

Unit 2 Lecture Objectives

Upon completion of this unit, the student should be able to achieve the following performance objectives,

1. Describe the functions of the nervous system.
2. Subdivide the components of the nervous system, structurally and functionally, into the central nervous system (CNS), peripheral nervous system (PNS), the autonomic nervous system (ANS) and somatic nervous system (SNS).
3. Describe the types of neuroglia found in the CNS and PNS.
4. Identify the dendrites, axon and cell body of neurons and state their functions.
5. Describe neurons and classify them using the following terms: afferent, efferent, sensory, motor, multipolar, bipolar, unipolar and interneuron.
6. Describe the function of neurilemma in nerve cell regeneration.
7. Explain the generation and maintenance of the resting membrane potential.
8. Discuss the step-by-step mechanism of nerve impulse transmission along a neuron represented by changes in voltage and ion distribution.
9. List and describe the components of a synapse and its function.
10. Define presynaptic neuron and postsynaptic cell.
11. Describe the mechanism of a conduction of an action potential across a synapse.
12. Differentiate the effects of excitatory and inhibitory neurotransmitters.
13. Discuss the location and structure of the spinal cord.
14. Identify and locate the layers of the meninges and the spaces associated with the meninges.
15. List the functions of the ascending and descending pathways in the spinal cord. Discuss the spinothalamic corticospinal tracts as specific examples.
16. Explain the structure of the spinal nerves.
17. Discuss the structural and functional components of two and three-neuron reflex arcs.
18. Describe the origin, composition, circulation, and functions of cerebrospinal fluid.
19. Describe the function of the medulla, pons, thalamus, hypothalamus, cerebellum, and cerebrum.
20. Describe the surface of the cerebrum with respect to structure, composition, and function.
21. Discuss the structure and functions of the cerebellum related to the control of skeletal muscles.
22. Discuss the role of neurotransmitters of the CNS.
23. Identify function of cranial nerves I, II, VIII and X.
24. Describe the structure and function of the divisions of the autonomic nervous system including the length of the preganglionic and postganglionic neurons, location and type of ganglia, neurotransmitters, receptors, and effectors.
25. Describe the layers of the eye and their functions.
26. Describe the location and functions of lens, ciliary body, iris, humors, fovea centralis, macula lutea, optic disc and optic nerve.
27. Describe the structure of the nervous tissue of the retina.
28. Compare the function and location of the rods and cones in the retina.
29. Describe the process of image formation in the eye.
30. State the function of Vitamin A and its relation to night blindness.
31. Identify common eye disorders including myopia, hyperopia, presbyopia, astigmatism, cataract and glaucoma.

32. List and discuss the functions of the major anatomical components of the outer, middle and inner ear.
33. Trace a sound wave through the ear naming all structures involved and the energy transformations that occur.
34. Describe the location, organization, and function of the semicircular canals and vestibular apparatus.
35. State the functions of the endocrine system.
36. Briefly describe the types of hormones and mechanisms of hormone action at the cellular level.
37. Describe the following hormones as to endocrine gland, function, action and target: growth hormone, adrenocorticotrophic hormone (ACTH), thyroid stimulating hormone (TSH), anti-diuretic hormone (ADH), thyroxine, calcitonin, parathyroid hormone, insulin, glucagon, aldosterone and cortisol.
38. Describe the subdivisions of the pituitary gland.
39. Explain the relationship between the hypothalamus and the anterior (adenohypophysis) and posterior (neurohypophysis) lobe of the pituitary.
40. Describe how hormone secretions are regulated by negative and positive feedback control mechanisms.
41. Explain the neuroendocrine function of the adrenal medulla.
42. Discuss the pancreas as both an endocrine and exocrine gland.