

# Webb: Neurology for the Speech-Language Pathologist, 5<sup>th</sup> Edition

## Test Bank

### Chapter 2: Organization of the Nervous System I

#### MULTIPLE CHOICE

1. Which of the following is NOT crucial to information processing and communication processing in the brain?

- A. total number of nerve cells
- B. total volume of the cerebral cortex
- C. the shape of the brain
- D. degree of dendritic growth or proliferation

ANS: C

It is the number of cells as well as cortex volume and dendritic growth that enhances information and communication processing in the brain. The shape of the brain is not crucial to information processing.

REF: p. 20

2. The central nervous system consists of:

- A. the brain and cranial nerves
- B. the brain and spinal cord
- C. the brain only
- D. the spinal cord and cranial nerves

ANS: B

The central nervous system consists solely of the brain and spinal cord.

REF: p. 20

3. Which of the following is NOT true of somatic nerves?

- A. They are present in both divisions of the nervous system.
- B. They control bodily movements.
- C. They innervate visceral organs.
- D. They innervate sensory organs.

ANS: C

Somatic nerves do all of the above except innervate visceral organs, which is the role of autonomic nerves.

REF: p. 20

4. Nerve cells are called:

- A. neurons
- B. dendrites
- C. axons
- D. neuroglial cells

ANS: A

Nerve cells are called neurons.

REF: p. 21

5. Which part of the neuron is critical to communication within the nervous system?

- A. soma
- B. perikaryon
- C. cytoskeleton
- D. axon

ANS: D

The axon and dendrites are critical to neuronal communication.

REF: p. 21

6. Which organelle contains the DNA of a cell?

- A. bilipid membrane
- B. nucleus
- C. lysosomes
- D. endoplasmic reticulum (ER)

ANS: B

The nucleus contains cellular DNA.

REF: p. 21

7. Which organelle is the “power center of the cell”?

- A. mitochondria
- B. nucleus
- C. Golgi apparatus
- D. cytoplasm

ANS: A

The mitochondria produce ATP, the main energy source used by cells.

REF: p. 21

8. The processes specialized to receive the impulses moving toward the cell are the:

- A. Golgi apparatus
- B. dendrites
- C. nuclei
- D. axons

ANS: B

Dendrites conduct impulses toward the neuron while axons conduct the impulses away.

REF: p. 21

9. Which of the following is true regarding axons?

- A. They conduct nerve impulse toward the neuron.
- B. They expand the area of the neuron that is available for contact by other neurons.
- C. There is only one per neuron.
- D. All axons are of uniform size and length.

ANS: C

Each neuron has only one axon.

REF: p. 21

10. What is the function of boutons?

- A. They transmit a neural impulse more quickly along the axon.
- B. They conduct a neural impulse toward the neuron.
- C. They establish a connection between the neuron and another neuron or the cells of a muscle or gland.
- D. They insulate the axon.

ANS: C

Establishing the end connection of the neuron is the primary role of the bouton, also known as the axon terminal.

REF: p. 23

11. The site of contact between a bouton and the nerve, muscle, or gland with which it is in contact is known as:

- A. the synapse
- B. the cytoplasm
- C. the dendrite
- D. the axon

ANS: A

The synapse, or synaptic junction, is the site of contact between the bouton and the neuron, muscle cells, or organ cells with which the neuron is communicating.

REF: p. 23

12. Which of the following is NOT a type of neuroglial cell in the CNS?

- A. astrocytes
- B. Schwann cells
- C. microglia
- D. ependyma

ANS: B

Schwann cells are neuroglial cells within the peripheral nervous system, not the central nervous system.

REF: p. 23

13. Which type of neuroglial cell forms and maintains myelin?

- A. astrocytes
- B. oligodendrocytes
- C. ependyma
- D. microglia

ANS: B

The role of the oligodendrocytes is to form and maintain myelin.

REF: p. 23

14. Which type of neuroglial cells will migrate to the site of brain injury and act as macrophages, cleaning out debris after neural cell death?

- A. astrocytes
- B. oligodendrocytes
- C. ependyma
- D. microglia

ANS: D

Microglia exhibit a “scavenger” function and will act as macrophages at the site of brain injury.

REF: p. 23

15. Which neuroglial cells produce neural growth factor substances?

- A. astrocytes
- B. oligodendrocytes
- C. ependyma
- D. microglia

ANS: A

Astrocytes produce neural growth factor substances; therefore they may play a critical role in brain recovery after injury.

REF: p. 23

16. Which type of neuroglial cells make up the choroid plexus?

- A. astrocytes
- B. oligodendrocytes
- C. ependyma
- D. microglia

ANS: C

Specialized ependymal cells make up the choroid plexus.

REF: p. 23

17. What is the function of the choroid plexus?

- A. cell regeneration after brain injury
- B. manufacture cerebrospinal fluid
- C. formation of new ependymal cells
- D. macrophage activity after cell death

ANS: B

The choroid plexus is responsible for manufacturing cerebrospinal fluid.

REF: p. 23

18. The presence of \_\_\_\_\_ is what gives white matter its white appearance and name.

- A. specialized ependymal cells
- B. myelinated axons
- C. unmyelinated axons
- D. synaptic junctions

ANS: B

The pearly white myelin cover on myelinated axons is what lends white matter its appearance and name.

REF: p. 23

19. The cortex is organized horizontally into how many layers?

- A. 2
- B. 4
- C. 6

D. The cortex is organized in vertical columns, not horizontal layers.

ANS: C

The cortex is divided into six horizontal layers, each containing different cell types.

REF: p. 24

20. Which of the following is a term for “the brain”?

- A. encephalon
- B. cranium
- C. basal ganglion
- D. cortex

ANS: A

Encephalon is a synonym for the brain.

REF: p. 25

21. The cerebral hemispheres are connected by the:

- A. gray matter
- B. corpus callosum
- C. encephalon
- D. basal ganglion

ANS: B

The corpus callosum is a band of white matter that connects the two hemispheres of the brain.

REF: p. 25

22. Which hemisphere of the brain contains the major neurologic mechanisms for speech and language?

- A. right
- B. left
- C. Speech and language centers are equally divided between the two hemispheres.
- D. Neither; speech and language centers are found primarily in the brainstem.

ANS: B

The left hemisphere contains the major neurologic mechanisms for speech and language.

REF: p. 25

23. The four lobes of each hemisphere of the brain are:

- A. the frontal, dorsal, temporal, and occipital lobes
- B. the occipital, temporal, nasal, and parietal lobes
- C. the frontal, parietal, temporal, and occipital lobes
- D. the parietal, sulcus, gyrus, and frontal lobes

ANS: C

The four lobes of each brain hemisphere are frontal, temporal, parietal, and occipital lobes.

REF: p. 25

24. The enfolding of the cortex of the brain during development forms the:

- A. sulci
- B. fissures
- C. lobes
- D. gyri

ANS: D

The gyri are formed by the enfolding of the cortex during brain development.

REF: p. 25

25. The precentral gyrus makes up the primary \_\_\_\_\_ cortex.

- A. sensory
- B. visual
- C. motor
- D. none of the above

ANS: C

The precentral gyrus makes up the primary motor cortex.

REF: p. 25

26. Which of the following is true regarding the amount of motor cortical representation (or space) given to any particular body part?

- A. The larger the body part, the greater the area of cortical representation.
- B. The more precise the movements of a particular body part, the greater its area of cortical representation.
- C. The more distal (further from the brain) the body part, the greater its cortical representation.
- D. Equal amounts of cortex are devoted to each part of the body.

ANS: B

Body parts requiring the greatest precision in movement have the greatest motor cortical representation.

REF: p. 25

27. Which hemisphere is the “dominant” hemisphere in most persons, meaning that it is the hemisphere from which language functions are controlled?

- A. left
- B. right
- C. neither

ANS: A

The left hemisphere has been demonstrated to be the dominant hemisphere in most people, controlling language function.

REF: p. 26

28. Nonroutine processes that require planning, analysis, feedback, and self-regulation are dependent on which portion of the brain?

- A. the precentral gyrus
- B. the corpus callosum
- C. frontal cortex association areas
- D. Broca’s area of the brain

ANS: C

Frontal association areas are vital to successful “executive functioning.” Appropriate and well-developed executive functioning allows us to carry out nonroutine processes that require planning, analysis, feedback, self-regulation, etc. Our ability to participate successfully in school, work, family, and social settings is dependent on these frontal association areas.

REF: pp. 26-27

29. In which lobe of the brain can the primary sensory cortex be found?

- A. frontal lobe
- B. parietal lobe
- C. temporal lobe
- D. occipital lobe

ANS: B

REF: p. 27

30. Which of the following is NOT a likely effect of damage to the angular gyrus?

- A. difficulty finding words
- B. inability to identify the fingers
- C. difficulty with arithmetic
- D. inability to thread a needle

ANS: D

Threading a needle requires fine motor skills, a function of the precentral gyrus or primary motor cortex.

REF: p. 27

31. The temporal lobe is the primary site of \_\_\_\_\_ in the brain.

- A. sensory processing
- B. visual processing
- C. auditory processing
- D. somatosensory processing

ANS: C

Auditory processing is performed within the temporal lobes of the brain.

REF: p. 29

32. The primary auditory cortex is found in:

- A. the superior temporal gyrus
- B. the inferior gyrus of the temporal lobe
- C. Wernicke's area
- D. the transverse gyrus of Heschl

ANS: D

The transverse gyrus of Heschl, or Heschl's gyrus, forms the primary auditory cortex.

REF: p. 29

33. The primary visual cortex is found in which lobe of the brain?

- A. frontal lobe
- B. temporal lobe
- C. parietal lobe
- D. occipital lobe

ANS: D

The primary visual cortex is contained within the occipital lobe.

REF: p. 29

34. The area of the brain in which the major neurologic components for understanding and producing language are found is:

- A. the sylvian fissure
- B. Broca's area
- C. the perisylvian zone
- D. Wernicke's area

ANS: C

The perisylvian zone is the area containing Broca's area, Wernicke's area, and the supramarginal and angular gyri; therefore it is the area containing all of the major neurologic components for both understanding and producing speech.

REF: p. 29

35. The area that Broca considered to be the fifth lobe of the brain and that contains the most primitive portions of the brain is the:

- A. corpus callosum
- B. limbic system
- C. hippocampus
- D. pons

ANS: B



The limbic system, or limbic lobe, was named by Broca, who considered it to be the fifth lobe. It contains the rhinencephalon, the most primitive portion of the brain, devoted to smell.

REF: p. 34

36. Which of the following structures is not a part of the diencephalon?

- A. thalamus
- B. hypothalamus
- C. pituitary gland
- D. thyroid gland

ANS: D

The diencephalon includes the thalamus, hypothalamus, epithalamus, subthalamus, and pituitary gland. The thyroid is not a part of the diencephalon.

REF: p. 35

37. The thalamus integrates all types of sensation in the nervous system except:

- A. olfaction
- B. vision
- C. hearing
- D. touch

ANS: A

Olfaction is the only classical sensory system not integrated in the thalamus.

REF: p. 35

38. Which of the following exerts neural control over the pituitary gland?

- A. thalamus
- B. hypothalamus
- C. subthalamus
- D. epithalamus

ANS: B

The hypothalamus is responsible for neural control over the pituitary gland.

REF: p. 37

39. Damage to the cerebellum may cause what type of speech problem?

- A. dysarthria
- B. aphasia
- C. none

ANS: A

Because it is involved in coordinating motor movements, damage to the cerebellum may result in dysarthria.

REF: p. 40

40. Which of the following is NOT a component part of the brainstem?

- A. pons
- B. midbrain
- C. cerebellum
- D. medulla oblongata

ANS: C

The cerebellum is anatomically distinct from the brainstem.

REF: pp. 40-41

41. The five regions of the spinal cord are the cervical, thoracic, lumbar, sacral, and \_\_\_\_\_ regions.

- A. caudal
- B. coccygeal
- C. cranial
- D. dorsal

ANS: B

The coccygeal is the lowest, fifth region of the spinal cord.

REF: p. 43

#### **TRUE/FALSE**

42. A myelinated axon conducts neural impulses faster than an unmyelinated axon.

- A. True
- B. False

ANS: A

Myelin sheaths allow for faster propagation of nerve impulses

REF: pp. 22-23