

c2

Student: _____

1. Neurons have a cell body and a nucleus as well as dendrites and axons.

True False

2. Neurons fire, transmit an electrical impulse along the axon, or don't fire.

True False

3. A resting state has a negative charge of about 200 millivolts.

True False

4. Duplicate neurons fire not only when a person enacts a particular behavior, but also when a person observes another individual carrying out the same behavior.

True False

5. Each kind of neurotransmitter is exactly the same as the others.

True False

6. Terminal buttons are chemicals that carry messages across the synapse to a dendrite of a receiving neuron.

True False

7. Excitatory messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

True False

8. Inhibitory messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

True False

9. Excitatory messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

True False

10. Inhibitory messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

True False

11. The pituitary gland is known as the master gland because it controls the functioning of the rest of the endocrine system.

True False

12. There are two major divisions of the peripheral nervous system.

True False

13. The autonomic division of the peripheral nervous system can be broken down into three smaller divisions called the sympathetic, the parasympathetic, and the neural.

True False

14. The brain controls our behavior during every waking and sleeping moment.

True False

15. A portion of the brain known as the central core is quite similar in all vertebrates.

True False

16. The central core is sometimes referred to as the "old brain" because its evolution can be traced back some 500 million years to primitive structures found in nonhuman species.

True False

17. The cerebral cortex is responsible for our ability to think, evaluate, and make complex judgments.

True False

18. The cortex has three major sections called lobes.

True False

19. Drugs that trigger the development of new neurons might be used to counter diseases like Alzheimer's that are produced when neurons die.

True False

20. The basic elements of the nervous system are known as _____.

- A. axons
- B. neurons.
- C. dendrites
- D. stimuli

21. Dendrites receive messages from other _____.

- A. neurons
- B. axons
- C. dendrites
- D. terminal buttons

22. _____ carry messages received by the dendrites to other neurons.

- A. Neurons
- B. Axons
- C. Dendrites
- D. Terminal buttons

23. Axons end in small bulges called _____, which send messages to other neurons.

- A. terminal buttons
- B. dendrites
- C. neurons
- D. stimuli

24. The myelin sheath is _____.

- A. a protective coating of fat and protein that wraps around the axon.
- B. an electrical impulse that moves neurons.
- C. a message that travels through neurons to the dendrites.
- D. a part of the neuron that is destined for other neurons.

25. The _____ law states that neurons are either on or off, with nothing in between the on state and the off state.
- A. all-or-none
 - B. dendrite
 - C. neuron
 - D. terminal button
26. A resting state is _____.
- A. when you are too tired to function properly
 - B. before a neuron is triggered
 - C. before an axon is triggered
 - D. before a dendrite is triggered
27. A resting state has a _____ charge of about -70 millivolts.
- A. positive
 - B. neutral
 - C. negative
 - D. non-existent
28. The _____ moves from one end of the axon to the other like a flame moving along a fuse.
- A. dendrite
 - B. neuron
 - C. action potential
 - D. terminal button
29. Neurons that fire not only when a person enacts a particular behavior, but also when a person observes another individual carrying out the same behavior, are known as _____.
- A. observable neurons.
 - B. mirror neurons.
 - C. duplicate neurons.
 - D. reflective neurons.
30. A _____ is the space between two neurons where the axon of a sending neuron communicates with the dendrites of a receiving neuron by using chemical messages.
- A. bridge
 - B. mirror
 - C. synapse
 - D. transmitter

31. _____ are chemicals that carry messages across the synapse to a dendrite of a receiving neuron.

- A. Substantia nigra
- B. Terminal buttons
- C. Neurotransmitters
- D. Axons

32. _____ messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

- A. Excitatory
- B. Inhibitory
- C. Neural
- D. Synaptic

33. _____ messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

- A. Excitatory
- B. Inhibitory
- C. Neural
- D. Synaptic

34. Neurotransmitters are either deactivated by enzymes or reabsorbed by the terminal button. This is an example of chemical recycling, called _____.

- A. washing
- B. reuptake
- C. cleaning
- D. synaptic cleansing

35. If someone has a deficiency or an excess of a _____, it can produce severe behavior disorders.

- A. dendrite
- B. basal ganglia
- C. neurotransmitter
- D. substantia nigra

36. One of the most common neurotransmitters is _____, which is found throughout the nervous system and is involved in our every move.

- A. dopamine
- B. acetylcholine
- C. norepinephrine
- D. epinephrine

37. _____ is a neurotransmitter that is involved in movement, attention, and learning.

- A. Dopamine
- B. Acetylcholine
- C. Norepinephrine
- D. Epinephrine

38. If someone has Parkinson's disease, then they have a deficiency of which neurotransmitter?

- A. Dopamine
- B. Acetylcholine
- C. Norepinephrine
- D. Epinephrine

39. It has been hypothesized that _____ of dopamine produces negative consequences in a person like schizophrenia.

- A. underproduction
- B. overproduction
- C. 270 millivolts
- D. 200 millivolts

40. If you touch a hot stove and you remove your hand right away, you are employing a(n) _____.

- A. somatic response
- B. reflex
- C. motor
- D. autonomic response

41. One of the most common neurotransmitters is _____, which is found throughout the nervous system and is involved in our every move.

- A. acetylcholine
- B. dicetylcholine
- C. tricetylchoine
- D. choline

42. _____ is involved in memory capabilities; diminished production of this neurotransmitter may be related to Alzheimer's disease.

- A. Acetylcholine
- B. Dicetylcholine
- C. Tricetylcholine
- D. Choline

43. When you jerk your hand away from a hot stove, you are activating your _____ system.

- A. endocrine
- B. nervous
- C. limbic
- D. stimulus

44. The _____ secretes chemical messages that circulate through the blood, and also communicates messages that influence behavior and many aspects of biological functioning.

- A. endocrine system
- B. neurotransmitter
- C. limbic system
- D. spinal cord

45. The nervous system is divided into two main parts: the _____ and the _____.

- A. central nervous system; peripheral nervous system
- B. spinal cord; brain
- C. limbic system; central nervous system
- D. peripheral nervous system; limbic system

46. A _____ is an automatic, involuntary response to an incoming stimulus.

- A. somatic response
- B. reflex
- C. motor
- D. autonomic response

47. The _____ branches out from the spinal cord and brain and reaches the extremities of the body.

- A. central nervous system
- B. peripheral nervous system
- C. limbic system
- D. reflex system

48. There are two major divisions of the peripheral nervous system. They are the _____ and the _____.

- A. somatic division; autonomic division
- B. brain; spinal cord
- C. arms; legs
- D. eyes; ears

49. The autonomic division of the peripheral nervous system (PNS) can be broken down into two smaller divisions, called

- A. sympathetic and parasympathetic
- B. brain and spinal cord
- C. somatic and autonomic
- D. fight-or-flight

50. The nervous system is divided into two main parts: the _____ and the _____.

- A. central nervous system; peripheral nervous system
- B. main nervous system; central nervous system
- C. peripheral nervous system; main nervous system
- D. main nervous system; secondary nervous system

51. _____ is involved in memory capabilities. Diminished production of this neurotransmitter may be related to Alzheimer's disease.

- A. Dopamine
- B. Acetylcholine
- C. Norepinephrine
- D. Epinephrine

52. The _____ is the primary means for transmitting messages between the brain and the rest of the body.

- A. spinal cord
- B. central nervous system
- C. peripheral nervous system
- D. endocrine system

53. Behavioral genetics studies the effects of _____ on behavior.

- A. genes
- B. heredity
- C. DNA
- D. RNA

54. _____ are chemicals that circulate through the blood and regulate the functioning or growth of the body.

- A. Glands
- B. Neurotransmitters
- C. Hormones
- D. Dopamine

55. The average brain weighs _____ pound(s).

- A. 10
- B. 1
- C. 2
- D. 3

56. Which of the following is a modern brain-scanning technique?

- A. Electroencephalogram (EEG)
- B. Positron Emission Tomography (PET)
- C. Functional Magnetic Resonance Imaging (fMRI)
- D. Transcranial Magnetic Stimulation Imaging (TMS)
- E. All of these are correct.

57. The region of the central cortex known as the _____ is/are generally considered to be the site of higher mental processes such as thinking, language, memory, and speech.

- A. association areas
- B. hindbrain
- C. spinal cord
- D. sensory areas

58. Certain behaviors are more likely to reflect activity in one hemisphere than in the other. This is called _____.

- A. splitting
- B. trephining
- C. supposition
- D. lateralization

59. A procedure in which a person learns to control through conscious thought internal physiological processes such as blood pressure, heart and respiration rate, skin temperature, sweating, and the constriction of particular muscles is called _____.

- A. relaxation
- B. biofeedback
- C. lateralization
- D. stress reduction

60. The average brain weighs _____ pound(s).

- A. three
- B. six
- C. one
- D. five

61. A resting state has a _____ charge of about -70 millivolts.

62. The _____ moves from one end of the axon to the other like a flame moving along a fuse.

63. Neurons that fire not only when a person enacts a particular behavior, but also when a person observes another individual carrying out the same behavior, are known as _____.

64. A _____ is the space between two neurons where the axon of a sending neuron communicates with the dendrites of a receiving neuron by using chemical messages.

65. _____ are chemicals that carry messages across the synapse to a dendrite of a receiving neuron.

66. _____ messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

67. _____ messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

68. Neurotransmitters are either deactivated by enzymes or reabsorbed by the terminal button, in an example of chemical recycling called _____.

69. If someone has a deficiency or an excess of a _____, it can produce severe behavior disorders.

70. _____ is a neurotransmitter that is involved in movement, attention, and learning.

71. It has been hypothesized that _____ of dopamine produces negative consequences in a person, such as schizophrenia.

72. The _____ secretes chemical messages that circulate through the blood, and also communicates messages that influence behavior and many aspects of biological functioning.

73. It has been hypothesized that overproduction of _____ produces negative consequences in a person like schizophrenia.

74. The _____ branches out from the spinal cord and brain and reaches the extremities of the body.

75. Behavioral genetics studies the effects of _____ on behavior.

76. _____ are chemicals that circulate through the blood and regulate the functioning or growth of the body.

77. Behavioral _____ are psychologists who specialize in considering the ways in which biological structures and functions of the brain affect behavior.

78. The brain continually reorganizes itself in a process termed _____.

79. The brain is divided into two equal _____ that control motion and receive sensation from the side of the body opposite their location.

80. The _____ is the primary means for transmitting messages between the brain and the rest of the body.

81. A(n) _____ is an automatic, involuntary response to an incoming stimulus.

82. If you touch a hot stove and you remove your hand right away, you are employing a(n) _____.

83. The _____ is found just above the medulla and behind the pons.

84. Scientists have learned in recent years that the brain continually reorganizes itself in a process termed _____.

85. The region of the central cortex known as the _____ are generally considered to be the site of higher mental processes such as thinking, language, memory, and speech.

86. Certain behaviors are more likely to reflect activity in one hemisphere than in the other. This is called

_____.

87. A procedure in which a person learns to control through conscious thought internal physiological processes such as blood pressure, heart and respiration rate, skin temperature, sweating, and the constriction of particular muscles is called _____.

88. Explain what happens before and during the triggering of a neuron. Include a description of the resting state.

89. Why do neurons differ in their potential rate of firing?

90. Explain what mirror neurons do when they are fired.

91. What are the three kinds of neurons involved in reflexes?

92. Describe the two divisions of the peripheral nervous system (PNS).

93. Explain the functions of the sympathetic division and the parasympathetic division of the autonomic nervous system.

94. Compare and contrast the functions of the left hemisphere with the functions of the right hemisphere of the brain.

95. Explain the cultural and gender differences within brain research.

96. Describe the major divisions of the brain, including the major structures within the brain.

c2 Key

1. (p. 48-49) Neurons have a cell body and a nucleus as well as dendrites and axons.

TRUE

Neurons have a cell body and nucleus, like most types of cells in the body. They also have dendrites and axons that perform actions within the body.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #1

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

2. (p. 49) Neurons fire, transmit an electrical impulse along the axon, or don't fire.

TRUE

Neurons either fire or don't fire. That is the whole point of what neurons do within the structure.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #2

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

3. (p. 49) A resting state has a negative charge of about 200 millivolts.

FALSE

Resting states have negative electrical charges of about -70 millivolts.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #3

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

4. (p. 50) Duplicate neurons fire not only when a person enacts a particular behavior, but also when a person observes another individual carrying out the same behavior.

FALSE

Mirror neurons have been identified within the last decade and show that people fire when they are observing others carrying out a behavior.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #4

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

5. (p. 52) Each kind of neurotransmitter is exactly the same as the others.

FALSE

Each kind of neurotransmitter is unique and has a distinctive configuration that allows it to fit into a specific type of receptor cell.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #5

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

6. (p. 52) Terminal buttons are chemicals that carry messages across the synapse to a dendrite of a receiving neuron.

FALSE

Neurotransmitters are chemicals that carry messages across the synapse to a dendrite (and sometimes cell body) of a receiving neuron.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #6

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

7. (p. 52) Excitatory messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

FALSE

Inhibitory messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #7

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

8. (p. 52) Inhibitory messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

TRUE

Inhibitory messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #8

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

9. (p. 52) Excitatory messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

TRUE

Excitatory messages are one of the two types of chemical messages that a neurotransmitter emits if it fits into a site on the receiving neuron. They make it more likely that a receiving neuron will fire and action potential will travel down its axon.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #9

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

10. (p. 52) Inhibitory messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

FALSE

Excitatory messages are one of the two types of chemical messages that a neurotransmitter emits if it fits into a site on the receiving neuron. They make it more likely that a receiving neuron will fire and action potential will travel down its axon.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #10

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

11. (p. 61) The pituitary gland is known as the master gland because it controls the functioning of the rest of the endocrine system.

TRUE

The pituitary gland is known as the master gland. It does control the functioning of the endocrine system. It also affects emotional reactions, sexual urges, and energy levels.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #11

Learning Outcome: 6.2 Describe the operation of the endocrine system and how it affects behavior.

Module: Module 6

12. (p. 58) There are two major divisions of the peripheral nervous system.

TRUE

The two major divisions of the peripheral nervous system are the somatic and autonomic divisions.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #12

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

13. (p. 58) The autonomic division of the peripheral nervous system can be broken down into three smaller divisions called the sympathetic, the parasympathetic, and the neural.

FALSE

There are two smaller divisions of the PNS, the sympathetic and the parasympathetic.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #13

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

14. (p. 64) The brain controls our behavior during every waking and sleeping moment.

TRUE

The brain is responsible for all of our actions and reactions.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #14

Learning Outcome: 7.1 Illustrate how researchers identify the major parts and functions of the brain.

Module: Module 7

15. (p. 66) A portion of the brain known as the central core is quite similar in all vertebrates.

TRUE

The central core is very much the same in all vertebrates.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #15

Learning Outcome: 7.2 Describe the central core of the brain.

Module: Module 7

16. (p. 66) The central core is sometimes referred to as the "old brain" because its evolution can be traced back some 500 million years to primitive structures found in nonhuman species.

TRUE

The central core is definitely called the old brain and can be traced back 500 million years.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #16

Learning Outcome: 7.2 Describe the central core of the brain.

Module: Module 7

17. (p. 68) The cerebral cortex is responsible for our ability to think, evaluate, and make complex judgments.

TRUE

The cerebral cortex is directly responsible for thinking, evaluation, and making complex judgments.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #17

Learning Outcome: 7.4 Describe the cerebral cortex of the brain.

Module: Module 7

18. (p. 69) The cortex has three major sections called lobes.

FALSE

The cortex has four major sections called lobes.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #18

Learning Outcome: 7.4 Describe the cerebral cortex of the brain.

Module: Module 7

19. (p. 72) Drugs that trigger the development of new neurons might be used to counter diseases like Alzheimer's that are produced when neurons die.

TRUE

Research shows that drugs that trigger the development of new neurons are being used to treat Alzheimer's disease.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #19

Learning Outcome: 7.5 Recognize neuroplasticity and its implications.

Module: Module 7

20. (p. 48) The basic elements of the nervous system are known as _____.

A. axons

B. neurons.

C. dendrites

D. stimuli

Neurons are the basic elements of the nervous system and are involved in the control of behavior.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #20

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

21. (p. 48-49) Dendrites receive messages from other _____.

- A.** neurons
- B. axons
- C. dendrites
- D. terminal buttons

Dendrites are a cluster of fibers that look like twisted branches of a tree and they receive messages from other neurons.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #21

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

22. (p. 49) _____ carry messages received by the dendrites to other neurons.

- A. Neurons
- B.** Axons
- C. Dendrites
- D. Terminal buttons

Axons carry messages to other neurons from the dendrites.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #22

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

23. (p. 49) Axons end in small bulges called _____, which send messages to other neurons.

- A.** terminal buttons
- B. dendrites
- C. neurons
- D. stimuli

Terminal buttons are the small bulges that are at the ends of axons which send messages to other neurons.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #23

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

24. (p. 49) The myelin sheath is _____.

- A.** a protective coating of fat and protein that wraps around the axon.
- B. an electrical impulse that moves neurons.
- C. a message that travels through neurons to the dendrites.
- D. a part of the neuron that is destined for other neurons.

The myelin sheath is a protective coating of fat and protein that wraps around the axons.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #24

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

25. (p. 49) The _____ law states that neurons are either on or off, with nothing in between the on state and the off state.

- A.** all-or-none
- B. dendrite
- C. neuron
- D. terminal button

The all-or-none law deals with the fact that neurons are either all on or all off.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #25

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

26. (p. 49) A resting state is _____.

- A. when you are too tired to function properly
- B.** before a neuron is triggered
- C. before an axon is triggered
- D. before a dendrite is triggered

A resting state occurs before a neuron is triggered.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #26

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

27. (p. 49) A resting state has a _____ charge of about -70 millivolts.

- A. positive
- B. neutral
- C. negative**
- D. non-existent

Resting states have negative electrical charges of about -70 millivolts.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #27

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

28. (p. 50) The _____ moves from one end of the axon to the other like a flame moving along a fuse.

- A. dendrite
- B. neuron
- C. action potential**
- D. terminal button

The action potential moves from one end of the axon to the other. It is an electrical impulse that occurs when the "trigger" is pulled.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #28

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

29. (p. 50) Neurons that fire not only when a person enacts a particular behavior, but also when a person observes another individual carrying out the same behavior, are known as _____.

- A. observable neurons.
- B. mirror neurons.**
- C. duplicate neurons.
- D. reflective neurons.

Mirror neurons, identified within the last decade, show that people fire when they are observing others carrying out a behavior.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #29

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

30. (p. 51) A _____ is the space between two neurons where the axon of a sending neuron communicates with the dendrites of a receiving neuron by using chemical messages.

- A. bridge
- B. mirror
- C. synapse**
- D. transmitter

A synapse is a chemical connection that bridges the gap between components.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #30

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

31. (p. 52) _____ are chemicals that carry messages across the synapse to a dendrite of a receiving neuron.

- A. Substantia nigra
- B. Terminal buttons
- C. Neurotransmitters**
- D. Axons

Neurotransmitters are chemical that carry messages across the synapse to a dendrite (and sometimes cell body) of a receiving neuron.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #31

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

32. (p. 52) _____ messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

- A. Excitatory**
- B. Inhibitory
- C. Neural
- D. Synaptic

Excitatory messages are one of the two types of chemical messages that a neurotransmitter emits if it fits into a site on the receiving neuron.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #32

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

33. (p. 52) _____ messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

- A. Excitatory
- B. Inhibitory**
- C. Neural
- D. Synaptic

Inhibitory messages are one of the two types of chemical messages that a neurotransmitter emits if it fits into a site on the receiving neuron.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #33

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

34. (p. 52) Neurotransmitters are either deactivated by enzymes or reabsorbed by the terminal button. This is an example of chemical recycling, called _____.

- A. washing
- B. reuptake**
- C. cleaning
- D. synaptic cleansing

Neurons reabsorb the neurotransmitters that are clogging the synapse in the process of reuptake.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #34

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

35. (p. 52) If someone has a deficiency or an excess of a _____, it can produce severe behavior disorders.

- A. dendrite
- B. basal ganglia
- C. neurotransmitter**
- D. substantia nigra

Neurotransmitters are responsible for many functions within the body. If there are too many neurotransmitters or too few, then various behavioral disorders occur.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #35

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

36. (p. 53) One of the most common neurotransmitters is _____, which is found throughout the nervous system and is involved in our every move.

- A. dopamine
- B. acetylcholine**
- C. norepinephrine
- D. epinephrine

Acetylcholine (ACh) is one of the most common neurotransmitters which is found throughout the nervous system. It is responsible for our every move. It transmits messages relating to our skeletal muscles.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #36

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

37. (p. 54) _____ is a neurotransmitter that is involved in movement, attention, and learning.

- A. Dopamine**
- B. Acetylcholine
- C. Norepinephrine
- D. Epinephrine

Dopamine is also a major neurotransmitter. It is involved in movement, attention, and learning.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #37

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

38. (p. 54) If someone has Parkinson's disease, then they have a deficiency of which neurotransmitter?

- A. Dopamine**
- B. Acetylcholine
- C. Norepinephrine
- D. Epinephrine

Dopamine is a major neurotransmitter. It is involved in movement, attention, and learning. Therefore, if there is a deficiency, Parkinson's disease will occur.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #38

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

39. (p. 54) It has been hypothesized that _____ of dopamine produces negative consequences in a person like schizophrenia.

- A. underproduction
- B. overproduction**
- C. 270 millivolts
- D. 200 millivolts

Overproduction of dopamine has been directly linked to schizophrenia.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #39

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

40. (p. 57) If you touch a hot stove and you remove your hand right away, you are employing a(n) _____.

- A. somatic response
- B. reflex**
- C. motor
- D. autonomic response

A reflex runs through the spinal cord, independent of the brain. It is an automatic response to something that would otherwise take too long to process.

Bloom's: Understanding

Difficulty: Easy

Feldman - Chapter 002 #40

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

41. (p. 53) One of the most common neurotransmitters is _____, which is found throughout the nervous system and is involved in our every move.

- A. acetylcholine**
- B. dicetylcholine
- C. tricetylchoine
- D. choline

Acetylcholine is one of the most common neurotransmitters which is found throughout the nervous system and is responsible for our every move.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #41

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

42. (p. 53) _____ is involved in memory capabilities; diminished production of this neurotransmitter may be related to Alzheimer's disease.

- A.** Acetylcholine
- B. Dicetylcholine
- C. Tricetylcholine
- D. Choline

Acetylcholine is not only responsible for our every move, but it has been linked with memory. A lack of acetylcholine has been found to correlate with Alzheimer's disease.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #42

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

43. (p. 57) When you jerk your hand away from a hot stove, you are activating your _____ system.

- A. endocrine
- B.** nervous
- C. limbic
- D. stimulus

Reflexes are governed by the nervous system.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #43

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

44. (p. 56) The _____ secretes chemical messages that circulate through the blood, and also communicates messages that influence behavior and many aspects of biological functioning.

- A.** endocrine system
- B. neurotransmitter
- C. limbic system
- D. spinal cord

The endocrine system is responsible for secreting chemical messages that circulate through the blood. It also communicates messages that influence behavior and many aspects of biological functioning.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #44

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

45. (p. 56) The nervous system is divided into two main parts: the _____ and the _____.

- A.** central nervous system; peripheral nervous system
- B. spinal cord; brain
- C. limbic system; central nervous system
- D. peripheral nervous system; limbic system

The nervous system is divided into the central nervous system (CNS) and the peripheral nervous system (PNS).

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #45

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

46. (p. 57) A _____ is an automatic, involuntary response to an incoming stimulus.

- A. somatic response
- B.** reflex
- C. motor
- D. autonomic response

A reflex runs through the spinal cord independent of the brain. It is an automatic response to something that would otherwise take too long to process.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #46

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

47. (p. 58) The _____ branches out from the spinal cord and brain and reaches the extremities of the body.

- A. central nervous system
- B.** peripheral nervous system
- C. limbic system
- D. reflex system

The peripheral nervous system is made up of neurons with long axons and dendrites and encompasses all of the parts of the nervous system other than the brain and the spinal cord.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #47

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

48. (p. 58) There are two major divisions of the peripheral nervous system. They are the _____ and the _____.

- A.** somatic division; autonomic division
- B. brain; spinal cord
- C. arms; legs
- D. eyes; ears

The somatic and autonomic divisions are the two parts of the peripheral nervous system.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #48

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

49. (p. 58) The autonomic division of the peripheral nervous system (PNS) can be broken down into two smaller divisions, called

- A.** sympathetic and parasympathetic
- B. brain and spinal cord
- C. somatic and autonomic
- D. fight-or-flight

The sympathetic and parasympathetic divisions of the PNS are each responsible for the minute details that are essential to our survival.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #49

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

50. (p. 56) The nervous system is divided into two main parts: the _____ and the _____.

- A.** central nervous system; peripheral nervous system
- B. main nervous system; central nervous system
- C. peripheral nervous system; main nervous system
- D. main nervous system; secondary nervous system

The nervous system is divided into the central nervous system and the peripheral nervous system.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #50

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

51. (p. 53) _____ is involved in memory capabilities. Diminished production of this neurotransmitter may be related to Alzheimer's disease.

- A. Dopamine
- B. Acetylcholine**
- C. Norepinephrine
- D. Epinephrine

Acetylcholine is not only responsible for our every move, but it has been linked with memory. A lack of acetylcholine has been found to correlate with Alzheimer's disease.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #51

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

52. (p. 57) The _____ is the primary means for transmitting messages between the brain and the rest of the body.

- A. spinal cord**
- B. central nervous system
- C. peripheral nervous system
- D. endocrine system

The purpose of the spinal cord, which is a bundle of neurons that leaves the brain and runs down the length of the back, is to transmit messages between the brain and the rest of the body.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #52

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

53. (p. 58-59) Behavioral genetics studies the effects of _____ on behavior.

- A. genes
- B. heredity**
- C. DNA
- D. RNA

Behavioral genetics is a fairly new area of study that concentrates on heredity and behavior. This is at the core of the nature/nurture debate.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #53

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

54. (p. 61) _____ are chemicals that circulate through the blood and regulate the functioning or growth of the body.

- A. Glands
- B. Neurotransmitters
- C. Hormones**
- D. Dopamine

Hormones are in charge of regulating the functioning or growth of the body.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #54

Learning Outcome: 6.2 Describe the operation of the endocrine system and how it affects behavior.

Module: Module 6

55. (p. 64) The average brain weighs _____ pound(s).

- A. 10
- B. 1
- C. 2
- D. 3**

The human brain weighs just three pounds, but it is responsible for so much.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #55

Learning Outcome: 7.1 Illustrate how researchers identify the major parts and functions of the brain.

Module: Module 7

56. (p. 65) Which of the following is a modern brain-scanning technique?

- A. Electroencephalogram (EEG)
- B. Positron Emission Tomography (PET)
- C. Functional Magnetic Resonance Imaging (fMRI)
- D. Transcranial Magnetic Stimulation Imaging (TMS)
- E. All of these are correct.**

All of the scans mentioned are modern brain-scanning techniques.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #56

Learning Outcome: 7.1 Illustrate how researchers identify the major parts and functions of the brain.

Module: Module 7

57. (p. 71) The region of the central cortex known as the _____ is/are generally considered to be the site of higher mental processes such as thinking, language, memory, and speech.

- A.** association areas
- B. hindbrain
- C. spinal cord
- D. sensory areas

The association areas are part of the cerebral cortex, and damage here can cause significant changes in a person.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #57

Learning Outcome: 7.4 Describe the cerebral cortex of the brain.

Module: Module 7

58. (p. 72) Certain behaviors are more likely to reflect activity in one hemisphere than in the other. This is called _____.

- A. splitting
- B. trephining
- C. supposition
- D.** lateralization

Brain lateralization is when certain behaviors are more likely to occur in one specific hemisphere over the other.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #58

Learning Outcome: 7.6 Explain how the two hemispheres of the brain operate interdependently and the implications for human behavior.

Module: Module 7

59. (p. 76) A procedure in which a person learns to control through conscious thought internal physiological processes such as blood pressure, heart and respiration rate, skin temperature, sweating, and the constriction of particular muscles is called _____.

- A. relaxation
- B.** biofeedback
- C. lateralization
- D. stress reduction

Biofeedback has really helped many people realize how much control they have over their bodies.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #59

Learning Outcome: 7.6 Explain how the two hemispheres of the brain operate interdependently and the implications for human behavior.

Module: Module 7

60. (p. 71) The average brain weighs _____ pound(s).

- A.** three
- B. six
- C. one
- D. five

The average brain typically weighs three pounds.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #60

Learning Outcome: 7.1 Illustrate how researchers identify the major parts and functions of the brain.

Module: Module 7

61. (p. 49) A resting state has a _____ charge of about -70 millivolts.

negative

Resting states have negative electrical charges of about -70 millivolts.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #61

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

62. (p. 50) The _____ moves from one end of the axon to the other like a flame moving along a fuse.

action potential

The action potential moves from one end of the axon to the other. It is an electrical impulse that occurs when the "trigger" is pulled.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #62

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

63. (p. 50) Neurons that fire not only when a person enacts a particular behavior, but also when a person observes another individual carrying out the same behavior, are known as _____.

mirror neurons

Mirror neurons have been identified within the last decade, and show that people fire when they are observing others carrying out a behavior.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #63

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

64. (p. 51) A _____ is the space between two neurons where the axon of a sending neuron communicates with the dendrites of a receiving neuron by using chemical messages.

synapse

A synapse is a chemical connection that bridges the gap between components.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #64

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

65. (p. 52) _____ are chemicals that carry messages across the synapse to a dendrite of a receiving neuron.

Neurotransmitters

Neurotransmitters are chemical that carry messages across the synapse to a dendrite (and sometimes cell body) of a receiving neuron.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #65

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

66. (p. 52) _____ messages make it more likely that a receiving neuron will fire and an action potential will travel down its axon.

Excitatory

Excitatory messages are one of the two types of chemical messages that a neurotransmitter emits if it fits into a site on the receiving neuron.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #66

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

67. (p. 52) _____ messages provide chemical information that prevents or decreases the likelihood that the receiving neuron will fire.

Inhibitory

Inhibitory messages are one of the two types of chemical messages that a neurotransmitter emits if it fits into a site on the receiving neuron.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #67

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

68. (p. 52) Neurotransmitters are either deactivated by enzymes or reabsorbed by the terminal button, in an example of chemical recycling called _____.

reuptake

Neurons reabsorb the neurotransmitters that are clogging the synapse in the process of reuptake.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #68

Learning Outcome: 5.3 Summarize how messages travel from one neuron to another.

Module: Module 5

69. (p. 52) If someone has a deficiency or an excess of a _____, it can produce severe behavior disorders.

neurotransmitter

Neurotransmitters are responsible for many functions within the body. If there are too many neurotransmitters or too few, then various behavioral disorders occur.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #69

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

70. (p. 54) _____ is a neurotransmitter that is involved in movement, attention, and learning.

Dopamine

Dopamine is also a major neurotransmitter. It is involved in movement, attention, and learning.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #70

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

71. (p. 54) It has been hypothesized that _____ of dopamine produces negative consequences in a person, such as schizophrenia.

overproduction

Overproduction of dopamine has been directly linked to schizophrenia.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #71

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

72. (p. 56) The _____ secretes chemical messages that circulate through the blood, and also communicates messages that influence behavior and many aspects of biological functioning.

endocrine system

The endocrine system is responsible for secreting chemical messages that circulate through the blood. It also communicates messages that influence behavior and many aspects of biological functioning.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #72

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

73. (p. 54) It has been hypothesized that overproduction of _____ produces negative consequences in a person like schizophrenia.

dopamine

Overproduction of dopamine has been directly linked to schizophrenia.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #73

Learning Outcome: 5.4 Identify neurotransmitters.

Module: Module 5

74. (p. 58) The _____ branches out from the spinal cord and brain and reaches the extremities of the body.

peripheral nervous system

The peripheral nervous system is made up of neurons with long axons and dendrites and encompasses all of the parts of the nervous system other than the brain and the spinal cord.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #74

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

75. (p. 58-59) Behavioral genetics studies the effects of _____ on behavior.

heredity

Behavioral genetics is a fairly new area of study that concentrates on heredity and behavior. This is at the core of the nature/nurture debate.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #75

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

76. (p. 61) _____ are chemicals that circulate through the blood and regulate the functioning or growth of the body.

Hormones

Hormones are in charge of regulating the functioning or growth of the body.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #76

Learning Outcome: 6.2 Describe the operation of the endocrine system and how it affects behavior.

Module: Module 6

77. (p. 47) Behavioral _____ are psychologists who specialize in considering the ways in which biological structures and functions of the brain affect behavior.

neuroscientists

Behavioral neuroscientists seek to answer questions about the brain and the body and their interactions.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #77

Learning Outcome: 5.1 Explain the structure of a neuron.

Module: Module 5

78. (p. 71) The brain continually reorganizes itself in a process termed _____.

Neuroplasticity

Neuroplasticity shows that interconnections between neurons become more complex throughout life. Some new neurons are created in certain areas of the brain during adulthood.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #78

Learning Outcome: 7.5 Recognize neuroplasticity and its implications.

Module: Module 7

79. (p. 72) The brain is divided into two equal _____ that control motion and receive sensation from the side of the body opposite their location.

hemispheres

The brain is divided into the left and right hemispheres and they are responsible for the opposite side of the body.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #79

Learning Outcome: 7.6 Explain how the two hemispheres of the brain operate interdependently and the implications for human behavior.

Module: Module 7

80. (p. 56) The _____ is the primary means for transmitting messages between the brain and the rest of the body.

spinal cord

The purpose of the spinal cord, which is a bundle of neurons that leaves the brain and runs down the length of the back, is to transmit messages between the brain and the rest of the body.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #80

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

81. (p. 57) A(n) _____ is an automatic, involuntary response to an incoming stimulus.

reflex

A reflex runs through the spinal cord, independent of the brain. It is an automatic response to something that would otherwise take too long to process.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #81

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

82. (p. 57) If you touch a hot stove and you remove your hand right away, you are employing a(n) _____.

reflex

A reflex runs through the spinal cord, independent of the brain. It is an automatic response to something that would otherwise take too long to process.

Bloom's: Understanding

Difficulty: Easy

Feldman - Chapter 002 #82

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

83. (p. 66) The _____ is found just above the medulla and behind the pons.

cerebellum

The cerebellum is above the medulla and behind the pons.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #83

Learning Outcome: 7.2 Describe the central core of the brain.

Module: Module 7

84. (p. 71) Scientists have learned in recent years that the brain continually reorganizes itself in a process termed _____.

neuroplasticity

This is the definition of neuroplasticity.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #84

Learning Outcome: 7.5 Recognize neuroplasticity and its implications.

Module: Module 7

85. (p. 71) The region of the central cortex known as the _____ are generally considered to be the site of higher mental processes such as thinking, language, memory, and speech.

association areas

The association areas are part of the cerebral cortex; damage here can cause significant changes in a person.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #85

Learning Outcome: 7.4 Describe the cerebral cortex of the brain.

Module: Module 7

86. (p. 72) Certain behaviors are more likely to reflect activity in one hemisphere than in the other. This is called _____.

lateralization

Brain lateralization is when certain behaviors are more likely to occur in one specific hemisphere than in the other.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #86

Learning Outcome: 7.6 Explain how the two hemispheres of the brain operate interdependently and the implications for human behavior.

Module: Module 7

87. (p. 76) A procedure in which a person learns to control through conscious thought internal physiological processes such as blood pressure, heart and respiration rate, skin temperature, sweating, and the constriction of particular muscles is called _____.

biofeedback

Biofeedback has really helped many people realize how much control they have over their bodies.

Bloom's: Remembering

Difficulty: Easy

Feldman - Chapter 002 #87

Learning Outcome: 7.6 Explain how the two hemispheres of the brain operate interdependently and the implications for human behavior.

Module: Module 7

88. (p. 49) Explain what happens before and during the triggering of a neuron. Include a description of the resting state.

Before a neuron is triggered, it has a negative electrical charge of about -70 millivolts. When a message arrives at a neuron, gates along the cell membrane open briefly to allow positively charged ions to rush in at rates as high as 100 million ions per second. The sudden arrival of these positive ions causes the charge within the nearby part of the cell to change momentarily from negative to positive. When the positive charge reaches a critical level, the "trigger" is pulled, and an electrical impulse, known as the action potential, travels along the axon of the neuron.

Bloom's: Understanding

Difficulty: Hard

Feldman - Chapter 002 #88

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

89. (p. 50) Why do neurons differ in their potential rate of firing?

Some neurons are capable of firing as many as a thousand times per second; others fire at much slower rates. The intensity of a stimulus determines how much of a neuron's potential firing rate is reached. A strong stimulus leads to a higher rate of firing than a less intense stimulus does. Even though all impulses move at the same strength or speed through a particular axon (because of the all-or-none law) there is a variation in the frequency of impulses, providing a mechanism by which we can distinguish the tickle of a feather from the weight of someone standing on our toes.

Bloom's: Understanding

Difficulty: Hard

Feldman - Chapter 002 #89

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

90. (p. 50-51) Explain what mirror neurons do when they are fired.

Mirror neurons fire not only when a person enacts a particular behavior, but also when a person observes another individual carrying out the same behavior. Mirror neurons may fire when we view other's behavior helping us to predict what their goals are and what they may do next.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #90

Learning Outcome: 5.2 Describe how neurons fire.

Module: Module 5

91. (p. 57) What are the three kinds of neurons involved in reflexes?

There are sensory (afferent) neurons that transmit information from the perimeter of the body to the central nervous system. There are motor (efferent) neurons that communicate information from the nervous system to muscles and glands. There are also interneurons which connect sensory and motor neurons, carrying messages between the two.

Bloom's: Remembering

Difficulty: Medium

Feldman - Chapter 002 #91

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

92. (p. 58) Describe the two divisions of the peripheral nervous system (PNS).

The peripheral nervous system (PNS) is comprised of the somatic division and the autonomic division. The somatic division specializes in the control of voluntary movements, such as the motion of the eyes to read or those of the hand to turn this page, and the communication of information to and from the sense organs. The autonomic division controls the parts of the body that keep us alive, such as the heart, blood vessels, glands, lungs, and other organs that function involuntarily without our awareness.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #92

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

93. (p. 58) Explain the functions of the sympathetic division and the parasympathetic division of the autonomic nervous system.

The sympathetic division of the autonomic nervous system acts to prepare the body for action in stressful situations by engaging all of the organism's resources to run away or confront the threat. This is often called the fight-or-flight response. The parasympathetic division acts to calm the body down after the emergency has ended. This division also directs the body to store energy for use in emergencies.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #93

Learning Outcome: 6.1 Explain how the structures of the nervous system are linked together.

Module: Module 6

94. (p. 72) Compare and contrast the functions of the left hemisphere with the functions of the right hemisphere of the brain.

The left side of the brain is responsible for processing language, such as speaking, reading, thinking, and reasoning. It also tends to process information sequentially. The right side of the brain is more focused on non-verbal areas such as the understanding of spatial relationships, recognition of patterns and drawings, music, and emotional expression. The right hemisphere tends to process information globally.

Bloom's: Understanding

Difficulty: Easy

Feldman - Chapter 002 #94

Learning Outcome: 7.6 Explain how the two hemispheres of the brain operate interdependently and the implications for human behavior.

Module: Module 7

95. (p. 74-76) Explain the cultural and gender differences within brain research.

Accumulating evidence seems to show intriguing differences in males' and females' brain lateralization and weight. For instance, most males tend to show greater lateralization of language in the left hemisphere. For them, language is clearly relegated largely to the left side of the brain. In contrast, women display less lateralization, with language abilities apt to be more evenly divided between the two hemispheres. Such differences in brain lateralization may account, in part, for the superiority often displayed by females on certain measures of verbal skills, such as the onset and fluency of speech. Other research suggests that men's brains are somewhat bigger than women's brains even after taking differences in body size into account. In contrast, part of the corpus callosum, a bundle of fibers that connects the hemispheres of the brain, is proportionally larger in women than in men. Men and women also may process information differently. For example, in one study, fMRI brain scans of men making judgments discriminating real from false words showed activation of the left hemisphere, of the brain, whereas women used areas on both sides of the brain. The meaning of such sex differences is far from clear. Consider one possibility related to differences in the proportional size of the corpus callosum. Its greater size in women may permit stronger connections to develop between the parts of the brain that control speech. In turn, this would explain why speech tends to emerge slightly earlier in girls than in boys. Before we rush to such a conclusion, though, it is important to consider an alternative hypothesis: the reason verbal abilities emerge earlier in girls may be that infant girls receive greater encouragement to talk than do infant boys. In turn, this greater early experience may foster the growth of certain parts of the brain. Hence, physical brain differences may be a reflection of social and environmental influences rather than a cause of the differences in men's and women's behavior. At this point, it is impossible to know which of these alternative hypotheses is correct. The right and left hemispheres of the brain specialize in handling different sorts of information. At the same time, it is important to realize that both hemispheres are capable of understanding, knowing, and being aware of the world, in somewhat different ways. The two hemispheres, then, should be regarded as different in terms of the efficiency with which they process certain kinds of information, rather than as two entirely separate brains. The hemispheres work interdependently to allow the full range and richness of thought of which humans are capable.

Bloom's: Understanding

Difficulty: Medium

Feldman - Chapter 002 #95

Learning Outcome: 7.6 Explain how the two hemispheres of the brain operate interdependently and the implications for human behavior.

Module: Module 7

96. (p. 66-69) Describe the major divisions of the brain, including the major structures within the brain.

The major divisions of the brain are the cerebral cortex and the central core. If we were to move up the spinal cord from the base of the skull to locate the structures of the central core of the brain, the first part we would come to would be the hindbrain, which contains the medulla, pons, and cerebellum. The medulla controls a number of critical body functions, the most important of which are breathing and heartbeat. The pons comes next, joining the two halves of the cerebellum, which lies adjacent to it. Containing large bundles of nerves, the pons acts as a transmitter of motor information, coordinating muscles and integrating movement between the right and left halves of the body. It is also involved in regulating sleep. The cerebellum is found just above the medulla and behind the pons. Without the help of the cerebellum we would be unable to walk a straight line without staggering and lurching forward, for it is the job of the cerebellum to control bodily balance. It constantly monitors feedback from the muscles to coordinate their placement, movement, and tension. In fact, drinking too much alcohol seems to depress the activity of the cerebellum, leading to the unsteady gait and movement characteristic of drunkenness. The cerebellum is also involved in several intellectual functions, ranging from the analysis and coordination of sensory information to problem solving. The reticular formation extends from the medulla through the pons, passing through the middle section of the brain—or midbrain—and into the front-most part of the brain, called the forebrain. Hidden within the forebrain, the thalamus acts primarily as a relay station for information about the senses. Messages from the eyes, ears, and skin travel to the thalamus to be communicated upward to higher parts of the brain. The thalamus also integrates information from higher parts of the brain, sorting it out so that it can be sent to the cerebellum and medulla. The hypothalamus is located just below the thalamus. Although tiny—about the size of a fingertip—the hypothalamus plays an extremely important role. One of its major functions is to maintain homeostasis, a steady internal environment for the body. The hypothalamus helps provide a constant body temperature and monitors the amount of nutrients stored in the cells. A second major function is equally important: the hypothalamus produces and regulates behavior that is critical to the basic survival of the species, such as eating, self-protection, and sex. The limbic system of the brain consists of a series of doughnut-shaped structures that include the amygdala and hippocampus, the limbic system borders the top of the central core and has connections with the cerebral cortex (see Figure 4). The structures of the limbic system jointly control a variety of basic functions relating to emotions and self-preservation, such as eating, aggression, and reproduction. Injury to the limbic system can produce striking changes in behavior. The limbic system is involved in several important functions, including self-preservation, learning, memory, and the experience of pleasure. These functions are hardly unique to humans; in fact, the limbic system is sometimes referred to as the "animal brain" because its structures and functions are so similar to those of other mammals. To identify the part of the brain that provides the complex and subtle capabilities that are uniquely human, we need to turn to another structure—the cerebral cortex. Those unique features of the human brain—indeed, the very capabilities that allow you to come up with such a question in the first place—are embodied in the ability to think, evaluate, and make complex judgments. The principal location of these abilities, along with many others, is the cerebral cortex. The cerebral cortex is referred to as the "new brain" because of its relatively recent evolution. It consists of a mass of deeply folded, rippled, convoluted tissue. Although only about one-twelfth of an inch thick, it would, if flattened out, cover an area more than two feet square. This configuration allows the surface area of the cortex to be considerably greater than it would be if it were smoother and more uniformly packed into the skull. The uneven shape also permits a high level of integration of neurons, allowing sophisticated information processing. The cortex has four major sections called lobes. If we take a side view of the brain, the frontal lobes lie at the front center of the cortex and the parietal lobes lie behind them. The temporal lobes are found in the lower center portion of the cortex, with the occipital lobes lying behind them. These four sets of lobes are physically separated by deep grooves called sulci.

Bloom's: Understanding

Difficulty: Hard

Feldman - Chapter 002 #96

Learning Outcome: 7.2 Describe the central core of the brain.

Learning Outcome: 7.3 Describe the limbic system of the brain.

Learning Outcome: 7.4 Describe the cerebral cortex of the brain.

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c2 Summary

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