which occur at stimulation (physical or chemical) of a neuron to produce a graded or action potential from a resting potential.
8. Generally describe how a nerve impulse travels along the length of a fiber.
9. Compare and contrast graded and action potentials.
10. Define the terms: hyperpolarization, depolarization, and repolarization.
11. Discuss the method and advantage of salutatory/nodal or “leaping” conduction of an impulse.
12. Define the phrase “refractory period” and state its significance.
13. Illustrate and describe a synapse. Distinguish between the (2) synapse types: electrical vs. chemical.
14. List some typical neurotransmitters and identify them as typically excitatory vs. inhibitory and explain what those (2) terms mean. (IPSP vs. EPSP)
15. Explain the events that are involved in the release of neurotransmitter from nerve endings.

16. Describe how neurotransmitters produce a local membrane potential in the post-synaptic neuron.
17. Distinguish between excitatory (EPSP) and inhibitory (IPSP) postsynaptic potentials.
18. Describe the methods of neurotransmitter removal from a synapse and state the significance of this action.
19. Compare the three terms and give examples of each:
 - 1) neuromodulators
 - 2) Neurotransmitter mimics
 - 3) Neurotransmitter blocks
20. Define the term integration by illustrating temporal & spatial summation.
21. Differentiate diverging and converging circuits.
22. Discuss the phrase “plasticity of neurons (i.e. the changes that occur in length, number of fibers, and number of connections as info is stored, processed and lost).