Introduction to Behavioral Neuroscience 1st edition Elizabeth Solutions Manual

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Instructor Answer Guide



Introduction to Behavioral Neuroscience

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Multiple Choice

1.1 Building a Nervous System

1. Which of the following molecules does the work in cells?

a. DNA
b. mRNA
c. Proteins
d. Golgi

Answer: c

2. Neurons:

a. come in many shapes and sizes.
b. all have one axon and many dendrites.
c. all have one dendrite and many axons.
d. all have multiple axons and multiple dendrites.

Answer: a

3. The part of the neuron that is specialized for receiving information is:

a. the axon.
b. the cell body.
c. the dendrites.
d. the axon hillock.

Answer: c

4. Which are the primary myelinating cells of the central nervous system?

a. Astrocytes
b. Microglia
c. Oligodendrocytes
d. Schwann cells

Answer: c

5. Which cell type is most important for helping to form the blood-brain barrier?

a. Astrocytes
b. Microglia
c. Oligodendrocytes
d. Schwann cells

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Answer: a

6. Which cell type is most important for helping to clear debris from injury in the central nervous system?

a. Astrocytes
b. Microglia
c. Oligodendrocytes
d. Schwann cells

Answer: b

1.2 Organization of the Nervous System

7. Which feature is consistent across all organisms that have a nervous system?

a. Ganglia
b. Neural nets
c. Bilateral symmetry
d. None of these

Answer: d

8. The property of a nervous system describing an organization where neurons are consolidated into specific areas of integration rather than just being randomly arranged throughout the body is called what?

a. Cephalization
b. Centralization
c. Symmetry
d. Concentration

Answer: b

9. Where in the central nervous system would you find cerebral spinal fluid?

a. In the dura mater
b. In the subarachnoid space
c. In the pia mater
d. In the nerves

Answer: b

10. Cerebral spinal fluid:

a. sloshes back and forth in the ventricular system.
b. flows in one direction through the ventricles, into to central canal and subarachnoid space.

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c. flows in one direction from the subarachnoid space into the ventricles and then into to central canal.
d. is still, like a lake or pool.

Answer: b

11. The human connectome:

a. is well understood.
b. is relatively simple.
c. is still being mapped and incredibly complex.
d. is very similar to that of the roundworm *C. elegans*.

Answer: c

12. The brain requires large amounts of blood to maintain its functions. This blood derives from 2 main arteries. The more ventral artery is called _____ while the more dorsal artery is _____.

a. carotid artery / vertebral artery
b. cerebral arteries / vertebral artery
c. ventral cerebral artery / dorsal cerebral artery
d. vertebral artery / carotid artery

Answer: a

1.3 The Central Nervous System: CNS

13. My left hand is _____ to my right hand.

a. medial
b. lateral
c. contralateral
d. ipsilateral

Answer: c

14. Divisions of the central nervous system:

a. begin early in development.
b. only emerge in adulthood.
c. are composed only of brain vs spinal cord.
d. are defined as neural tube and spinal cord.

Answer: a

15. Which embryonic brain region becomes the cerebral hemispheres?

a. Telencephalon

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b. Diencephalon
c. Mesencephalon
d. Metencephalon

Answer: a

16. Sensory neurons enter the spinal cord from the _____ side.

a. lateral
b. medial
c. ventral
d. dorsal

Answer: d

17. Which kind of pathways bring information from the periphery to the brain?

a. Descending
b. Ascending
c. Peripheral
d. Lateral

Answer: b

1.4 The Brain: Structure and Function

18. Which lobe of the cortex is most important for decision making and problem solving?

a. Frontal
b. Temporal
c. Parietal
d. Occipital

Answer: a

19. Which lobe of the cortex is important for language, memory, and hearing?

a. Frontal
b. Temporal
c. Parietal
d. Occipital

Answer: b

20. The _____ lobe of the cortex is most important for vision.

a. frontal
b. temporal
c. parietal

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d. occipital

Answer: d

21. Brain regions important for motor control are found:

a. in the frontal lobe.
b. in the subcortical nuclei.
c. in the brainstem.
d. in all of these.

Answer: d

22. Which brain function shows strong lateralization?

a. Memory
b. Sensory integration
c. Vision
d. Language

Answer: d

23. Cranial nerves carry what kind of information?

a. Sensory
b. Motor
c. Sensory and motor
d. Neither sensory or motor

Answer: c

24. The part of the peripheral nervous system that helps the body relax and digest is:

a. the sympathetic nervous system.
b. the parasympathetic nervous system.
c. the hypothalamus.
d. the somatic nervous system.

Answer: b

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Fill in the Blank

1.1 Building a Nervous System

1. The two major cell types of the brain are _____ and _____.

neurons / glia

2. The four major types of glia in the nervous system are _____, _____, _____, and _____.

astrocytes, microglia, oligodendrocytes, Schwann cells

1.2 Organization of the Nervous System

3. Axon bundles in the central nervous system are called _____ and in the peripheral nervous system are called _____.

tracts / nerves

1.3 The Central Nervous System: CNS

4. The three planes for sectioning the brain for anatomical analysis are _____, _____, and _____.

coronal / sagittal / horizontal

1.4 The Brain: Structure and Function

5. The group of specialized brain areas under the cerebral cortex that are part of the telencephalon are called _____.

subcortical nuclei (or subcortical structures)

6. The _____ nerves are a part of the peripheral nervous system and emerge directly from the brain.

cranial

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