My Psychology 2nd edition Pomerantz Test Bank

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Name:_____ Class:_____ Date:_____

Chapter 02: Multiple Choice

1. Phineas Gage's brain injury and the autopsy on Paul Broca's stroke patient provided evidence for the idea of:
   a. localization.
   b. association areas.
   c. phrenology.
   d. the nervous system.

ANSWER: a

2. After Phineas Gage's brain injury, his basic abilities remained intact but his _____ changed significantly.
   a. ability to form new memories
   b. ability to produce fluent speech
   c. personality characteristics
   d. coordination and balance

ANSWER: c

3. Yasmina was in a horse-riding accident, which caused damage to her brain similar to the damage sustained by Phineas Gage. As a result, you would predict that Yasmina would MOST likely demonstrate changes in her:
   a. coordination and balance.
   b. personality characteristics.
   c. ability to form new memories.
   d. level of intelligence.

ANSWER: b

4. The brain area damaged in Phineas Gage's accident was MOST responsible for:
   a. decision making and managing emotion.
   b. storing new and recalling old memories.
   c. producing fluent and meaningful speech.
   d. allowing the production of movement.

ANSWER: a

5. Damage to _____ impairs a person's ability to speak.
   a. Broca's area
   b. the occipital cortex
   c. the hippocampus
   d. Gage's area

ANSWER: a

6. Kelsey was involved in a car accident that damaged the part of their brain called Broca's area. This means that Kelsey will MOST likely have:
   a. an impaired ability to speak.
   b. significant personality changes.
   c. issues forming new memories.

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d. decreased intelligence.

ANSWER: a

7. Broca's area is associated with the ability to:

a. see.

b. speak.

c. hear.

d. taste.

ANSWER: b

8. In your psychology class, you learned about the famous case in which railroad worker Phineas Gage suffered a severe head injury. An iron rod he was using hit blasting powder, causing the rod to shoot up and through his head. Phineas Gage survived with his basic abilities intact, although his personality underwent a profound change. Phineas Gage's case BEST illustrates the idea that:

a. specific parts of the brain correspond to specific functions.

b. the brain adapts its functioning in response to damage.

c. new neurons are created after the brain has been damaged.

d. damage to the brainstem can cause personality change.

ANSWER: a

9. Scientists who believe that specific parts of the brain are responsible for specific functions and abilities are supported in this belief by:

a. the inability of split-brain surgery to treat severe epilepsy.

b. Phineas Gage's change in personality after sustaining a severe head injury.

c. the ability of the brain to adapt its structure or function in response to damage.

d. the discovery that new neurons are created by the brain after injury.

ANSWER: b

10. In an abnormal psychology class, you had a guest speaker from a local rehabilitation center that specializes in patients with brain injuries. The speaker discussed the case of a patient who suffered a stroke and lost the ability to speak. However, all of this patient's other abilities remained entirely intact. It is MOST likely that the stroke damaged which part of the patient's brain?

a. corpus callosum

b. hypothalamus

c. Broca's area

d. Wernicke's area

ANSWER: c

11. Dr. Emerson is a neurologist who studies the brain and how it functions. Dr. Emerson is particularly interested in the part of the brain that affects a person's ability to speak when it has been damaged. The part of the brain Dr. Emerson is interested in is:

a. the corpus callosum.

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b. the amygdala.
c. Wernicke's area.
d. Broca's area.

ANSWER: d

12. Your psychology instructor suggests that you first learn the microscopic activity of the brain. Which topic would fall in this category?
a. the role of the amygdala in expressing emotion
b. how the endocrine and nervous systems interact
c. how neurons send and receive information
d. how the hippocampus participates in memory

ANSWER: c

13. A neuron is:
a. a cell that facilitates communication.
b. a chemical that is used for signaling.
c. the gap between connecting cells.
d. the substance that insulates the signaling portion of cells.

ANSWER: a

14. Cells that facilitate communication within the nervous system are called:
a. dendrites.
b. neurons.
c. axons.
d. action potentials.

ANSWER: b

15. _____ are the building blocks of the brain.
a. Hormones
b. Synapses
c. Neurons
d. Neurotransmitters

ANSWER: c

16. A newly discovered life form was found. Unlike humans, this life form has no cells that facilitate communication within its nervous system. It can be assumed that this life form has no:
a. hormones.
b. neurons.
c. corpus callosum.
d. cerebral hemispheres.

ANSWER: b

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17. In a recent study, scientists analyzed how the brain develops in people with autism spectrum disorder compared to those without the disorder. The scientists were specifically interested in the development of _____, which are cells that are responsible for communication within the brain.

a. neurons
b. neurotransmitters
c. synapses
d. axons

ANSWER: a

18. Lknarf Industries is a large, multinational corporation with hundreds of employees. The employees of Lknarf Industries use an internal messaging system which allows them to communicate quickly, easily, and efficiently with one another. The company's approach to communication operates MOST similarly to the:

a. nervous system.
b. corpus callosum.
c. cerebral hemispheres.
d. endocrine system.

ANSWER: a

19. At a busy intersection, a police officer directs traffic. The movement of the cars is controlled by the police officer, who is responsible for communicating to drivers how to proceed. The role of the police officer is MOST similar to the role of _____ in brain functioning.

a. neurotransmitters
b. neurons
c. glands
d. the endocrine system

ANSWER: b

20. Your brain contains approximately _____ billion neurons.

a. 1
b. 10
c. 100
d. 500

ANSWER: c

21. The majority of the neurons in your brain:

a. receive sensory input.
b. connect other neurons.
c. send motor commands.
d. facilitate reflexes.

ANSWER: b

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22. Interneurons:
    a. receive sensory information.
    b. produce and secrete hormones.
    c. directly produce motor movement.
    d. connect neurons to each other.

ANSWER: d

23. A neuron that connects only to nearby neurons is a(n):
    a. sensory neuron.
    b. interneuron.
    c. motor neuron.
    d. glial cell.

ANSWER: b

24. When at sea, ships use flags to communicate with other ships that are nearby. These flags would not be used to communicate with ships farther away. The use of flags by ships is similar to the use of _____ in the brain.
    a. neurotransmitters
    b. glial cells
    c. interneurons
    d. synapses

ANSWER: c

25. When Shana listens to a symphony at the opera house, neurons send that information to her thalamus, where it is processed before traveling onward to her auditory cortex and hippocampus. This processing of information within Shana's thalamus is MOST likely due to the activity of:
    a. afferent neurons.
    b. interneurons.
    c. endocrine hormones.
    d. motor neurons.

ANSWER: b

26. Sensory neurons are also called:
    a. afferent neurons.
    b. interneurons.
    c. efferent neurons.
    d. motor neurons.

ANSWER: a

27. _____ send information to your brain from your senses.
    a. Efferent neurons
    b. Motor neurons

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c. Afferent neurons
d. Glial cells

ANSWER: c

28. When Antonio smelled a rose, neurons carried the information about the smell to his brain. This information was MOST likely carried by:
a. afferent neurons.
b. motor neurons.
c. efferent neurons.
d. endocrine cells.

ANSWER: a

29. When reaching into your book bag, you accidentally jab yourself on the sharp point of a pencil. The pain you feel when this happens is communicated to your brain by your:
a. glial cells.
b. interneurons.
c. motor neurons.
d. sensory neurons.

ANSWER: d

30. When reaching into your book bag, you accidentally jab yourself on the sharp point of a pencil. You immediately move your hand away from the source of pain. The ability to move away when this happens is communicated to your muscles from your brain through:
a. hormones.
b. glia cells.
c. motor neurons.
d. sensory neurons.

ANSWER: c

31. Motor neurons are also called:
a. afferent neurons.
b. interneurons.
c. efferent neurons.
d. sensory neurons.

ANSWER: c

32. _____ send information from your brain to your muscles.
a. Sensory neurons
b. Motor neurons
c. Afferent neurons
d. Glial cells

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ANSWER: b

33. Sandra took a sip of spoiled milk and immediately spit it out. Her ability to spit the milk out so quickly is MOST directly due to the activity of her:

a. afferent neurons.
b. interneurons.
c. efferent neurons.
d. sensory neurons.

ANSWER: c

34. Paula has multiple sclerosis, and she has trouble feeling the temperature and texture of any item she touches with her hands. Her inability to feel the things she touches suggests that the multiple sclerosis is MOST directly affecting her:

a. glia cells.
b. interneurons.
c. efferent neurons.
d. sensory neurons.

ANSWER: d

35. In amyotrophic lateral sclerosis (also known as Lou Gehrig's disease), the cells that send messages from the brain to muscles, also known as _____, begin to break down, resulting in progressive movement impairments.

a. glial cells
b. interneurons
c. efferent neurons
d. sensory neurons

ANSWER: c

36. As you were riding to school with your roommate one day, a bobble-head doll your roommate had on the dashboard fell when the car stopped suddenly at a red light. Without thinking, you reached out and caught the bobble-head before it fell to the floorboard. When you did so, you were using your:

a. motor neurons.
b. glial cells.
c. interneurons.
d. sensory neurons.

ANSWER: a

37. _____ carry messages to your brain, whereas _____ carry messages from your brain.

a. Sensory neurons; motor neurons
b. Motor neurons; sensory neurons
c. Interneurons; glial cells
d. Glial cells; interneurons

ANSWER: a

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38. A(n) _____ is an automatic motor response to sensory input.
    a. efferent movement
    b. afferent reaction
    c. action potential
    d. reflex

ANSWER: d

39. When Linda's doctor hits her knee with a small hammer, her knee involuntarily jerks forward. The involuntary movement of Linda's knee is a(n):
    a. spasm.
    b. contraction.
    c. action potential.
    d. reflex.

ANSWER: d

40. Which statement is true about reflexes?
    a. Reflexes take anywhere from a few seconds to a minute to begin.
    b. Reflexes are involuntary, automatic motor responses to sensory input.
    c. Reflexes are voluntary, controlled motor responses to sensory input.
    d. Reflexes are learned reactions to sensory stimuli.

ANSWER: b

41. The _____ is the part of the neuron that performs basic cellular activities.
    a. dendrite
    b. soma
    c. axon
    d. axon terminal

ANSWER: b

42. The soma of a neuron:
    a. performs basic cellular activities.
    b. carries information toward other neurons.
    c. forms connections with the next neuron.
    d. receives information from a previous neuron.

ANSWER: a

43. The _____ is the central region of the neuron, which performs the basic activities that keep it functioning properly.
    a. axon
    b. cell body

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c. myelin sheath
d. synapse

ANSWER: b

44. The cell body of a neuron:
a. performs the basic activities that keep a neuron functional.
b. receives signals sent from other neurons.
c. forms connections with other neurons.
d. supports and protects neurons.

ANSWER: a

45. In your body, the digestive system absorbs food to provide the energy necessary for the basic functions that allow your body to function. The part of the neuron that corresponds BEST to the digestive system of your body is the:
a. axon.
b. cell body.
c. myelin sheath.
d. synapse.

ANSWER: b

46. In a car, the motor or engine provides the energy necessary for the basic functions that allow the car to be operated. The part of the neuron that corresponds BEST to a car motor or engine is the:
a. axon.
b. cell body.
c. myelin sheath.
d. synapse.

ANSWER: b

47. The _____ is the part of the neuron that carries information toward other neurons.
a. cell body
b. dendrite
c. axon terminal
d. axon

ANSWER: d

48. The axon:
a. performs the basic activities that keep a neuron functional.
b. receives signals from other neurons.
c. forms direct connections with other neurons.
d. carries information toward other neurons.

ANSWER: d

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49. At many pharmacy drive-throughs, customers use a tube to send their prescriptions to the pharmacist inside. When a customer arrives, they place their prescription in the tube and then press a button. The prescription is then transported via the tube inside to the pharmacist. This tube operates MOST similarly to which part of the neuron?

a. cell body
b. myelin sheath
c. dendrite
d. axon

ANSWER: d

50. The small branches that form connections with the next neuron are called:

a. dendrites.
b. cell bodies.
c. neurotransmitters.
d. axon terminals.

ANSWER: d

51. The axon terminals of a neuron:

a. perform basic cellular activities.
b. carry information toward other neurons.
c. form connections with the next neuron.
d. receive information from another neuron.

ANSWER: c

52. Neurons send information via their _____ and receive information via their _____.

a. axon terminals; dendrites
b. dendrites; axon terminals
c. synapse; dendrites
d. dendrites; cell body

ANSWER: a

53. Information being sent to other neurons travels along the _____ before reaching the _____, which forms connections with the next neuron.

a. dendrites; axon terminals
b. axon; dendrites
c. axon; axon terminals
d. cell body; dendrites

ANSWER: c

54. Alicia sent a text to her friend Crystal letting her know that she could not meet her to go to the movies as planned. Crystal received this information in her e-mail inbox. Alicia sending this message to Crystal's inbox operates MOST similarly to the _____ of the neuron.

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a. synaptic vesicles
b. soma
c. dendrites
d. axon terminals

ANSWER: d

55. The myelin sheath of a neuron:
a. speeds its communication.
b. slows its communication.
c. covers the dendrites and soma.
d. restricts the reuptake process.

ANSWER: a

56. _____ cover(s) the axons of a neuron, helping messages travel quickly and efficiently.
a. Dendrites
b. Axon terminals
c. Receptors
d. Myelin

ANSWER: d

57. Multiple sclerosis breaks down a neuron's _____, which is a fatty material that surrounds a neuron's axon.
a. synapse
b. histamine
c. threshold
d. myelin

ANSWER: d

58. Multiple sclerosis causes deterioration of a neuron's _____, which results in problems with movement and sensation.
a. dendrites
b. axon terminals
c. myelin sheath
d. neurotransmitters

ANSWER: c

59. Shana has multiple sclerosis. This means that her neurons' _____ will deteriorate over time.
a. dendrites
b. axon terminals
c. myelin
d. neurotransmitters

ANSWER: c

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60. Danielle has a disease that decreases both incoming messages from the senses and her ability to move. She MOST likely has:
a. multiple sclerosis.
b. Broca's aphasia.
c. anterograde amnesia.
d. Wernicke's aphasia.
ANSWER: a

61. Glial cells:
a. break down a neuron's myelin sheath.
b. receive and send information.
c. support and protect neurons.
d. release neurotransmitters.
ANSWER: c

62. Which statement about glial cells is true?
a. Glial cells create myelin sheaths.
b. Glial cells receive and send information between neurons.
c. Glial cells send sensory messages to the brain.
d. Glial cells produce action potentials.
ANSWER: a

63. The dendrites of a neuron:
a. perform basic cellular activities.
b. carry information toward other neurons.
c. form connections with the next neuron.
d. receive information from other neurons.
ANSWER: d

64. _____ are branches at the end of neurons that receive signals from other neurons.
a. Axon terminals
b. Synapses
c. Dendrites
d. Myelin sheaths
ANSWER: c

65. Naomi sent an e-mail to Professor Lu to ask a question about the day's lecture. Professor Lu received this information in her e-mail inbox. Professor Lu's reception of the message from Naomi operates MOST similarly to the _____ of a neuron.
a. synaptic vesicles
b. soma

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c. dendrites
d. axon terminals

ANSWER: c

66. Your letter carrier delivers mail to the mailbox where you live. Your mailbox functions in the same way as the _____ of the neuron.
a. synaptic vesicles
b. soma
c. dendrites
d. axon terminals

ANSWER: c

67. Neurotransmitters must travel across _____ to reach the next neuron.
a. glial cells
b. the synapse
c. receptor sites
d. the soma

ANSWER: b

68. A synapse is:
a. a saclike container packed with neurotransmitters.
b. a neurotransmitter receptor.
c. the gap between neurons.
d. a space between myelin on the axon.

ANSWER: c

69. Dr. O'Connor discovered a new species of sea slug. In this species, the axon terminals and the dendrites of the neurons communicate via direct contact. Unlike humans, this species does not have _____ between its neurons.
a. glial cells
b. synapses
c. receptor sites
d. axons

ANSWER: b

70. _____ are the chemical messengers in the nervous system that travel across the synapses between neurons.
a. Synaptic vesicles
b. Action potentials
c. Neurotransmitters
d. Hormones

ANSWER: c

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71. Neurotransmitters are:
    a. cells that carry information to the brain.
    b. chemical messengers that travel across synapses from one neuron to the next.
    c. electrical impulses that cause a neuron to fire.
    d. chemical messengers sent throughout the body via the bloodstream.

ANSWER: b

72. Dr. Pahz studies the effect of chemicals produced by the brain on a person's mood and their perception of pain. Dr. Pahz MOST likely studies:
    a. synaptic vesicles.
    b. action potentials.
    c. neurotransmitters.
    d. hormones.

ANSWER: c

73. Endorphins are:
    a. saclike containers for neurotransmitters.
    b. openings for neurotransmitters in dendrites.
    c. spaces that neurotransmitters must cross between neurons.
    d. neurotransmitters involved in reducing pain and increasing pleasure.

ANSWER: d

74. The "high" that runners feel during marathons MOST likely results from the release of:
    a. histamine.
    b. endorphins.
    c. GABA.
    d. epinephrine.

ANSWER: b

75. Alberto's grandfather has Parkinson's disease, which results in tremors and slow movement. The medicine Alberto's grandfather takes increases his levels of _____, which is low in people with Parkinson's disease.
    a. dopamine
    b. GABA
    c. epinephrine
    d. serotonin

ANSWER: a

76. Which neurotransmitter is most involved in sleep?
    a. dopamine
    b. acetylcholine
    c. epinephrine

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d. serotonin

ANSWER: d

77. As individuals age, they need fewer hours of sleep. This is MOST likely due to changes in the levels of the neurotransmitter:

a. dopamine.
b. acetylcholine.
c. epinephrine.
d. serotonin.

ANSWER: d

78. The neurotransmitter that is MOST involved in the fight-or-flight response is:

a. dopamine.
b. GABA.
c. epinephrine.
d. serotonin.

ANSWER: c

79. Cynthia just rode a roller coaster with her friends. Cynthia loved the experience, but her heart is pounding, and she feels shaky and breathless. The neurotransmitter that is MOST likely responsible for Cynthia's physical response to riding the roller coaster is:

a. GABA.
b. acetylcholine.
c. epinephrine.
d. serotonin.

ANSWER: c

80. Scientists would MOST likely manipulate the signaling of _____ in order to make a mouse learn faster and remember better.

a. GABA
b. glutamate
c. epinephrine
d. serotonin

ANSWER: b

81. At times, Stanley feels more anxious than usual. When Stanley feels like this, it affects his functioning. If a psychiatrist prescribed Stanley medicine to help with his anxiety during these times, that medicine would MOST likely address which neurotransmitter?

a. dopamine
b. GABA
c. acetylcholine
d. serotonin

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ANSWER: b

82. An _____ is a drug that enhances the impact of a neurotransmitter.
a. efferent
b. agonist
c. afferent
d. antagonist

ANSWER: b

83. Parkinson's disease causes tremors and slow movement due to the brain's inability to produce enough dopamine. Thus, to treat Parkinson's, doctors would MOST likely prescribe a dopamine:
a. efferent.
b. agonist.
c. afferent.
d. antagonist.

ANSWER: b

84. A drug that interferes with the impact of a neurotransmitter is called an:
a. efferent.
b. agonist.
c. afferent.
d. antagonist.

ANSWER: d

85. Schizophrenia is partially caused by an overabundance of dopamine signaling in the brain. Thus, to treat schizophrenia, doctors would MOST likely prescribe a dopamine:
a. efferent.
b. agonist.
c. afferent.
d. antagonist.

ANSWER: d

86. Morphine is a drug that acts in the same way that the body's natural endorphins do. This suggests that morphine acts as an _____ for endorphin.
a. efferent
b. agonist
c. afferent
d. antagonist

ANSWER: b

87. Narcan is a drug that can block heroin's ability to act on the body's natural endorphin system. This suggests that Narcan acts as an _____ for endorphin.

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a. efferent
b. agonist
c. afferent
d. antagonist

ANSWER: d

88. The tiny, saclike containers containing neurotransmitters are called:
a. receptor sites.
b. synaptic vesicles.
c. axon terminals.
d. dendrites.

ANSWER: b

89. A synaptic vesicle is:
a. a saclike container for neurotransmitters.
b. an opening for neurotransmitters in dendrites.
c. the space neurotransmitters must cross between neurons.
d. a receptor site in dendrites for neurotransmitters.

ANSWER: a

90. Pills are often kept in plastic containers until they are used. A plastic container for pills is similar to a(n) _____ for neurotransmitters.
a. synaptic vesicle
b. myelin sheath
c. axon terminal
d. receptor

ANSWER: a

91. A receptor site is:
a. a saclike container for neurotransmitters.
b. an opening for specific neurotransmitters in dendrites.
c. the space neurotransmitters must cross between neurons.
d. a space between the myelin on the axon.

ANSWER: b

92. _____ are locations on dendrites that match specific neurotransmitters.
a. Receptor sites
b. Synaptic vesicles
c. Axon terminals
d. Somas

ANSWER: a

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93. Neurotransmitter action at the next neuron is sometimes described as acting like a lock-and-key system, with neurotransmitters being the key and _____ being the lock.
a. synaptic vesicles
b. myelin sheaths
c. axon terminals
d. receptor sites
ANSWER: d

94. What is the correct order of neurotransmitter activity from one neuron to the next?
a. axon terminal, synapse, receptor site
b. axon terminal, receptor site, synapse
c. synapse, axon terminal, receptor site
d. receptor site, synapse, refractory period
ANSWER: a

95. The process of reuptake:
a. increases the amount of neurotransmitters in the synapse.
b. aids in getting neurotransmitters to receptor sites.
c. returns neurotransmitters to the neuron that released them.
d. releases neurotransmitters into the synapse.
ANSWER: c

96. The process that occurs when a neurotransmitter is taken back up by the neuron that sent it is called:
a. neurogenesis.
b. reuptake.
c. firing.
d. refraction.
ANSWER: b

97. Reuptake is the:
a. waiting time during which a neuron is reset.
b. firing of an electrical impulse through the axon.
c. the reabsorption of a neurotransmitter by its sending neuron.
d. creation of new neurons by the brain after it has been damaged.
ANSWER: c

98. Jeremy baked cookies to celebrate his cousin's graduation. Jeremy had dough left over after filling the sheet, which he returned to the refrigerator. Returning the excess dough to the refrigerator is MOST similar to the _____ of a neuron.
a. threshold level
b. reuptake process

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c. action potential
d. refractory period

ANSWER: b

99. Which statement is TRUE about the reuptake process? Reuptake:
a. occurs when neurotransmitters do not successfully release into the synapse.
b. happens when neurotransmitters return to the sending neuron.
c. is the process by which neurotransmitters attach to receptor sites.
d. causes the firing of an electrical impulse that travels through the axon.

ANSWER: b

100. Some antidepressant drugs act by blocking the reuptake of serotonin. The result of these drugs is:
a. a decrease in the amount of serotonin released.
b. an increase in the amount of serotonin in the synapse.
c. more serotonin available to act on glial cells.
d. less serotonin to act on neuron receptor sites.

ANSWER: b

101. The firing of an electrical impulse that travels through the neuron's axon is called the:
a. action potential.
b. resting potential.
c. refractory period.
d. reuptake process.

ANSWER: a

102. A neuron's communication process begins with the:
a. action potential.
b. resting potential.
c. refractory period.
d. reuptake process.

ANSWER: a

103. An action potential is the:
a. chemical transmission of information between neurons.
b. low-level electrical charge of an inactive neuron.
c. firing of an electrical impulse in a neuron.
d. waiting time during which a neuron resets.

ANSWER: c

104. Sarah lives in an old house. Sarah wants to update parts of her house, starting with her light switches. Currently, Sarah can only turn the lights all the way on or all the way off. Sarah plans to install switches that

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allow her to adjust the level of her lights instead of just turning them on or off. The way Sarah's current light switches operate is MOST similar to a neuron's:

a. action potential.
b. resting potential.
c. refractory period.
d. reuptake process.

ANSWER: a

105. The low-level electrical charge a neuron has when it is not firing is called the:

a. action potential.
b. resting potential.
c. refractory period.
d. reuptake process.

ANSWER: b

106. The resting potential of a neuron is defined as the:

a. low-level electrical charge in a neuron when it is not firing.
b. minimum level of electrical change necessary to fire a neuron.
c. level of electrical charge present necessary to reset a neuron.
d. electrical charge needed to begin the neuron's firing process.

ANSWER: a

107. Regan enjoys running marathons. While running, Regan uses a significant amount of energy. She uses much less energy when not running, but some is required to keep her going throughout the day. Regan's energy level between marathons is MOST similar to the _____ of a neuron.

a. action potential
b. resting potential
c. refractory period
d. threshold

ANSWER: b

108. The threshold of a neuron is the:

a. level of electrical charge required for a neuron to fire.
b. low-level electrical charge of an inactive neuron.
c. firing of an electrical impulse in a neuron.
d. waiting time during which a neuron resets its charge.

ANSWER: a

109. The action potential of a neuron is triggered when the _____ is reached.

a. resting potential
b. action potential

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c. refractory period
d. threshold

ANSWER: d

110. When a person has a heart attack, doctors often use a machine to deliver a dose of electricity to the person's heart. After the defibrillator is used, a period of time is needed for it to recharge. The period of time a defibrillator needs to recharge is MOST similar to the _____ of a neuron.
a. action potential
b. resting potential
c. refractory period
d. reuptake process

ANSWER: c

111. When you flush a toilet, you must wait a period of time before the toilet can fully flush again. That waiting period is MOST similar to the _____ of a neuron.
a. action potential
b. resting potential
c. refractory period
d. reuptake process

ANSWER: c

112. The _____ of a neuron is the time during which a neuron resets its electrical charge.
a. resting potential
b. threshold
c. action potential
d. refractory period

ANSWER: d

113. What is the correct order of electrical activity of a neuron?
a. resting potential, action potential, refractory period
b. resting potential, refractory period, action potential
c. refractory period, action potential, resting potential
d. action potential, resting potential, refractory period

ANSWER: a

114. Which statement about a neuron's electrical activity is FALSE?
a. The strength of an action potential depends on the strength of what triggered it.
b. At rest, neurons have a low-level electrical charge.
c. Action potentials operate on the all-or-none principle.
d. There is a period of time after an action potential during which a neuron cannot fire again.

ANSWER: a

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115. Which statement about how neurons develop and connect in different species is FALSE?
a. In humans, brain connections depend heavily on experience, especially early in life.
b. In nonhuman animal species, many brain connections are established by birth.
c. Compared to other animals, the human brain is overdeveloped at birth.
d. Compared to other animals, human brains are more customizable.

ANSWER: c

116. _____ is the idea that specific parts of the brain are responsible for specific behaviors or abilities.
a. Plasticity
b. Neurogenesis
c. Localization
d. Association

ANSWER: c

117. Localization refers to the idea that _____ particular behaviors or abilities.
a. specific parts of the brain are responsible for
b. the lobes of the brain work together to perform
c. the two hemispheres of the brain are primarily responsible for
d. each lobe of the brain is solely responsible for

ANSWER: a

118. Dr. Konitski recently conducted a study in which they examined how the hippocampus of people with memory loss functioned as compared to people without memory loss. Dr. Konitski theorized that the hippocampus is responsible for specific aspects of memory. Dr. Konitski's approach corresponds MOST closely to the concept of:
a. localization.
b. plasticity.
c. reuptake.
d. specialization.

ANSWER: a

119. You work at a large factory that manufactures farm equipment. The factory has different areas responsible for manufacturing specific parts of the equipment. Your job is in the area of the factory that puts all of the parts together so that the equipment can operate. The way the different areas of the factory operate is MOST similar to the concept of brain:
a. localization.
b. plasticity.
c. association.
d. specialization.

ANSWER: a

120. Each app on your phone has a certain function—one takes pictures, another sends messages. The way the

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different apps on your phone operate is MOST similar to the concept of brain:
a. localization.
b. plasticity.
c. association.
d. specialization.
ANSWER: a

121. Relatively speaking, the _____ of the human brain is larger in humans than in other species.
a. top and front
b. brainstem
c. top and back
d. hindbrain
ANSWER: a

122. Which statement about brain size across species is true?
a. Human brains are bigger at the back and bottom than other species' brains.
b. Humans have larger forebrains than other species.
c. Reptiles have larger forebrains than birds and mammals.
d. Species that evolved more recently have larger brainstems.
ANSWER: b

123. Which statement about the brain is FALSE?
a. The back and bottom control basic functions.
b. The top and front control advanced functions.
c. Specific parts of the brain are responsible for specific activities and behaviors.
d. Some parts of the brain can function entirely independently from the rest of the brain.
ANSWER: d

124. Which statement about the brain is TRUE?
a. The back and bottom control advanced functions.
b. The top and front control basic functions.
c. Specific parts of the brain are responsible for specific activities and behaviors.
d. Some parts of the brain can function entirely independently from the rest of the brain.
ANSWER: c

125. The main function of the brainstem is to:
a. pass along sensory information to other brain areas.
b. regulate movement and control coordination.
c. maintain basic functions necessary for life.
d. facilitate motivation and emotion.
ANSWER: c

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126. Which function is NOT controlled by the brainstem?
a. breathing
b. heartbeat
c. memory
d. swallowing
ANSWER: c

127. Which functions are NOT controlled by the brainstem?
a. breathing and heartbeat
b. attention and arousal
c. deciding and planning
d. sneezing and vomiting
ANSWER: c

128. If a person sustains severe damage to their brainstem, which would be the MOST likely outcome?
a. impaired memory
b. death
c. sensory processing deficits
d. blindness
ANSWER: b

129. Which is NOT a part of the brainstem?
a. thalamus
b. reticular activating system
c. pons
d. medulla
ANSWER: a

130. During surgery, patients are often placed on machines to control their breathing and heartbeat. These machines function MOST similarly to which part of the brain?
a. cerebellum
b. brainstem
c. corpus callosum
d. limbic system
ANSWER: b

131. The _____ is the collection of neurons in the brainstem that are involved in alertness, attention, sleep, and waking.
a. reticular activating system
b. limbic system

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c. hippocampus
d. cerebellum

ANSWER: a

132. Your professor is discussing the part of the brainstem that is involved in alertness, attention, sleep, and waking. Your professor is MOST likely discussing the:
a. limbic system.
b. hippocampus.
c. cerebellum.
d. reticular activating system.

ANSWER: d

133. Which part of the brainstem is involved in arousal, alertness, and attention?
a. thalamus
b. reticular activating system
c. pons
d. medulla

ANSWER: b

134. Sophie suffered an injury to her brainstem and now has problems staying alert and maintaining attention. What part of Sophie's brainstem was MOST likely injured?
a. thalamus
b. reticular activating system
c. pons
d. medulla

ANSWER: b

135. The _____ is the part of the brainstem involved in sleeping, breathing, and the maintenance of equilibrium.
a. thalamus
b. reticular activating system
c. pons
d. medulla

ANSWER: c

136. Santiago suffered an injury to his brainstem and now has problems maintaining equilibrium. What part of Santiago's brainstem was MOST likely injured?
a. thalamus
b. reticular activating system
c. pons
d. medulla

ANSWER: c

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137. After a stroke, Raymond experienced problems with his equilibrium. What part of the brain did Raymond's stroke MOST likely affect?
a. thalamus
b. reticular activating system
c. pons
d. medulla
ANSWER: c

138. The part of the brainstem primarily responsible for heartbeat and breathing is the:
a. thalamus.
b. reticular activating system.
c. pons.
d. medulla.
ANSWER: d

139. Amanti took a medication that slowed his breathing. The medication is MOST likely acting on his:
a. cortex.
b. cerebellum.
c. hippocampus.
d. medulla.
ANSWER: d

140. The part of the brainstem primarily responsible for heartbeat and breathing is the:
a. thalamus.
b. reticular activating system.
c. pons.
d. medulla.
ANSWER: d

141. Which two parts of the brain work together to control swallowing?
a. thalamus and hypothalamus
b. amygdala and hippocampus
c. pons and medulla
d. cortex and corpus callosum
ANSWER: c

142. The main function of the _____ is to regulate movement and control coordination.
a. amygdala
b. hippocampus
c. cerebellum
d. brainstem

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ANSWER: c

143. The cerebellum is hypothesized to be involved in all these functions EXCEPT:
a. balance.
b. emotion.
c. attention.
d. memory.

ANSWER: b

144. The cerebellum is located near the _____ of the brain.
a. front
b. top
c. base
d. middle

ANSWER: c

145. The _____ is involved in the regulation of movement.
a. occipital lobe
b. brainstem
c. reticular activating system
d. cerebellum

ANSWER: d

146. Aesha suffered damage to her cerebellum. Aesha is MOST likely to have difficulty with which task?
a. using the correct amount of pressure to write without tearing her paper
b. producing coherent speech in response to a question
c. having enough energy to complete a 30-minute cardio workout
d. being able to sleep continuously through the night

ANSWER: a

147. After an accident, George's ability to walk was impaired. The area of the brain George MOST likely damaged is his:
a. thalamus.
b. cerebellum.
c. hippocampus.
d. amygdala.

ANSWER: b

148. Which statement about the cerebellum is FALSE? The cerebellum:
a. is located at the bottom and back of the brain.
b. is necessary for muscle movements to start.

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c. may play a role in attention and memory.
d. contains 50% of the brain's total neurons.

ANSWER: b

149. Jamie is a top-level gymnast. As a gymnast, Jamie has good balance and coordination of movement. The area of Jamie's brain that is responsible for her balance and coordination is the:
a. thalamus.
b. pons.
c. cerebellum.
d. amygdala.

ANSWER: c

150. The _____ is the brain's main sensory processing center.
a. limbic system
b. thalamus
c. cerebellum
d. pons

ANSWER: b

151. The thalamus is located _____ of the brain.
a. in the middle
b. at the top and front
c. at the back and bottom
d. at the front and bottom

ANSWER: a

152. The main function of the thalamus is to:
a. process sensory information.
b. regulate movement coordination.
c. maintain basic life functions.
d. process motivation and emotion.

ANSWER: a

153. The _____ processes and relays sensory information.
a. brainstem
b. endocrine system
c. limbic system
d. thalamus

ANSWER: d

154. Which is NOT true about the thalamus? The thalamus:

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a. works with the basal ganglia to help control movement.
b. passes along sensory information to other brain areas.
c. is located near the center of the brain.
d. is one of the structures that make up the brainstem.

ANSWER: d

155. Which is true about the thalamus? The thalamus:
a. is involved in motivation.
b. is involved in sensory processing.
c. surrounds the limbic system.
d. is part of the cerebrum.

ANSWER: b

156. If a person suffered damage to their thalamus, which ability would MOST likely be impaired?
a. coordination and movement
b. understanding and producing speech
c. processing of sensory information
d. regulating emotions

ANSWER: c

157. In class, you learned about a person who suffered a head injury that made them unable to process information from the senses. What part of the person's brain was MOST likely damaged for this to occur?
a. cerebellum
b. corpus callosum
c. thalamus
d. hypothalamus

ANSWER: c

158. The _____ is the cluster of brain areas located near the center of the brain that is involved primarily in emotion.
a. limbic system
b. reticular activating system
c. thalamus
d. cerebrum

ANSWER: a

159. The main function of the limbic system is to:
a. pass along sensory information to other brain areas.
b. regulate movement and control coordination.
c. maintain basic functions necessary for life.
d. facilitate motivation and emotion.

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ANSWER: d

160. Which is NOT true about the limbic system? The limbic system:
a. is surrounded by the thalamus.
b. is involved in the production of emotion.
c. initiates feelings of motivation.
d. includes the amygdala.

ANSWER: a

161. Fathima suffered damage to her limbic system. She now has difficulty:
a. walking in a straight line.
b. producing speech.
c. seeing red light.
d. feeling motivated.

ANSWER: d

162. A type of mouse has been genetically engineered to have an underfunctioning limbic system. The mice have difficulty:
a. walking on a narrow, raised beam.
b. remembering the path through a maze.
c. differentiating between red and green light.
d. performing motivated behaviors.

ANSWER: d

163. Recently, one of your favorite artists released a new song. This song is about the happiness and sadness of two people who fell in love but eventually broke up. After taking an introductory psychology course, you know that the feelings described in the song are MOST likely regulated by the:
a. cerebellum.
b. thalamus.
c. limbic system.
d. reticular activating system.

ANSWER: c

164. Which of these is NOT part of the limbic system?
a. amygdala
b. hippocampus
c. thalamus
d. hypothalamus

ANSWER: c

165. What is the main function of the hypothalamus?
a. maintenance of homeostasis

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b. formation and storage of memory
c. relay of sensory information
d. initiation of movement

ANSWER: a

166. Dante had a stroke that damaged his hypothalamus. He is now unable to:
a. form new memories.
b. regulate his feelings of hunger.
c. feel emotions, especially fear.
d. engage in fluid movement.

ANSWER: b

167. The hypothalamus:
a. is controlled by the pituitary gland.
b. influences the autonomic nervous system.
c. regulates breathing and movement.
d. controls development of new memories.

ANSWER: b

168. The hypothalamus achieves steadiness in bodily functions by regulating the activity of the:
a. pituitary gland and autonomic nervous system.
b. reticular activating system and brainstem.
c. cortical hemispheres and corpus callosum.
d. rest of the limbic system and thalamus.

ANSWER: a

169. Dr. Lambert studies people who have difficulty judging when they are hungry and when they are full. Dr. Lambert is MOST likely studying the _____ in these people.
a. cerebellum
b. thalamus
c. hypothalamus
d. hippocampus

ANSWER: c

170. The _____ is the part of the limbic system involved in memory, especially spatial memory and long-term memory.
a. hypothalamus
b. amygdala
c. hippocampus
d. thalamus

ANSWER: c

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171. Conner had a head injury that damaged his hippocampus. Conner now has significant difficulty:
a. localizing sounds.
b. forming new memories.
c. controlling eye movements.
d. feeling motivated for food.
ANSWER: b

172. Severe damage to the hippocampus may result in:
a. anterograde amnesia.
b. Broca's aphasia.
c. personality change.
d. blindness.
ANSWER: a

173. Alek recently had a stroke. Although Alek can remember events that happened before his stroke, he cannot form new memories. Alek MOST likely has:
a. Wernicke's aphasia.
b. Broca's aphasia.
c. anterograde amnesia.
d. receptive aphasia.
ANSWER: c

174. Which statement about the hippocampus is FALSE?
a. The hippocampus can be damaged by high levels of stress and the hormone cortisol.
b. The hippocampus allows short-term memory to be stored as long-term memory.
c. Damage to the hippocampus can result in inability to recall past events.
d. The hippocampus is especially important for your memory of physical spaces.
ANSWER: c

175. You are at a furniture store shopping for a new couch. You really like one couch in particular and can picture exactly where in your house it will go best. To do this, you are using a mental map of your house's layout. The part of the brain that you MOST relied upon to create this mental map in your memory is the:
a. cerebellum.
b. medulla.
c. hypothalamus.
d. hippocampus.
ANSWER: d

176. Dr. Lopez works with people who are unable to form new long-term memories. Dr. Lopez is MOST likely studying the:
a. cerebellum.

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b. thalamus.
c. hypothalamus.
d. hippocampus.

ANSWER: d

177. The _____ is the part of the limbic system involved most directly in emotion, especially fear.
a. hippocampus
b. hypothalamus
c. amygdala
d. thalamus

ANSWER: c

178. _____ is almost exclusively controlled by the amygdala.
a. Joy
b. Fear
c. Disgust
d. Sadness

ANSWER: b

179. Radley was in a car accident and damaged his amygdala. Which outcome would Radley MOST likely experience because of that damage?
a. difficulty regulating negative emotions
b. impaired ability to form new memories
c. impaired ability to synthesize and interpret information
d. difficulty in the ability to understand speech

ANSWER: a

180. Which statement about the amygdala is FALSE? The amygdala:
a. converts short-term to long-term memories.
b. is involved in the experience and recognition of fear.
c. initiates the fight-or-flight response.
d. influences the strength of the startle reflex.

ANSWER: a

181. Dr. Hu studies people who are unable to recognize when a person in a picture has a fearful facial expression. Dr. Hu is MOST likely studying people who have experienced damage to their:
a. cerebellum.
b. amygdala.
c. hypothalamus.
d. hippocampus.

ANSWER: b

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Chapter 02: Multiple Choice

182. The front and upper part of the brain that is made up of two hemispheres and is involved in complex human abilities is the:
a. cerebrum.
b. brainstem.
c. corpus callosum.
d. hippocampus.
ANSWER: a

183. The cerebrum is also known as the:
a. forebrain.
b. brainstem.
c. corpus callosum.
d. limbic system.
ANSWER: a

184. The cerebrum is the:
a. bundle of neurons that connects the two cerebral hemispheres.
b. front and upper part of the brain involved in complex human abilities.
c. brain material devoted to synthesizing and interpreting information.
d. part of the limbic system involved most directly in emotion.
ANSWER: b

185. Kevin's dog, Cash, always runs to greet Kevin when he comes home. Cash learned that Kevin always gives Cash bones when he comes home. Although Kevin thinks that Cash is very clever, he knows that Cash is less able to think, plan, and reason than a person because:
a. dogs only have one cerebral hemisphere.
b. humans have larger cerebrums than dogs.
c. humans have larger brainstems than dogs.
d. dogs do not have a frontal lobe.
ANSWER: b

186. The cerebral cortex is where:
a. sensory information is processed.
b. memories are formed and stored.
c. basic vital functions are maintained.
d. emotion and motivation are initiated.
ANSWER: a

187. The cerebrum is divided into two:
a. lobes.
b. hemispheres.

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c. association areas.
d. cortices.

ANSWER: b

188. You are watching TV with a friend. Your friend asks you for the remote for the TV. You pick up the remote and hand it to your friend with your left hand. The use of your left hand is controlled to complete these actions by the _____ of your brain.
a. occipital lobe
b. right hemisphere
c. left hemisphere
d. limbic system

ANSWER: b

189. Zeke is on his school's soccer team. During practice, Zeke and his teammates practice kicking balls into the soccer goal. When Zeke kicks the ball, he always uses his right foot. Zeke's use of his right foot to kick the ball is controlled by the _____ of Zeke's brain.
a. temporal lobe
b. right hemisphere
c. left hemisphere
d. reticular activating system

ANSWER: c

190. Janine is an occupational therapist. One of her patients has weakness on the right side of their body after having a stroke. The patient's stroke MOST likely occurred in the patient's:
a. corpus callosum.
b. left hemisphere.
c. right hemisphere.
d. parietal lobe.

ANSWER: b

191. Which statement BEST represents how the cerebral hemispheres operate? The _____ side of the brain controls the _____.
a. left; right arm and left leg
b. left; left arm and left leg
c. right; right arm and left leg
d. right; left arm and left leg

ANSWER: d

192. _____ is a task dominated by the right hemisphere.
a. Reading written words
b. Moving the body's right side
c. Recognition of faces

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d. Seeing objects in one's right field of view

ANSWER: c

193. The left hemisphere of the brain is dominant in the task of:
a. reading written words.
b. moving the body's left side.
c. recognizing faces and objects.
d. seeing objects focusing on the left.

ANSWER: a

194. The corpus callosum is responsible for:
a. synthesizing and interpreting information from the senses.
b. connecting and allowing communication between the cerebral hemispheres.
c. regulating and maintaining the vital functions necessary for life.
d. forming and storing spatial and long-term memories.

ANSWER: b

195. The _____ connects and facilitates communication between the two cerebral hemispheres.
a. hypothalamus
b. hippocampus
c. frontal lobe
d. corpus callosum

ANSWER: d

196. At work, you are responsible for assigning tasks needed to complete various projects your company is handling. When choosing who to assign to a task, you have to consider how the task should be completed in relation to the overall project goal. To assign responsibility, you are using the left and right hemispheres of your brain, which communicate via the:
a. cerebral cortex.
b. parietal lobe.
c. association areas.
d. corpus callosum.

ANSWER: d

197. Which brain structure is cut during split-brain surgery?
a. corpus callosum
b. hypothalamus
c. brainstem
d. amygdala

ANSWER: a

198. Split-brain surgery is typically used as a last-resort effort to treat:

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a. paralysis.
b. aphasia.
c. epilepsy.
d. amnesia.

ANSWER: c

199. A person who has medication-resistant epilepsy may have surgery on their _____ to reduce the number and severity of their seizures.
a. corpus callosum
b. frontal lobe
c. cerebellum
d. cerebral cortex

ANSWER: a

200. When he was a toddler, David had brain surgery to reduce the severity and number of epileptic seizures he was having. The part of David's brain that was operated on was MOST likely the:
a. corpus callosum.
b. thalamus.
c. cerebellum.
d. cerebral cortex.

ANSWER: a

201. Destiny had split-brain surgery as a teenager. She is now participating in an experiment where she looks at a dot on a screen and words are flashed either to the right or left of the dot. Destiny is asked to report what word she saw. Which statement MOST likely accurately represents her response? When a word is flashed:
a. to the right of the dot, Destiny can verbally report the word.
b. to the left of the dot, Destiny can verbally report the word.
c. to either the right or the left of the dot, Destiny cannot verbally report the word.
d. to either the right or the left of the dot, Destiny can verbally report the word.

ANSWER: a

202. The _____ lobe of the brain is responsible for vision.
a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: d

203. Which of the following would be LEAST likely to result from damage to the occipital lobe of the brain?
a. complete blindness
b. visual hallucinations

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c. incoherent speech
d. difficulty seeing color

ANSWER: c

204. Kaden has a brain tumor. Because of the location of the tumor, Kaden has difficulty seeing certain colors and movements. Kaden's tumor is most likely located on his _____ lobe.
a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: d

205. The _____ lobe of the brain contains the area responsible for understanding speech.
a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: c

206. The area of the brain responsible for understanding speech is:
a. Broca's area.
b. Wernicke's area.
c. the occipital lobe.
d. the parietal lobe.

ANSWER: b

207. When he was small, Lucas had a very high fever that caused damage to part of his brain. Since then, Lucas has had difficulty understanding speech. This suggests that the damage to Lucas' brain was MOST likely to the _____ lobe.
a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: c

208. Tiana was in an accident that damaged part of her brain. Since the accident, Tiana has had difficulty with her perception of sound. Tiana's accident MOST likely affected her _____ lobe.
a. frontal
b. parietal
c. temporal
d. occipital

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ANSWER: c

209. Impairment in the ability to understand speech is called:
a. Wernicke's aphasia.
b. Broca's aphasia.
c. anterograde amnesia.
d. expressive aphasia.

ANSWER: a

210. Wade has difficulty understanding what others are saying. Even though Wade can speak, his sentences are often incoherent and make little sense. Wade most likely has _____ aphasia.
a. Wernicke's
b. Broca's
c. receptive
d. anomic

ANSWER: a

211. Which of the following would MOST likely result from damage to the temporal lobe of the brain?
a. complete blindness
b. visual hallucinations
c. incoherent speech
d. difficulty moving

ANSWER: c

212. Which is NOT a function of the temporal lobe of the brain?
a. hearing
b. speech
c. memory
d. decision making

ANSWER: d

213. Dr. Ogden works at a Veterans Administration hospital with veterans who have sustained brain injuries. One of the veterans Dr. Ogden worked with developed problems with processing feelings of pain and temperature. The area of the brain MOST likely damaged was the _____ lobe.
a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: b

214. _____ is a cortical brain area located on the parietal lobe that receives information about contact, pressure, pain, temperature, and itching.

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a. Wernicke's area
b. The motor cortex
c. The somatosensory cortex
d. Broca's area

ANSWER: c

215. The _____ of the body part does NOT match the amount of space it takes up on somatosensory cortex; instead, each spot corresponds to the _____ of that part of your body.

a. size; sensitivity
b. sensitivity; size
c. location; size
d. sensitivity; location

ANSWER: a

216. Which animal's body part would MOST likely have the proportionally largest amount of somatosensory cortex devoted to it?

a. horse's back
b. camel's hump
c. rat's whisker
d. elephant's leg

ANSWER: c

217. The _____ lobe of the brain is responsible for complex thinking tasks, planning, purposeful actions, and other advanced functions.

a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: a

218. Which is NOT a function of the frontal lobe of the brain?

a. producing movement
b. executive control
c. storing memory
d. making decisions

ANSWER: c

219. Which is an example of executive control under the control of the frontal lobe?

a. feeling temperature
b. regulating hunger
c. forming memories

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d. making decisions

ANSWER: d

220. The _____ lobe of the brain contains part of the motor cortex responsible for movement.

a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: a

221. _____ is a strip of brain matter in the frontal lobe that is involved in voluntary movement.

a. The motor cortex
b. Wernicke's area
c. The somatosensory cortex
d. Broca's area

ANSWER: a

222. Thaddeus volunteers behind the scenes at the local community theater. While setting up for a show, another volunteer accidently dropped a heavy set piece on Thaddeus's head. For several months after the accident, Thaddeus had significant trouble with problem solving, weighing multiple solutions, and forming strategies. Fortunately, Thaddeus recovered most of his functioning, although at times he still has minor trouble with these skills. It is MOST likely that the accident affected Thaddeus's _____ lobe.

a. frontal
b. parietal
c. temporal
d. occipital

ANSWER: a

223. Someone who is unable to produce speech MOST likely has:

a. multiple sclerosis.
b. Broca's aphasia.
c. anterograde amnesia.
d. receptive aphasia.

ANSWER: b

224. When Matthew tries to speak, he has trouble getting out the words needed to express his thoughts. Matthew MOST likely has:

a. Wernicke's aphasia.
b. Broca's aphasia.
c. anterograde amnesia.
d. receptive aphasia.

ANSWER: b

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Chapter 02: Multiple Choice

225. Which statement is NOT true about the frontal lobe? The frontal lobe contains:
a. the motor cortex.
b. the somatosensory cortex.
c. the areas necessary for executive function.
d. Broca's area.
ANSWER: b

226. _____ is responsible for understanding speech, whereas _____ is responsible for producing speech.
a. The somatosensory cortex; the motor cortex
b. The frontal lobe; the temporal lobe
c. Wernicke's area; Broca's area
d. Broca's area; Wernicke's area
ANSWER: c

227. The area of the brain that receives information from parts of the body is _____ and the area that sends information to parts of the body is _____.
a. the frontal lobe; the temporal lobe
b. Wernicke's area; Broca's area
c. the motor cortex; the somatosensory cortex
d. the somatosensory cortex; the motor cortex
ANSWER: d

228. An association area is:
a. the bundle of neurons that connects the two cerebral hemispheres.
b. the front and upper part of the brain involved in complex human abilities.
c. brain material devoted to synthesizing and interpreting information.
d. the part of the limbic system involved most directly in emotion.
ANSWER: c

229. Association areas in the brain are responsible for:
a. taking in sensory information.
b. initiating motor movements.
c. synthesizing and interpreting.
d. maintaining arousal and attention.
ANSWER: c

230. Association areas are found in the:
a. cerebrum.
b. brainstem.
c. limbic system.

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d. cerebellum.

ANSWER: a

231. Which statement about association areas is FALSE? Association areas:
a. are where information is integrated.
b. do more than just take in information.
c. process individual bits of information.
d. are spread across the cerebrum.

ANSWER: c

232. Which statement about association areas is TRUE? Association areas:
a. break down information into individual components.
b. send individual components of information.
c. synthesize the meaning of information.
d. are spread across the brainstem and thalamus.

ANSWER: c

233. A part of the brain that is devoted to both synthesizing and assigning meaning to information is:
a. an association area.
b. the somatosensory cortex.
c. the reticular activating system.
d. Broca's area.

ANSWER: a

234. Which function would be performed by an association area?
a. perceiving the sound that a baby is crying
b. moving your head away from an oncoming ball
c. feeling hungry after going a day without food
d. understanding to pick up the phone when it rings

ANSWER: d

235. The ability of the brain to adapt its structure and function in response to damage or experience is called:
a. reuptake.
b. plasticity.
c. aphasia.
d. localization.

ANSWER: b

236. Plasticity is the ability of the brain to:
a. adapt its structure and function in response to damage or experience.
b. recycle neurotransmitters back to the neuron that released it.

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Chapter 02: Multiple Choice

c. synthesize and interpret information rather than merely take it in.
d. send information from one neuron to the next in line.

ANSWER: a

237. Which statement about plasticity is FALSE? Plasticity:
a. occurs exclusively in the frontal cortex.
b. occurs more in young people.
c. is an adaptation of structure and function.
d. involves neurogenesis.

ANSWER: a

238. Neurogenesis is the:
a. creation of new neurons.
b. crossing of the synapse by neurotransmitters.
c. revision of the purpose of existing neurons.
d. result of damage to Wernicke's area.

ANSWER: a

239. _____ is the creation of new neurons.
a. Reuptake
b. Localization
c. Neurogenesis
d. Specialization

ANSWER: c

240. New evidence suggests that adults as well as children undergo _____, which is the creation of new neurons.
a. reuptake
b. split-brain surgery
c. neurogenesis
d. plasticity

ANSWER: c

241. Stem cells are:
a. unspecialized cells.
b. cells created during neurogenesis.
c. cells damaged by strokes.
d. specialized cells.

ANSWER: a

242. Cells that do not yet have a specialized structure or function are:

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Chapter 02: Multiple Choice

a. glial cells.
b. interneurons.
c. stem cells.
d. brain cells.

ANSWER: c

243. Sydney is a sculptor whose medium is clay. When starting a project, Sydney uses a lump of clay that can be molded into any type of shape she wants. What the lump of clay eventually becomes is based on what Sydney needs to make for her customers. The lump of clay Sydney uses is MOST similar in function to:

a. glial cells.
b. interneurons.
c. stem cells.
d. efferent neurons.

ANSWER: c

244. Which is NOT an example of plasticity?

a. a larger than usual amount of the somatosensory cortex dedicated to the hands and fingers in a person with a visual disability
b. a larger than usual amount of the motor cortex dedicated to the forelimbs of rats without whiskers
c. increased motivation by the limbic system to seek food when a person is hungry
d. change in the limbic system of a person with a phobia after undergoing psychotherapy

ANSWER: c

245. While fixing the electrical system in his house, Bruce accidentally shocked himself. This caused him to fall and hit his head. When he fell, Bruce sustained permanent damage to parts of his brain. Over time, other areas of Bruce's brain partially took over the function of the damaged areas. This is an example of the concept of:

a. split-brain function.
b. plasticity.
c. localization.
d. myelination.

ANSWER: b

246. Gerrie was in an accident that damaged her visual cortex and left her blind. What type of plasticity would MOST likely happen to help Gerrie recover function?

a. The amount of somatosensory cortex dedicated to her Braille-reading finger would increase.
b. The size of her hippocampus, occipital lobe, and prefrontal cortex would decrease.
c. The amount of somatosensory cortex dedicated to her Braille-reading finger would decrease.
d. The size of her hippocampus, occipital lobe, and prefrontal cortex would increase.

ANSWER: a

247. The _____ consists of the full set of nerves that connect the brain with all other parts of the body.

a. corpus callosum

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Chapter 02: Multiple Choice

b. nervous system
c. endocrine system
d. cerebral cortex

ANSWER: b

248. The nervous system is BEST defined as the nerves that:
a. connect the brain to the parts of the body controlled voluntarily.
b. stimulate the body in response to stressors.
c. connect the brain with all other parts of the body.
d. calm the body after exposure to stressors.

ANSWER: c

249. At a local hospital, all patients with cardiac issues are housed on one floor of the hospital. On this floor is a nurses' station, which is connected to each patient room. From their station, the nurses can send and receive messages from patients as well as control the equipment in the patients' rooms. The nurses' station on this floor and its connections to the patients' rooms would be MOST comparable to which part of the human body?
a. corpus callosum
b. nervous system
c. glial cells
d. cerebral cortex

ANSWER: b

250. Dr. Browne is a neuropsychologist who studies the functioning of the human brain. Although Dr. Browne is interested in all parts of the brain, his area of interest is primarily the _____, which consists of the full set of nerves that connect the brain with all other parts of the body.
a. corpus callosum
b. central nervous system
c. cerebral cortex
d. nervous system

ANSWER: d

251. The nervous system:
a. connects your brain to all parts of your body.
b. controls only voluntary movement.
c. regulates only involuntary movement.
d. uses hormones instead of neurotransmitters.

ANSWER: a

252. Which statement about the nervous system is NOT true? The nervous system:
a. connects your brain to all parts of your body.
b. is made up of neurons.
c. sends and receives messages from all over your body.

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d. sends hormones through the body.

ANSWER: d

253. The _____ nervous system is made up of the brain and the spinal cord.

a. central
b. peripheral
c. autonomic
d. parasympathetic

ANSWER: a

254. The central nervous system:

a. connects your brain to all parts of your body.
b. is made up of the brain and the spinal cord.
c. regulates only the parts of the body controlled voluntarily.
d. stimulates the body in response to stressors.

ANSWER: b

255. In the early days of the telephone, all calls were routed through a switchboard. The switchboard was controlled by an operator. The operator connected the incoming calls to their intended location via telephone wires. The part of the body that operates MOST similarly to a telephone switchboard operator is the:

a. brainstem.
b. corpus callosum.
c. peripheral nervous system.
d. central nervous system.

ANSWER: d

256. A researcher who studies how communication is controlled by the brain and the spinal cord is focusing on the _____ nervous system.

a. central
b. peripheral
c. autonomic
d. somatic

ANSWER: a

257. The _____ is made up of the neurons that connect the central nervous system to other parts of the body.

a. central nervous system
b. peripheral nervous system
c. reticular activating system
d. endocrine system

ANSWER: b

258. The peripheral nervous system:

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Chapter 02: Multiple Choice

a. is activated only when the body is under stress.
b. regulates only the parts of the body controlled involuntarily.
c. regulates only the parts of the body controlled voluntarily.
d. connects the central nervous system to other parts of the body.

ANSWER: d

259. The _____ connects the central nervous system to the parts of the body that are under voluntary or involuntary control.
a. endocrine system
b. peripheral nervous system
c. reticular activating system
d. endocrine system

ANSWER: b

260. The _____ nervous system connects the central nervous system to the parts of the body that are controlled voluntarily.
a. somatic
b. autonomic
c. parasympathetic
d. sympathetic

ANSWER: a

261. The somatic nervous system:
a. connects the central nervous system to the parts of the body that are controlled voluntarily.
b. connects the central nervous system to the parts of the body that are controlled involuntarily.
c. consists of the brain and the spinal cord.
d. calms the body down when stressors decrease.

ANSWER: a

262. If you were to reach out and turn off the light in your room, this would be controlled by the _____ nervous system.
a. somatic
b. autonomic
c. parasympathetic
d. sympathetic

ANSWER: a

263. Dr. Yakan is an athletic trainer. He is interested in improving the performance of elite baseball pitchers. Dr. Yakan helps players to improve their curveball and fastball. Dr. Yakan is concentrating on the athletes' actions that are controlled by the:
a. autonomic nervous system.
b. endocrine system.

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Chapter 02: Multiple Choice

c. parasympathetic division.
d. somatic nervous system.

ANSWER: d

264. The autonomic nervous system:
a. connects the central nervous system to the parts of the body that are controlled voluntarily.
b. connects the central nervous system to the parts of the body that are controlled involuntarily.
c. consists of the brain and the spinal cord.
d. regulates all communication with the brain.

ANSWER: b

265. Which statement about the autonomic nervous system is FALSE? The autonomic nervous system:
a. is part of the peripheral nervous system.
b. is separated into two divisions.
c. includes the brain and spinal cord.
d. controls involuntary movement.

ANSWER: c

266. Which of the following is NOT controlled by the autonomic nervous system?
a. hiccupping
b. walking
c. sneezing
d. breathing

ANSWER: b

267. Dr. Gould is the doctor for a college football team. Before members of the team are given permission to play, Dr. Gould conducts a physical examination. Part of Dr. Gould's examination involves checking players' heartbeat, pulse, and blood pressure, which are controlled by the:
a. autonomic nervous system.
b. central nervous system.
c. endocrine system.
d. somatic nervous system.

ANSWER: a

268. The autonomic nervous system is responsible for _____, whereas the somatic nervous system is responsible for _____.
a. stimulating the body in response to stressors; calming the body when stressors decrease
b. voluntary movement; involuntary functions
c. involuntary functions; voluntary movement
d. calming the body when stressors decrease; stimulating the body in response to stressors

ANSWER: c

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Chapter 02: Multiple Choice

269. The _____ is the part of the autonomic nervous system that stimulates the body in response to stressors.
a. somatic nervous system
b. sympathetic division
c. parasympathetic division
d. central nervous system
ANSWER: b

270. You jump involuntarily in response to a sudden loud noise. This is controlled by the:
a. endocrine system.
b. cerebral cortex.
c. parasympathetic division.
d. sympathetic division.
ANSWER: d

271. After you eat, your body works to digest your food. The part of the nervous system that is MOST responsible for your digestion is the:
a. sympathetic division.
b. central nervous system.
c. parasympathetic division.
d. somatic nervous system.
ANSWER: c

272. You are sitting in the cafeteria texting when a classmate unexpectedly taps your shoulder. This startles you and causes you to jump, although you quickly calm down when you see who it is. Which of your behaviors is the result of activation of the sympathetic division of your autonomic nervous system?
a. sitting
b. texting
c. jumping
d. calming down
ANSWER: c

273. A large dog runs toward you, and your heart and breathing rates increase. Which division of your autonomic nervous system has been activated?
a. somatic
b. central
c. sympathetic
d. parasympathetic
ANSWER: c

274. The _____ is the part of the autonomic nervous system that calms the body once a stressor has been removed.
a. somatic nervous system

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Chapter 02: Multiple Choice

b. sympathetic division
c. parasympathetic division
d. central nervous system

ANSWER: c

275. You are sitting in the cafeteria texting when a classmate unexpectedly taps your shoulder. This startles you and causes you to jump although you quickly calm down when you see who it is. Which of your behaviors is the result of activation of the parasympathetic division of your autonomic nervous system?
a. sitting
b. texting
c. jumping
d. calming down

ANSWER: d

276. When you were driving to school, another car pulled out in front of you unexpectedly. At first you were startled, but then became calm when the other car moved out of your way. The part of your autonomic nervous system that was responsible for you calming down was the:
a. somatic nervous system.
b. sympathetic division.
c. parasympathetic division.
d. central nervous system.

ANSWER: c

277. You just came home after a long day in class and put your feet up on the couch. Soon, your heart and breathing rates decreased. Which division of your autonomic nervous system was MOST active while you relaxed?
a. peripheral
b. central
c. sympathetic
d. parasympathetic

ANSWER: d

278. Which is a response that results from activation of the parasympathetic division of the autonomic nervous system?
a. pupils widening
b. digesting food
c. heart rate increasing
d. sweating

ANSWER: b

279. Dr. Drogoti studies the sympathetic nervous system. Which type of response is he MOST likely to be interested in?

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Chapter 02: Multiple Choice

a. sweating
b. seeing
c. speaking
d. deciding

ANSWER: a

280. The _____ is made up of the glands that produce and release hormones into the bloodstream where they can travel to affect many parts of the body.
a. central nervous system
b. somatic nervous system
c. peripheral nervous system
d. endocrine system

ANSWER: d

281. The endocrine system:
a. sends hormones throughout the body.
b. breaks down into the parasympathetic and sympathetic divisions.
c. specifically controls voluntary movement.
d. consists of the brain and spinal cord.

ANSWER: a

282. Which statement about the endocrine systems is NOT true? The endocrine system:
a. is made up of many glands.
b. sends hormones through the blood.
c. operates as quickly as the nervous system.
d. influences sexual development.

ANSWER: c

283. The chemicals made by the glands of the endocrine system are called:
a. neurotransmitters.
b. hormones.
c. agonists.
d. antagonists.

ANSWER: b

284. Hormones are:
a. signaling chemicals made by the endocrine system.
b. what neurotransmitters are called after reuptake.
c. synonymous with action potentials.
d. support materials made by glial cells.

ANSWER: a

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Chapter 02: Multiple Choice

285. Martina sent a graduation party invitation to her friend Bernadette, which took four days to reach her. When she received the invitation, Bernadette e-mailed Martina to say she would attend her graduation party. Martina received the e-mail almost immediately after Bernadette sent it. In this example, Martina's approach to communication is similar to the _____ and Bernadette's is similar to the _____.

a. central nervous system; peripheral nervous system
b. peripheral nervous system; central nervous system
c. nervous system; endocrine system
d. endocrine system; nervous system

ANSWER: d

286. Which behavior is LEAST influenced by hormones?

a. vision
b. sex drive
c. appetite
d. sleep

ANSWER: a

287. The _____ glands are located on top of the kidneys and produce hormones to arouse the body in response to stress.

a. thyroid
b. pineal
c. adrenal
d. pituitary

ANSWER: c

288. Sharon often feels stressed. The gland that is MOST likely for Sharon's stress is the:

a. pituitary.
b. pineal.
c. thyroid.
d. adrenal.

ANSWER: d

289. The _____ glands produce adrenaline and the "stress hormone" cortisol.

a. adrenal
b. pituitary
c. pineal
d. thyroid

ANSWER: a

290. The _____ gland plays an important role in sleeping and waking.

a. adrenal

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Chapter 02: Multiple Choice

b. pituitary
c. pineal
d. thyroid

ANSWER: c

291. The reproductive organs produce:
a. estrogen and testosterone.
b. adrenaline and cortisol.
c. melatonin and histamine.
d. growth hormone and cortisol.

ANSWER: a

292. Anita is experiencing difficulty falling asleep at night, and she is repeatedly waking up at 3 o'clock in the morning. The gland that is MOST likely affecting Anita's sleep cycle is the _____ gland.
a. glia
b. peripheral
c. pineal
d. thyroid

ANSWER: c

293. Ginger has gained a lot of weight even though she has been eating well and continues to exercise. Ginger is concerned because in addition to her increased body weight, her blood pressure is increasing. Ginger plans to see her physician because she suspects that her _____ gland is not working as it should.
a. adrenal
b. glia
c. pineal
d. thyroid

ANSWER: d

294. The _____ gland plays an important role in sleeping and waking, whereas the _____ gland influences metabolism, blood pressure, and body temperature.
a. pineal; thyroid
b. pituitary; adrenal
c. adrenal; pituitary
d. thyroid; pineal

ANSWER: a

295. Your pituitary gland is directly or indirectly involved in all of the following EXCEPT:
a. sensing touch on the back of your hand.
b. determining how tall you will grow.
c. your blood pressure and body temperature.

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d. the rate of your metabolism.

ANSWER: a

296. The pituitary gland is located:

a. on top of the kidneys.
b. on reproductive organs.
c. in the brain.
d. by the throat.

ANSWER: c

297. The pituitary gland produces:

a. adrenaline.
b. cortisol.
c. melatonin.
d. growth hormone.

ANSWER: d

298. The _____ gland is considered the "master gland" of the endocrine system.

a. adrenal
b. pituitary
c. pineal
d. thyroid

ANSWER: b

299. The _____ gland produces human growth hormone and also controls all of the other glands in the body.

a. adrenal
b. pituitary
c. pineal
d. thyroid

ANSWER: b

300. If a person has below expected growth during childhood, their doctor may suspect that their _____ gland is not functioning properly.

a. pituitary
b. adrenal
c. pineal
d. thyroid

ANSWER: a

301. The supervisor at a fast food restaurant controls the schedule and tasks assigned to employees. This supervisor is functioning MOST similarly to the _____ gland.

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Chapter 02: Multiple Choice

a. adrenal
b. pineal
c. pituitary
d. thyroid

ANSWER: c

302. _____ is a technique in which sensors are placed on the scalp to record activity in the brain.
a. Electroencephalography
b. Computed tomography
c. Magnetic resonance imaging
d. Positron emission tomography

ANSWER: a

303. _____ measures the difference in the activity of neurons between two points on the brain via sensors placed on the scalp.
a. Computed tomography
b. Electroencephalography
c. Magnetic resonance imaging
d. Positron emission tomography

ANSWER: b

304. _____ is best suited for assessing seizure-based disorders like epilepsy.
a. Computed tomography
b. Magnetic resonance imaging
c. Electroencephalography
d. Positron emission tomography

ANSWER: c

305. Which technique would NOT be suited for assessing damaged brain tissue or larger-than-normal spaces in the brain?
a. computed tomography
b. magnetic resonance imaging
c. positron emission tomography
d. electroencephalography

ANSWER: d

306. Susan was in a boating accident and is undergoing tests at the emergency room to see if a specific location of her brain was damaged. Which technique would be LEAST suited for this assessment?
a. computed tomography
b. magnetic resonance imaging
c. positron emission tomography

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Chapter 02: Multiple Choice

d. electroencephalography

ANSWER: d

307. Which technique does NOT produce a picture of the brain?

a. electroencephalography
b. computed tomography
c. magnetic resonance imaging
d. positron emission tomography

ANSWER: a

308. _____ produces images of the brain whereas _____ does not.

a. Electroencephalography; computed tomography
b. Computed tomography; electroencephalography
c. Magnetic resonance imaging; positron emission tomography
d. Positron emission tomography; magnetic resonance imaging

ANSWER: b

309. _____ is a technique in which multiple X-rays are combined to make a 3D image of the brain.

a. Electroencephalography
b. Computed tomography
c. Magnetic resonance imaging
d. Positron emission tomography

ANSWER: b

310. The first brain imaging procedure developed that allowed psychologists to detect brain lesions and other diseases was:

a. electroencephalography.
b. computed tomography.
c. magnetic resonance imaging.
d. positron emission tomography.

ANSWER: b

311. Computed tomography takes _____ time than magnetic resonance imaging and produces brain images with _____ resolution.

a. more; higher
b. more; lower
c. less; higher
d. less; lower

ANSWER: d

312. The _____ technique uses X-rays, whereas the _____ technique uses magnetic fields and radio waves to image the brain.

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Chapter 02: Multiple Choice

a. MRI; CT
b. MRI; PET
c. PET; MRI
d. CT; MRI

ANSWER: d

313. _____ is a technique in which magnetic fields and radio waves are used to make images of brain structure.
a. EEG
b. CT
c. MRI
d. PET

ANSWER: c

314. _____ is a technique in which activity in various brain structures is illustrated by a radioactive sugar injected into the body.
a. Electroencephalography
b. Computed tomography
c. Magnetic resonance imaging
d. Positron emission tomography

ANSWER: d

315. Dr. Spekter is interested in what parts of the brain are active when a person feels hungry. She uses a technique in which she injects a radioactive sugar into the body and tracks where it is used in the brain. Dr. Spekter is MOST likely using:
a. electroencephalography.
b. computed tomography.
c. magnetic resonance imaging.
d. positron emission tomography.

ANSWER: d

316. Which technique is best suited for making connections between particular activities and specific parts of the brains?
a. electroencephalography
b. computed tomography
c. positron emission tomography
d. magnetic resonance imaging

ANSWER: c

317. _____ and _____ are techniques that show both brain activity and the location of parts of the brain.
a. EEG; CT
b. fMRI; PET

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Chapter 02: Multiple Choice

c. PET; EEG
d. fMRI; CT

ANSWER: b

318. _____ is a technique in which magnetic fields are used to make images of brain activity.
a. EEG
b. CT
c. fMRI
d. PET

ANSWER: c

319. What is NOT a limitation of functional magnetic resonance imaging?
a. The fMRI technique has poor resolution in comparison to other techniques.
b. Research using fMRI is more exploratory than hypothesis-based.
c. Many fMRI results are not stable across time and/or are due to chance.
d. Conclusions from fMRI results are often exaggerated and oversimplified.

ANSWER: a

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Name:_____ Class:_____ Date:_____

Chapter 02: Essay

1. Describe how Phineas Gage's brain injury and Paul Broca's discovery of language deficits after a patient's stroke provide evidence that certain traits or abilities are localized to specific brain areas. Provide specific examples from each case study.

ANSWER: Phineas Gage was working on a railroad construction project and sustained a brain injury when an explosion sent a rod through the roof of his mouth and into his head. While he survived, his behavior changed dramatically; previously, he was very mild-mannered and responsible but, after the accident, he became hot-headed and impulsive. Paul Broca performed an autopsy on a patient who, after a stroke, could not speak fluently, and he found that the stroke had damaged a very specific part of the patient's left frontal lobe. Both of these behavior changes after brain injury suggest that these specific parts of the brain were necessary for certain behaviors or traits, and, in uninjured brains, control certain traits or behaviors.

2. What is a reflex? Define the roles of afferent and efferent neurons in a reflex. Provide an example to illustrate the roles.

ANSWER: A reflex is an automatic motor response to a sensory event. Information from the outside environment is received by and travels from afferent neurons to the central nervous system (e.g., pain from touching a hot stove). Once the information is processed in the central nervous system, an efferent neuron carries the command to move the body away from the stimulus (e.g., pull hand away from stove).

3. Detail the functions of a neuron's dendrites, axon, and axon terminals to describe how information is received and sent by a neuron. Also describe the space between neurons that the message must cross.

ANSWER: Information is received by the dendrites of a neuron. If this stimulates an action potential in that neuron, the message will be sent down the axon, which ends in the axon terminals. These terminals release neurotransmitters, the chemical messengers in the nervous system, that will be received by the next neuron in the communication chain. Neurotransmitters must cross the synapse to be received on receptor sites on the dendrites of the next neuron in line.

4. Explain how and why deterioration of the myelin sheath in multiple sclerosis would impact sensation and movement.

ANSWER: The myelin sheath is a fatty substance that helps electrical messages travel down a neuron's axon. When it breaks down, the message may not reach the next neuron. If this happens between the central nervous system and motor neurons, that means a command from the brain to move will not reach the muscles. If this happens between sensory neurons, it means a message received from the outside world will not make it to the brain to be perceived.

5. Describe the process of reuptake. Give an example of how drugs that affect this process can be used in the treatment of disease.

ANSWER: Reuptake is the process through which a neurotransmitter that does not make it to receptor sites on the next neuron is returned to the neuron that released it. Drugs that block reuptake of certain neurotransmitters—mostly serotonin and norepinephrine—are often used in the treatment of depression. By allowing a neurotransmitter to remain in the synapse, rather than being reuptaken, the neurotransmitter is more is likely to activate receptor sites on the next neuron.

6. What happens when a neuron at rest is stimulated to a level that reaches threshold? Can this process happen continuously? Why or why not?

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Chapter 02: Essay

ANSWER: When a neuron's resting potential changes to the point that it reaches threshold, the neuron will fire an action potential. This cannot happen continuously because, after an action potential fires, the neuron enters a refractory period during which it cannot fire again until the resting potential resets.

7. Describe what it means that brain function is localized. Discuss the limitations of this localization.

ANSWER: Localization of brain function means that specific parts are specialized to perform certain behaviors. Thus, a certain behavior may no longer happen if a certain part of the brain is damaged. However, this doesn't mean that a behavior or trait would still exist if the part of the brain specialized for it was the *only* part that was working.

8. Compare and contrast the locations and functions of the brainstem, thalamus, and cerebrum. Describe how this structural organization supports the notion that a larger proportion of brain material at the top and front of the head supports functions that make us "uniquely human."

ANSWER: The brainstem is at the very bottom of the brain, and it performs functions that are basic but necessary for survival. It contributes to primarily automatic and unconscious responses. The thalamus caps the brainstem and performs the somewhat more complex function of processing and relaying sensory information. This information is sent to final processing in the cerebrum, where higher-order thinking, planning, and decision making occurs. The cerebrum—especially the outermost cortex of the frontal lobe—supports executive function and are things that make us "uniquely human."

9. Name the three main parts of the limbic system and their main functions. What is similar about all their functions? Why are they considered a single system?

ANSWER: The three main parts of the limbic system are the hypothalamus, the hippocampus, and the amygdala. The hypothalamus maintains steadiness of bodily function. The hippocampus is important in memory. The amygdala is necessary for emotion, especially fear. All parts of the limbic system work together to motivate behavior and contribute to emotional responses.

10. Compare and contrast the dominant functions of the left versus the right hemispheres of the cerebrum. What part of the brain controls movement on the right side of the body, and what part of the brain processes things you see in your left visual field?

ANSWER: The right cerebral hemisphere is dominant for the recognition of objects and faces, whereas the left cerebral hemisphere is dominant for language tasks, such as word reading. The motor cortex in your left hemisphere would control movement of the right side of the body, whereas the occipital lobe of your right hemisphere processes information in your left visual field.

11. Why might a person have split-brain surgery, and what happens during this surgery? Give one example of a unique behavior that can occur after split-brain surgery.

ANSWER: Split-brain surgery may be used to treat severe epilepsy. Because electrical signals in the brain can get out of control as they move from cerebral hemisphere to hemisphere, cutting the corpus callosum can stop the onset of seizures. However, because the ability of one hemisphere to talk to the other is removed, a person's hands may act independently of one another. One example is that, after a person puts an item from the grocery into a shopping cart, the other hand will remove it without the person's awareness.

12. Where can we find the somatosensory cortex and the motor cortex? How is the amount of brain material on

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them allocated? Explain and give an example.

ANSWER: The somatosensory cortex is located on the parietal lobes, and the motor cortex is located on the frontal lobes. Brain material amount is allocated not in proportion to how big the body part is, but rather to how sensitive the part is to a sensation or how delicate a movement it can execute. For example, the torso is bigger than the fingertips, but more brain material on the somatosensory cortex is allocated to the fingertips, which is why the fingertips are much more sensitive to touch than the torso.

13. Discuss the role of stem cells in neurogenesis and brain plasticity. Give one example of plasticity that can occur after brain damage.

ANSWER: Plasticity—the ability of the brain to change structure and function—often is assisted through the creation of new neurons through the process of neurogenesis. New neurons form from stem cells, which are undifferentiated cells that don't specialize until they are needed. In the case of brain damage, new neurons can be created to replace some (but not all) that have been lost.

14. Differentiate between the central and peripheral nervous systems in terms of composition and function. Name and, using examples, describe the functions of the two parts of the peripheral nervous system.

ANSWER: The central nervous system is composed of the brain and the spinal cord, which receive messages from the rest of the body, process the information, and send replies in the form of motor commands back to the body. The peripheral nervous system consists of all the other neurons of the body, which receive the information from the outside environment, send it to the central nervous system, and execute the commands of the central nervous system. The peripheral nervous system can be further divided into the somatic and autonomic systems. The somatic system controls voluntary movement, like running a marathon, and the autonomic system controls involuntary behaviors, like stomach contractions during the digestion of food.

15. Name and describe the functions of the two divisions of the autonomic nervous system. Provide examples to illustrate the functions.

ANSWER: The autonomic nervous system controls involuntary movement and is composed of two divisions: the sympathetic and parasympathetic divisions. The sympathetic division is responsible for the fight-or-flight response and mobilizes the body to react to stress by doing things like stopping digestion, widening the pupils, and making a person sweat. Once the stressor is gone, the parasympathetic calms the person down and "resets" the body by doing things like resuming digestion, constricting the pupils, and stopping one from sweating.

16. You're sitting in the theater watching a movie when the fire alarm goes off. You jump and get out of your seat to leave the theater, but the alarm stops, and an announcement is made that the alarm was unintentional and there is no emergency. You calm down and go back to enjoying your movie. Name and explain the roles of the divisions of the autonomic nervous system in your responses.

ANSWER: The sympathetic division of the autonomic nervous system is responsible for your startled jump and preparation to flee in response to an unexpected stressor (the fire alarm). This system mobilizes your "fight-or-flight" response. Once the announcement was made and you understood there was no emergency, the parasympathetic division of your nervous system took over to calm you down and allow you to return to enjoying the movie.

17. Compare and contrast the type of signals used by the nervous and endocrine systems and how they differ in

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terms of speed.

ANSWER: Both the endocrine and nervous systems use chemicals to communicate. In the nervous system, neurons release neurotransmitters, which cross a synapse and bind to receptors on other neurons to continue the message. In the nervous system, glands release hormones into the bloodstream, and these impact many organs. Information sent via neurotransmitters is very fast, whereas hormones take a longer time to reach their destination.

18. Describe what electroencephalography measures, how it does it, and why it is well suited for assessing seizure-based disorders like epilepsy.

ANSWER: Electroencephalography measures differences in electrical activity between different parts of a person's brain via electrodes that are stuck to the scalp. Seizures are the result of disproportionate activity across the brain, and so EEG can detect and potentially diagnose such disorders.

19. Compare and contrast how computed tomography and positron emission tomography work to provide information about the brain. What type of information does each provide? Give an example of what each would be best used for.

ANSWER: Computed tomography works by taking multiple X-ray pictures of the brain from different angles to create a three-dimensional image of the brain. It does not provide any information about activity occurring in the brain, but rather provides a very detailed picture. This is helpful to localize damage, for example, after a stroke or to assess the size of a brain tumor. Positron emission tomography assesses how quickly certain parts of the brain use a radioactive sugar that is injected into the bloodstream. It does not provide as detailed a spatial picture as computed tomography, but it gives information on the activity of a brain area. This is helpful to see if blood flow is interrupted to a certain brain area and how drugs affect activity in the brain.

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