Chapter 3 Quick Quiz

1. _____ are the cells in the nervous system that receive, integrate, and transmit information.
   a. Synapse cells
   b. Neurons
   c. Glial cells
   d. Terminal cells

2. What entity in the brain serves the same function as water on a water slide?
   a. Glial cells
   b. Cerebrospinal fluid
   c. Myelin sheath
   d. Synaptic vesicles

3. Isabella is putting mustard on her hot dog. She realizes she has put too much and sucks up some of it back into the squeeze bottle. This process is similar to
   a. the action potential.
   b. receptor site bindings.
   c. binding specificity.
   d. reuptake.

4. A neuron that is not receiving any input is said to be at its
   a. resting potential.
   b. absolute refractory period.
   c. action potential.
   d. resolution mode.

5. If a person were to damage the speech center in the brain, the ideal age for this to happen would be
   a. 2.
   b. 14.
   c. 33.
   d. 61.

6. The brain and spinal cord make up the
   a. central nervous system.
   b. autonomic nervous system.
   c. peripheral nervous system.
   d. somatic nervous system.

7. Parkinson disease is a disorder of movement, in which cells degenerate in the
   a. corpus callosum.
   b. basal ganglia.
   c. reticular formation.
   d. cerebellum.

8. The parts of the brain dedicated to emotion are located within the
   a. endocrine system.
   b. limbic system.
   c. association cortex.
   d. primary sensory cortex.

9. The _____ gland is known as the master gland because it controls the other glands in the body.
   a. pituitary
   b. adrenal
   c. pineal
   d. thyroid

10. Much as a blind person uses Braille to read, a _____ used the skull to assess personality.
    a. psychiatrist
    b. psychoanalysist
    c. neurosurgeon
    d. phrenologist

Chapter 3 Quick Quiz Answers

1. **Chapter Section:** Neurons: The Brain's Communicators
   Answer: b **Page(s):** 80 **Type:** Factual **Diff:** 1
   Rationale: This is a factual question.

2. **Chapter Section:** Glial Cells: Supporting Roles
   Answer: c **Page(s):** 83 **Type:** Applied **Diff:** 3
   Rationale: The myelin sheath insulates the axons of certain neurons and speeds messages along, much like the water on a water slide speeds the rider along.

3. **Chapter Section:** Chemical Communication: Neurotransmission
   Answer: d **Page(s):** 83 **Type:** Conceptual **Diff:** 3
   Rationale: Reuptake occurs when a sending neuron reabsorbs excess neurotransmitter molecules, much like letting some liquid drip out of the bottom of a straw and then sucking it back up again.

4. **Chapter Section:** Electrifying Thought
   Answer: a **Page(s):** 85 **Type:** Factual **Diff:** 2
   Rationale: This is a factual question.

5. **Chapter Section:** Neural Plasticity: How and When the Brain Changes
   Answer: a **Page(s):** 86 **Type:** Applied **Diff:** 3
   Rationale: The earlier brain damage occurs, the more likely the brain is to show plasticity.

6. **Chapter Section:** The Brain–Behavior Network
   Answer: a **Page(s):** 87 **Type:** Factual **Diff:** 1
   Rationale: This is a factual question.

7. **Chapter Section:** CNS: The Command Center
   Answer: b **Page(s):** 91 **Type:** Conceptual **Diff:** 3
   Rationale: The basal ganglia are structures in the forebrain that help to control movement; damage to them plays a key role in Parkinson disease.

8. **Chapter Section:** The Limbic System
   Answer: b **Page(s):** 92 **Type:** Factual **Diff:** 1
   Rationale: This is a factual question.

9. **Chapter Section:** The Endocrine System
   Answer: a **Page(s):** 95 **Type:** Conceptual **Diff:** 1
   Rationale: The pituitary gland is described as the "master gland" that directs the other glands of the body.

10. **Chapter Section:** A Tour of Brain-Mapping Methods
    Answer: d **Page(s)**: 97–98 **Type:** Applied **Diff:** 2
    Rationale: Phrenology involved "reading" the bumps on a person's head to supposedly learn about his or her personality.

Chapter 3: Biological Psychology

Multiple Choice

3.1-1. Professor Hines is extremely interested in the relationship between the neurotransmitter dopamine and Parkinson disease. What type of psychologist is Professor Hines?
a. Biological psychologist
b. Chemical psychologist
c. Biosystems psychologist
d. Genetic psychologist
Difficulty: 2
Question ID: 3.1-1
Page Ref: 80
Topic: Introduction
Skill: Applied
Objective: 3.1
Answer: a. Biological psychologist
Rationale: Biological psychologists, or neuroscientists, study the brain and behavior.

3.1-2. _____ are the cells in the nervous system that receive, integrate, and transmit information.
a. Synapse cells
b. Neurons
c. Glial cells
d. Terminal cells
Difficulty: 1
Question ID: 3.1-2
Page Ref: 80
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: b. Neurons

3.1-3. The brain communicates with other parts of the body via
a. glial cells.
b. neurons.
c. nodes of Ranvier.
d. reuptake.
Difficulty: 1
Question ID: 3.1-3
Page Ref: 80–82
Topic: Neurons: The Brain's Communicators
Skill: Conceptual
Objective: 3.1
Answer: b. neurons.
Rationale: The brain depends on communication among neurons, which are nerve cells specialized for communication with each other.
% correct 100 a = 0 b = 100 c = 0 d = 0 *r* = .00

3.1-4. The _____ is the central region of the neuron that manufactures new cell components.
a. neuronal membrane
b. dendrite
c. axon
d. cell body
Difficulty: 1
Question ID: 3.1-4
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: d. cell body
% correct 50 a = 20 b = 15 c = 15 d = 50 *r* = .31

3.1-5. All neurons contain
a. dendrites, an axon, and a myelin sheath.
b. dendrites, an axon, and nodes of Ranvier.
c. dendrites, a cell body, and an axon.
d. a cell body, a myelin sheath, and an axon.
Difficulty: 1
Question ID: 3.1-5
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: c. dendrites, a cell body, and an axon.
% correct 85 a = 3 b = 11 c = 85 d = 1 *r* = .35

3.1-6. Which of the following is NOT a part of a neuron?
a. Soma
b. Axon
c. Dendrite
d. Neurotransmitter
Difficulty: 1
Question ID: 3.1-6
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: d. Neurotransmitter

3.1-7. The portion of the neuron that receives signals is the
a. neurotransmitter.
b. axon.
c. dendrite.
d. synaptic vesicle.
Difficulty: 1
Question ID: 3.1-7
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: c. dendrite.

3.1-8. The portion of a neuron that sends signals is the
   a. axon.
   b. dendrite.
   c. neurotransmitter.
   d. synaptic vesicle.

Difficulty: 1
Question ID: 3.1-8
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: a. axon.

3.1-9. Neurotransmitters are found in the
   a. mitochondria.
   b. cell body.
   c. synaptic vesicles.
   d. dendrites.

Difficulty: 1
Question ID: 3.1-9
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: c. synaptic vesicles.
% correct 45 a = 20 b = 20 c = 45 d = 15 *r* = .48

3.1-10. The space between two connecting neurons through which messages are transmitted chemically is called a
   a. synapse.
   b. myelin sheath.
   c. receptor site.
   d. glial cell.

Difficulty: 1
Question ID: 3.1-10
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: a. synapse.

3.1-11. The _____ receive information from other neurons and have long extensions.
   a. dendrites
   b. axons
   c. synaptic knobs
   d. axon terminals

Difficulty: 1
Question ID: 3.1-11
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: a. dendrites
% correct 80 a = 80 b = 15 c = 0 d = 5 *r* = .20

3.1-12. A(n) _____ is a physical gap between the sending and receiving neurons.
a. axon terminal
b. synapse
c. neuronal membrane
d. synaptic vesicle
Difficulty: 2
Question ID: 3.1-12
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Factual
Objective: 3.1
Answer: b. synapse

3.1-13. Unlike _____, _____ are usually very thin at their site of origin near the cell body, because this narrowness creates a trigger zone—a site that's easy to activate.
a. cell bodies; dendrites
b. dendrites; axons
c. axons; axon terminals
d. axons; dendrites
Difficulty: 3
Question ID: 3.1-13
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Conceptual
Objective: 3.1
Answer: b. dendrites; axons
Rationale: Narrowness near the cell body creates a trigger zone that facilitates message transmission.
% correct 45 a = 10 b = 45 c = 45 d = 0 *r* = .61

3.1-14. Glial cells
a. protect neurons.
b. form the blood-brain barrier.
c. promote neuronal healing.
d. do all of the above.
Difficulty: 1
Question ID: 3.1-14
Page Ref: 83
Topic: Glial Cells: Supporting Roles
Skill: Conceptual
Objective: 3.1
Answer: d. do all of the above.
Rationale: Glial cells have multiple roles, including protecting neurons, releasing chemicals to promote healing, and helping to form the blood-brain barrier that protects against infection (as well as the myelin sheath).
% correct 90 a = 10 b = 0 c = 0 d = 90 *r* = .21

3.1-15. The _____ speeds up the passage of electrical messages by acting as an insulator of the neuronal signal.
   a. blood-brain barrier
   b. axon terminal
   c. myelin sheath
   d. All of the answers are correct.

Difficulty: 1
Question ID: 3.1-15
Page Ref: 83
Topic: Glial Cells: Supporting Roles
Skill: Conceptual
Objective: 3.1
Answer: c. myelin sheath
Rationale: The myelin sheath helps speed messages along by insulating the axons of certain neurons.
% correct 85 a = 0 b = 5 c = 85 d = 10 *r* = .42

3.1-16. What entity in the brain serves the same function as water on a water slide?
   a. Glial cells
   b. Cerebrospinal fluid
   c. Myelin sheath
   d. Synaptic vesicles

Difficulty: 3
Question ID: 3.1-16
Page Ref: 83
Topic: Glial Cells: Supporting Roles
Skill: Applied
Objective: 3.1
Answer: c. Myelin sheath
Rationale: The myelin sheath insulates the axons of certain neurons and speeds messages along, much like the water on a water slide speeds the rider along.

3.1-17. The _____ is a fatty coat that insulates the axons of some nerve cells, speeding transmission of impulses.
   a. glial tissue
   b. myelin sheath
   c. axon terminal
   d. node

Difficulty: 1
Question ID: 3.1-17
Page Ref: 83
Topic: Glial Cells: Supporting Roles
Skill: Factual
Objective: 3.1
Answer: b. myelin sheath

3.1-18. A(n) _____ is a gap in the myelin sheath, which helps the conduction of nerve impulses.
a. axon
b. node
c. synapse
d. dendrite
Difficulty: 2
Question ID: 3.1-18
Page Ref: 83
Topic: Glial Cells: Supporting Roles
Skill: Factual
Objective: 3.1
Answer: b. node

3.1-19. Which of the following is NOT true about neurotransmitters?
a. Neurotransmitters can bind to any receptor site.
b. Neurotransmitters bind to receptor sites that are specific to that type of neurotransmitter.
c. Neurotransmitters may be broken down chemically to halt neurotransmission.
d. Neurotransmission may be halted by reuptake of the neurotransmitter back into the axon terminal.
Difficulty: 3
Question ID: 3.1-19
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Conceptual
Objective: 3.2
Answer: a. Neurotransmitters can bind to any receptor site.
Rationale: Neurotransmitters cannot bind into just any receptor site; they fit into particular receptor sites like a key fits into a lock.
% correct 70 a = 70 b = 15 c = 10 d = 5 *r* = .42

3.1-20. The location that uniquely recognizes a neurotransmitter is called a(n)
a. receptor site.
b. action potential.
c. threshold.
d. reuptake site.
Difficulty: 1
Question ID: 3.1-20
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: a. receptor site.

3.1-21. Reuptake is
   a. the space between two connecting neurons.
   b. a location that uniquely recognizes a neurotransmitter.
   c. a means of recycling neurotransmitters.
   d. when the neuron resets its action potential by drawing up sodium ions.

Difficulty: 1
Question ID: 3.1-21
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: c. a means of recycling neurotransmitters.

3.1-22. Isabella is putting mustard on her hot dog. She realizes she has put too much and sucks up some of it back into the squeeze bottle. This process is similar to
   a. the action potential.
   b. receptor site bindings.
   c. binding specificity.
   d. reuptake.

Difficulty: 3
Question ID: 3.1-22
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Conceptual
Objective: 3.2
Answer: d. reuptake.
Rationale: Reuptake occurs when a sending neuron reabsorbs excess neurotransmitter molecules, much like letting some liquid drip out of the bottom of a straw and then sucking it back up again.

3.1-23. The main excitatory neurotransmitter in the nervous system that plays a role in the relay of sensory information and learning is
   a. glutamate.
   b. gamma-aminobutyric acid.
   c. acetylcholine.
   d. serotonin.

Difficulty: 2
Question ID: 3.1-23
Page Ref: 83–84
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: a. glutamate.
% correct 50 a = 50 b = 30 c = 10 d = 5 *r* = .36

3.1-24. The main inhibitory neurotransmitter in the nervous system is
a. glutamate.
b. gamma-aminobutyric acid.
c. acetylcholine.
d. serotonin.
Difficulty: 2
Question ID: 3.1-24
Page Ref: 83–84
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: b. gamma-aminobutyric acid.

3.1-25. The most common neurotransmitters in the brain are
a. acetylcholine derivatives.
b. monoamine neurotransmitters.
c. glutamate and GABA.
d. endorphins.
Difficulty: 2
Question ID: 3.1-25
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: c. glutamate and GABA.

3.1-26. Neurons in virtually every brain area use these neurotransmitters to communicate with other neurons. They are
a. glutamate and GABA.
b. GABA and acetylcholine.
c. glutamate and serotonin.
d. dopamine and serotonin.
Difficulty: 2
Question ID: 3.1-26
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Conceptual
Objective: 3.2
Answer: a. glutamate and GABA.
Rationale: Glutamate (an excitatory neurotransmistter) and GABA (an inhibitory neurotransmitter) are the most common neurotransmitters in the brain, and are used by neurons in almost every brain region.

3.1-27. Evan is a high-level official who works at the Pentagon. He must undergo a retinal scan to enter his office. No one but Evan is allowed in. What is the analogous feature in the central nervous system?
   a. Dendrites
   b. Receptor sites
   c. Synapses
   d. Neurotransmitters

Difficulty: 3
Question ID: 3.1-27
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Applied
Objective: 3.2
Answer: b. Receptor sites
Rationale: Receptor sites are like keyholes; only a particular "key" (neurotransmitter) will fit in the "lock."

3.1-28. Norm suffers from an anxiety disorder. Which neurotransmitter may not be doing its job?
   a. Dopamine
   b. Serotonin
   c. GABA
   d. Glutamate

Difficulty: 2
Question ID: 3.1-28
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Applied
Objective: 3.2
Answer: c. GABA
Rationale: Antianxiety drugs are used to activate GABA sites, because GABA inhibits or dampens neural activity. If someone is anxious, GABA levels may be low (and the person may be overly aroused).

3.1-29. Which of the following specializes in pain reduction?
   a. Norepinephrine
   b. Glutamate
   c. Endorphins
   d. Dopamine

Difficulty: 2
Question ID: 3.1-29
Page Ref: 84
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: c. Endorphins

3.1-30. _____ is the main inhibitory neurotransmitter in the nervous system.
a. GABA
b. Glutamate
c. Dopamine
d. Serotonin
Difficulty: 2
Question ID: 3.1-30
Page Ref: 84
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: a. GABA

3.1-31. Mobombi had completed about a quarter of the distance in the marathon in which he was a participant. Suddenly, he stumbled and fell. Despite feeling a sharp pain initially, he got up and continued to run until he completed the race. Upon crossing the finish line he fell down writhing in pain. When checked out, it was discovered that Mobombi had broken his leg. He was able to run the remainder of the marathon relatively pain free due to the release of
a. neuropeptides.
b. amino acids.
c. monoamines.
d. endorphins.
Difficulty: 2
Question ID: 3.1-31
Page Ref: 84
Topic: Chemical Communication: Neurotransmission
Skill: Conceptual
Objective: 3.2
Answer: d. endorphins.
Rationale: Endorphins are one type of neuropeptide that contributes to pain reduction and a euphoric feeling.

3.1-32. Stan is a firefighter. His fellow firefighters were amazed that despite a broken arm, he was able to drag the last person from the fire. What chemicals were likely activated that allowed such heroics?
a. Endorphins
b. Dopamine
c. Acetylcholine
d. Glutamate
Difficulty: 1
Question ID: 3.1-32
Page Ref: 84
Topic: Chemical Communication: Neurotransmission
Skill: Applied
Objective: 3.2
Answer: a. Endorphins
Rationale: Endorphins are one type of neuropeptide that contributes to pain reduction and a euphoric feeling.

3.1-33. Which neurotransmitter is associated with mood, aggression, sleep, and temperature regulation?
a. GABA
b. Serotonin
c. Endorphins
d. Anandamide
Difficulty: 2
Question ID: 3.1-33
Page Ref: 84
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: b. Serotonin

3.1-34. Steven is a cheerleader for the football team; his job is to excite the fans. What is the name for drugs that perform the same function in the brain?
a. GABA
b. Antagonists
c. Agonists
d. Neuropeptides
Difficulty: 2
Question ID: 3.1-34
Page Ref: 84
Topic: Chemical Communication: Neurotransmission
Skill: Applied
Objective: 3.2
Answer: c. Agonists
Rationale: Agonists excite (increase) a neurotransmitter's receptor site activity.

3.1-35. Drugs that decrease a neuron's receptor site activity are called
a. agonists.
b. antagonists.
c. excitatory.
d. reuptake blockers.
Difficulty: 2
Question ID: 3.1-35
Page Ref: 85
Topic: Chemical Communication: Neurotransmission
Skill: Conceptual
Objective: 3.2
Answer: b. antagonists.
Rationale: Drugs that enhance receptor site activity are called agonists; drugs that decrease receptor site activity are called antagonists.

3.1-36. What is the name given to the type of chemical that performs the same function as pouring water on a fire?
   a. Agonists
   b. Antagonists
   c. Neuropeptides
   d. Antidepressants

Difficulty: 2
Question ID: 3.1-36
Page Ref: 85
Topic: Chemical Communication: Neurotransmission
Skill: Applied
Objective: 3.2
Answer: b. Antagonists
Rationale: Antagonists decrease (slow down) a neurotransmitter's receptor site activity.

3.1-37. Jeff is in the middle of a hurricane. As the water approaches his house, he begins to stack sandbags, hoping to stem the flow of water. What drugs in the brain perform the same action as the sandbags?
   a. Anandamide
   b. Glutamate
   c. Agonists
   d. Antagonists

Difficulty: 2
Question ID: 3.1-37
Page Ref: 85
Topic: Chemical Communication: Neurotransmission
Skill: Applied
Objective: 3.2
Answer: d. Antagonists
Rationale: Antagonists decrease (slow down) a neurotransmitter's receptor site activity.

3.1-38. A neuron that is not receiving any input is said to be at its
   a. resting potential.
   b. absolute refractory period.
   c. action potential.
   d. resolution mode.

Difficulty: 2
Question ID: 3.1-38
Page Ref: 85
Topic: Electrifying Thought
Skill: Factual
Objective: 3.3
Answer: a. resting potential.

3.1-39. When a neuron is at its resting potential, it has
a. a negative charge.
b. a neutral charge.
c. a positive charge.
d. none of the above.
Difficulty: 2
Question ID: 3.1-39
Page Ref: 85
Topic: Electrifying Thought
Skill: Factual
Objective: 3.3
Answer: a. a negative charge.

3.1-40. If a neuron reaches a level called the _____, an action potential occurs.
a. ion exchange
b. resting potential
c. absolute refractory period
d. threshold
Difficulty: 1
Question ID: 3.1-40
Page Ref: 85
Topic: Electrifying Thought
Skill: Factual
Objective: 3.3
Answer: d. threshold

3.1-41. After firing an action potential, a neuron experiences a(n) _____ , a brief time during which another action potential can't occur.
a. resting potential
b. resolution phase
c. absolute refractory period
d. threshold
Difficulty: 1
Question ID: 3.1-41
Page Ref: 85
Topic: Electrifying Thought
Skill: Factual
Objective: 3.3
Answer: c. absolute refractory period

3.1-42. The time it would take to reload a single-shot gun could be compared to a neuron's
a. threshold.
b. absolute refractory period.
c. reuptake.
d. potential difference.
Difficulty: 2
Question ID: 3.1-42
Page Ref: 85
Topic: Electrifying Thought
Skill: Conceptual
Objective: 3.3
Answer: b. absolute refractory period.
Rationale: Absolute refractory period is the brief time during which an action potential cannot occur; the neuron cannot fire again until it has "reloaded."

3.1-43. Owantu let out an ear-piercing scream when he became frightened. He was unable to stimulate those neurons for a brief time after their firing because of the
   a. resting potential.
   b. potential difference.
   c. absolute refractory period.
   d. relative refractory period.

Difficulty: 3
Question ID: 3.1-43
Page Ref: 85
Topic: Electrifying Thought
Skill: Conceptual
Objective: 3.3
Answer: c. absolute refractory period.
Rationale: The absolute refractory period is the time after a neuron fires during which it is unable to fire again.

3.1-44. Your car battery isn't dead, but it does not have enough power to start your car. After hooking up the jumper cables to your dad's car, you touch the posts on your own battery. The boost delivered is analagous to a(n)
   a. resting potential.
   b. action potential.
   c. myelin sheath.
   d. refractory period.

Difficulty: 3
Question ID: 3.1-44
Page Ref: 85
Topic: Electrifying Thought
Skill: Applied
Objective: 3.3
Answer: b. action potential.
Rationale: Action potentials are abrupt waves of electric discharge, analogous to "jumping" a car battery.

3.1-45. The nervous system's ability to change is referred to as
   a. malleability.
   b. plasticity.
   c. fluidity.
   d. hardiness.

Difficulty: 1
Question ID: 3.1-45
Page Ref: 86
Topic: Neural Plasticity: How and When the Brain Changes
Skill: Factual
Objective: 3.4
Answer: b. plasticity.

3.1-46. If a person were to damage the speech center in the brain, the ideal age for this to happen would be
a. 2.
b. 14.
c. 33.
d. 61.
Difficulty: 3
Question ID: 3.1-46
Page Ref: 86
Topic: Neural Plasticity: How and When the Brain Changes
Skill: Applied
Objective: 3.4
Answer: a. 2.
Rationale: The earlier brain damage occurs, the more likely the brain is to show plasticity.

3.1-47. The creation of new cells in the adult brain is called
a. plasticity.
b. cellular mitosis.
c. neurogenesis.
d. generativity.
Difficulty: 1
Question ID: 3.1-47
Page Ref: 86
Topic: Neural Plasticity: How and When the Brain Changes
Skill: Factual
Objective: 3.4
Answer: c. neurogenesis.

3.1-48. _____ is the creation of new cells in the adult brain.
a. Neurogenesis
b. Neural plasticity
c. Long-term potentiation
d. Synaptogenesis
Difficulty: 2
Question ID: 3.1-48
Page Ref: 86–87
Topic: Neural Plasticity: How and When the Brain Changes
Skill: Conceptual
Objective: 3.4
Answer: a. Neurogenesis
Rationale: Neurogenesis involves the creation of new neurons in the adult brain. That it occurs is a fairly recent finding; for a long time, researchers thought that the brain is incapable of creating new neurons after childhood.

3.1-49. Who might benefit the most from neurogenesis?
a. A person with sickle-cell anemia
b. A person with Alzheimer's disease
c. A person with Parkinson disease
d. Both B and C are correct.
Difficulty: 3
Question ID: 3.1-49
Page Ref: 86
Topic: Neural Plasticity: How and When the Brain Changes
Skill: Applied
Objective: 3.4
Answer: d. Both B and C are correct.
Rationale: Neurogenesis is the creation of new nerve cells. Alzheimer's and Parkinson are both degenerative diseases, whereas sickle-cell anemia involves a problem with red blood cells, which are not part of the nervous system, so neurogenesis would not help.

3.1-50. The brain and spinal cord make up the
a. central nervous system.
b. autonomic nervous system.
c. peripheral nervous system.
d. somatic nervous system.
Difficulty: 1
Question ID: 3.1-50
Page Ref: 87
Topic: The Brain–Behavior Network
Skill: Factual
Objective: 3.5
Answer: a. central nervous system.
% correct 98 a = 100 b = 1 c = 1 d = 0 *r* = .26

3.1-51. The brain and spinal cord are part of the
a. peripheral nervous system.
b. autonomic nervous system.
c. central nervous system.
d. somatic nervous system.
Difficulty: 1
Question ID: 3.1-51
Page Ref: 87
Topic: The Brain–Behavior Network
Skill: Factual
Objective: 3.5
Answer: c. central nervous system.

3.1-52. The _____ consists of nerves in the body that extend outside the central nervous system (CNS).
a. peripheral nervous system
b. limbic system
c. corpus callosum
d. forebrain
Difficulty: 1
Question ID: 3.1-52
Page Ref: 87
Topic: The Brain–Behavior Network
Skill: Factual
Objective: 3.5
Answer: a. peripheral nervous system

3.1-53. The most highly developed area in the human brain is the
a. motor cortex.
b. forebrain.
c. temporal lobe.
d. parietal lobe.
Difficulty: 1
Question ID: 3.1-53
Page Ref: 88
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: b. forebrain.

3.1-54. The largest component of the forebrain is the
a. cerebral cortex.
b. corpus callosum.
c. motor cortex.
d. Broca's area.
Difficulty: 2
Question ID: 3.1-54
Page Ref: 88
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: a. cerebral cortex.

3.1-55. The cerebral cortex is divided into _____ cerebral hemispheres.
a. two
b. three
c. four
d. six
Difficulty: 1
Question ID: 3.1-55
Page Ref: 88
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: a. two

3.1-56. The _____ connects the cerebral hemispheres.
a. prefrontal cortex
b. temporal lobe
c. Wernicke's area
d. corpus callosum
Difficulty: 1
Question ID: 3.1-56
Page Ref: 88
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: d. corpus callosum

3.1-57. Tom is using a new accounting program to do his taxes. He enters all the relevant data into the program, and the program tells him what to do next. The tax program is analogous to the _____ nervous system.
a. peripheral
b. central
c. somatic
d. autonomic
Difficulty: 2
Question ID: 3.1-57
Page Ref: 88
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: b. central
Rationale: The central nervous system, consisting of the brain and spinal cord, is the command center for our behavior and mental processes.

3.1-58. Jerry and Deanna are arguing about where to go for dinner. Jerry tells Deanna that she can never make a decision. What part of the brain would a neuroscientist say Deanna is failing to activate?
a. Parietal lobe
b. Temporal lobe
c. Frontal lobe
d. Occipital lobe
Difficulty: 3
Question ID: 3.1-58
Page Ref: 89
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: c. Frontal lobe
Rationale: The frontal lobes of the cerebral cortex contribute to planning, memory, and decision making, among other functions.

3.1-59. What structure in the brain would be analogous to the processor in a computer?
a. Parietal lobe
b. Occipital lobe
c. Temporal lobe
d. Frontal lobe
Difficulty: 1
Question ID: 3.1-59
Page Ref: 89
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: d. Frontal lobe
Rationale: The frontal lobe is involved in executive function (overseeing and organizing most other mental functions), much like the processor of a computer.

3.1-60. In most people's brains, a deep groove called the _____ separates the frontal lobe from the rest of the cortex.
a. Broca's area
b. fissure of Rolando
c. central gyrus
d. central sulcus
Difficulty: 2
Question ID: 3.1-60
Page Ref: 89
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: d. central sulcus

3.1-61. Calypso is a witch doctor. As she sticks a pin into her voodoo doll, Jack begins to twitch uncontrollably. To which structure in the brain does it appear she has direct access?
a. Motor cortex
b. Muscle cortex
c. Somatosensory cortex
d. Association cortex
Difficulty: 2
Question ID: 3.1-61
Page Ref: 89
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: a. Motor cortex
Rationale: Stimulation of a particular spot on the motor cortex corresponds to movement in a particular body part.

3.1-62. Which of the following lobes is probably (hopefully) most activated as you take this test?
a. Parietal
b. Frontal
c. Temporal
d. Occipital
Difficulty: 2
Question ID: 3.1-62
Page Ref: 89
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: b. Frontal
Rationale: The frontal lobes of the cerebral cortex contribute to our thinking, planning, memory, and decision making.

3.1-63. The part of the frontal lobe responsible for thinking, planning, and language is the
a. motor cortex.
b. prefrontal cortex.
c. cingulate cortex.
d. basal ganglia.
Difficulty: 2
Question ID: 3.1-63
Page Ref: 89
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: b. prefrontal cortex.

3.1-64. Broca's area is located in the
a. prefrontal cortex.
b. parietal lobe.
c. motor cortex.
d. temporal lobe.
Difficulty: 2
Question ID: 3.1-64
Page Ref: 89
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: a. prefrontal cortex.

3.1-65. If Broca's area of your prefrontal cortex was damaged, you would most likely have trouble
a. interpreting auditory stimuli.
b. using your sense of touch.
c. controlling speech production.
d. regulating body temperature.
Difficulty: 2
Question ID: 3.1-65
Page Ref: 89
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: c. controlling speech production.
Rationale: Broca's area helps to control speech production.

3.1-66. Phineas Gage tragically had a tamping iron propelled through his head. Both left and right sides of the prefrontal cortex were severely damaged. As a result of the accident, Phineas Gage
   a. died from his injuries.
   b. suffered loss of movement in his arms and legs.
   c. lost his sense of hearing.
   d. suffered a change in personality.

Difficulty: 1
Question ID: 3.1-66
Page Ref: 89–90
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: d. suffered a change in personality.
% correct 91 a = 4 b = 2 c = 2 d = 91 *r* = .51

3.1-67. Ito was driving through a rough part of town late at night when a stray bullet hit the front side of his head. Both the left and right sides of his prefrontal cortex were severely damaged. As a result of the accident, Ito most likely
   a. can no longer process visual information.
   b. suffered loss of movement in his arms and legs.
   c. lost his sense of hearing.
   d. suffered a change in personality.

Difficulty: 2
Question ID: 3.1-67
Page Ref: 89–90
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: d. suffered a change in personality.
Rationale: The prefrontal cortex is responsible thinking, planning, and language, as well as executive functioning, mood, self-awareness, and personality.

3.1-68. The upper middle part of the cerebral cortex that specializes in touch and perception is called
   a. the motor cortex.
   b. the parietal lobe.
   c. the temporal lobe.
   d. Wernicke's area.

Difficulty: 1
Question ID: 3.1-68
Page Ref: 90
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: b. the parietal lobe.

3.1-69. Which lobe is most activated as a spider crawls slowly up your leg?
a. Temporal
b. Frontal
c. Parietal
d. Occipital
Difficulty: 3
Question ID: 3.1-69
Page Ref: 90
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: c. Parietal
Rationale: The parietal lobes of the cerebral cortex contain the somatosensory cortex, which processes information about touch from the body.

3.1-70. Which of the following is NOT processed by the somatosensory cortex?
a. Pain
b. Temperature
c. Fear
d. Pressure
Difficulty: 2
Question ID: 3.1-70
Page Ref: 90
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: c. Fear
Rationale: In the parietal lobe, the somatosensory cortex is sensitive to all aspects of touch—pain, temperature, and pressure. The amygdala regulates arousal and fear.

3.1-71. You are a psychologist interested in recovering repressed memories. Which lobe of the brain might you show the most interest in?
a. Parietal
b. Temporal
c. Occipital
d. Frontal
Difficulty: 3
Question ID: 3.1-71
Page Ref: 91
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: b. Temporal
Rationale: The lower part of the temporal lobe is important for autobiographical memories (memories about ourselves).

3.1-72. Who is most likely suffering damage to the temporal lobe?
   a. Sally, who can't say the word "textbook"
   b. Ben, who can't feel the bug crawling down his back
   c. Scott, who can only read books in large print
   d. Clark, who can't understand his professor's lecture

Difficulty: 3
Question ID: 3.1-72
Page Ref: 91
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: d. Clark, who can't understand his professor's lecture
Rationale: The temporal lobe includes Wernicke's area, which is involved in understanding (but not producing) speech.

3.1-73. Parkinson disease is a disorder of movement, in which cells degenerate in the
   a. corpus callosum.
   b. basal ganglia.
   c. reticular formation.
   d. cerebellum.

Difficulty: 3
Question ID: 3.1-73
Page Ref: 91
Topic: CNS: The Command Center
Skill: Conceptual
Objective: 3.5
Answer: b. basal ganglia.
Rationale: The basal ganglia are structures in the forebrain that help to control movement; damage to them plays a key role in Parkinson disease.

3.1-74. The structures in the forebrain that help control movement are called
   a. amygdala.
   b. thalamus.
   c. basal ganglia.
   d. cingulum.

Difficulty: 1
Question ID: 3.1-74
Page Ref: 91
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: c. basal ganglia.

3.1-75. Whose basal ganglia is likely to be LEAST active?
a. John, who received a participation trophy
b. Ame, who is about to eat a piece of cake
c. Lucas, who just won first place in the race
d. Ulie, whose girlfriend is on her way over
Difficulty: 3
Question ID: 3.1-75
Page Ref: 91
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: a. John, who received a participation trophy
Rationale: The basal ganglia help to control movement and are active when we anticipate rewards, so they would presumably not be very active in someone who is not moving and has already received an award.

3.1-76. The parts of the brain dedicated to emotion are located within the
a. endocrine system.
b. limbic system.
c. association cortex.
d. primary sensory cortex.
Difficulty: 1
Question ID: 3.1-76
Page Ref: 92
Topic: The Limbic System
Skill: Factual
Objective: 3.5
Answer: b. limbic system.
% correct 65 a = 20 b = 65 c = 5 d = 10 *r* = .35

3.1-77. The parts of the brain dedicated to emotion are contained in the
a. occipital lobe.
b. hypothalamus.
c. limbic system.
d. thalamus.
Difficulty: 1
Question ID: 3.1-77
Page Ref: 92
Topic: The Limbic System
Skill: Factual
Objective: 3.5
Answer: c. limbic system.

3.1-78. The amygdala plays key roles in
a. visual interpretation.
b. controlling movement.
c. fear, excitement, and arousal.
d. speech production.
Difficulty: 2
Question ID: 3.1-78
Page Ref: 92
Topic: The Limbic System
Skill: Factual
Objective: 3.5
Answer: c. fear, excitement, and arousal.

3.1-79. As José walks to his car late at night, he hears footsteps behind him. Feeling afraid, Jose grips his keys and quickens his pace. It is likely that Jose's _____ has been activated
a. hypothalamus
b. hippocampus
c. amygdala
d. cerebellum
Difficulty: 2
Question ID: 3.1-79
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: c. amygdala
Rationale: The amygdala is a brain structure within the limbic system that is involved in our experience of fear, arousal, and excitement.

3.1-80. Ari is a very nervous child. He jumps at random sounds and becomes scared and excited at almost any new stimulus. Ari's _____ is probably in overdrive.
a. thalamus
b. basal ganglia
c. occipital lobe
d. amygdala
Difficulty: 2
Question ID: 3.1-80
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: d. amygdala
Rationale: The amygdala plays key roles in fear, excitement, and arousal.

3.1-81. The _____ regulates and maintains constant internal bodily states by interacting with the endocrine and autonomic nervous systems.
a. thalamus
b. hypothalamus
c. amygdala
d. hippocampus
Difficulty: 1
Question ID: 3.1-81
Page Ref: 92
Topic: The Limbic System
Skill: Factual
Objective: 3.5
Answer: b. hypothalamus
% correct 75 a = 5 b = 75 c = 10 d = 10 *r* = .26

3.1-82. Which structure of the brain is most likely to be involved in synesthesia, a disorder where a person can taste sounds or hear colors?
a. Hypothalamus
b. Pons
c. Thalamus
d. Hippocampus
Difficulty: 2
Question ID: 3.1-82
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: c. Thalamus
Rationale: The thalamus receives sensory information and routes it to appropriate brain areas. If it is not functioning normally, sensory signals may be "mixed up."

3.1-83. What structure in the brain does the thermostat in your home most closely resemble?
a. Pons
b. Amygdala
c. Hypothalamus
d. Thalamus
Difficulty: 3
Question ID: 3.1-83
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: c. Hypothalamus
Rationale: The hypothalamus regulates and maintains internal bodily states related to temperature, hunger, and thirst.

3.1-84. Charlie has been married for nineteen years. He can tell just by looking at his wife whether or not to ask her if he can go to the football game with his buddy. What structure in the brain has served Charlie well?

a. Amygdala
b. Hypothalamus
c. Cingulate cortex
d. Cerebral cortex

Difficulty: 3
Question ID: 3.1-84
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: a. Amygdala
Rationale: The amygdala helps us learn fear reactions.

3.1-85. After her recent surgery, Kris has been suffering from a type of amnesia that limits her ability to form new memories. What brain structure has most likely been damaged?

a. Hypothalamus
b. Cingulate cortex
c. Amygdala
d. Hippocampus

Difficulty: 3
Question ID: 3.1-85
Page Ref: 93
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: d. Hippocampus
Rationale: Damage to the hippocampus causes problems with the formation of new memories, but usually leaves older memories intact.

3.1-86. According to _____ theory, memories are initially stored at multiple sites. Over time, storage strengthens at some sites but weakens at others.

a. memory transfer
b. multiple trace
c. memory consolidation
d. neural realignment

Difficulty: 3
Question ID: 3.1-86
Page Ref: 93
Topic: The Limbic System
Skill: Conceptual
Objective: 3.5
Answer: b. multiple trace
Rationale: Multiple trace theory holds that memories are initially stored in several sites. Over time, storage strengthens at some sites but weakens at others.

3.1-87. Our sense of balance is based in the
a. pons.
b. cerebellum.
c. medulla.
d. hippocampus.
Difficulty: 1
Question ID: 3.1-87
Page Ref: 93
Topic: The Brain Stem
Skill: Factual
Objective: 3.5
Answer: b. cerebellum.

3.1-88. Garth is at the circus. He is mesmerized by the tightrope artists and their ability to walk across a tiny rope many feet above the ground. Which brain structure is likely to be highly developed in these performers?
a. Reticular activating system
b. Pons
c. Cerebral cortex
d. Cerebellum
Difficulty: 2
Question ID: 3.1-88
Page Ref: 93
Topic: The Brain Stem
Skill: Applied
Objective: 3.5
Answer: d. Cerebellum
Rationale: To perform high-wire balance tasks, one would presumably need a well-developed cerebellum, as it is involved with balance, coordination, and learning motor skills.

3.1-89. Our heartbeat and breathing are regulated by the
a. medulla.
b. pons.
c. midbrain.
d. cerebellum.
Difficulty: 1
Question ID: 3.1-89
Page Ref: 93
Topic: The Brain Stem
Skill: Factual
Objective: 3.5
Answer: a. medulla.

3.1-90. Ms. Davies suffered a massive stroke and is now in a coma. She has lost nearly all higher cortical functions, but continues to breathe on her own. Would the typical psychologist say she is dead?
   a. Unknown; basic functions remain intact, but an inability to think and reason equal cortical death.
   b. No, because she is still breathing on her own and her heart is still beating.
   c. Yes, because she no longer possesses the qualities that make her human.
   d. None of the above.

Difficulty: 3
Question ID: 3.1-90
Page Ref: 93–94
Topic: The Brain Stem
Skill: Applied
Objective: 3.5
Answer: a. Unknown; basic functions remain intact, but an inability to think and reason equal cortical death.
Rationale: Brain death is usually defined as an irreversible coma. "Death," in general, can be difficult to define, because it is now possible to keep breathing and heartbeat going in a person who has lost his or her higher brain functions.

3.1-91. Neurons that send messages to other nearby neurons are called
   a. motor neurons.
   b. sensory neurons.
   c. interneurons.
   d. efferent neurons.

Difficulty: 1
Question ID: 3.1-91
Page Ref: 94
Topic: The Brain Stem
Skill: Factual
Objective: 3.5
Answer: c. interneurons.
% correct 65 a = 25 b = 10 c = 65 d = 0 *r* = .56

3.1-92. The _____ nervous system helps control and coordinate voluntary movement.
   a. central
   b. autonomic
   c. somatic
   d. peripheral

Difficulty: 2
Question ID: 3.1-92
Page Ref: 94
Topic: The Somatic Nervous System
Skill: Factual
Objective: 3.5
Answer: c. somatic

3.1-93. The _____ nervous system controls the involuntary actions of internal organs and glands.
a. afferent
b. autonomic
c. reflexive
d. peripheral
Difficulty: 1
Question ID: 3.1-93
Page Ref: 94
Topic: The Autonomic Nervous System
Skill: Factual
Objective: 3.6
Answer: b. autonomic

3.1-94. The flight-or-fight response is mobilized by the
a. central nervous system.
b. somatic nervous system.
c. sympathetic division of the autonomic nervous system.
d. parasympathetic division of the autonomic nervous system.
Difficulty: 1
Question ID: 3.1-94
Page Ref: 95
Topic: The Autonomic Nervous System
Skill: Factual
Objective: 3.6
Answer: c. sympathetic division of the nervous system.
% correct 50 a = 25 b = 15 c = 50 d = 10 *r* = .21

3.1-95. Everybody likes Fred. He is always relaxed and never seems to panic, even in the face of emergencies. When smoke started coming in through the vent in the classroom, Fred calmly strolled out of the room. What system might a neuroscientist suggest isn't functioning inside Fred?
a. Sympathetic
b. Parasympathetic
c. Peripheral
d. Somatic
Difficulty: 2
Question ID: 3.1-95
Page Ref: 95
Topic: The Autonomic Nervous System
Skill: Applied
Objective: 3.6
Answer: a. Sympathetic
Rationale: The sympathetic branch of the autonomic nervous system is responsible for revving us up for fight or flight, especially during a crisis. If Fred's reaction is that subdued, perhaps his sympathetic branch is not working properly.

3.1-96. The _____ is a system of glands and hormones that controls secretion of blood-borne chemical messengers.
a. endocrine system
b. sympathetic division
c. limbic system
d. parasympathetic division
Difficulty: 1
Question ID: 3.1-96
Page Ref: 95
Topic: The Endocrine System
Skill: Factual
Objective: 3.7
Answer: a. endocrine system

3.1-97. The _____ is known as the "master gland" because it controls the other glands in the body.
a. adrenal gland
b. pituitary gland
c. somatic gland
d. pineal gland
Difficulty: 2
Question ID: 3.1-97
Page Ref: 95
Topic: The Endocrine System
Skill: Factual
Objective: 3.7
Answer: b. pituitary gland

3.1-98. The _____ gland is known as the master gland because it controls the other glands in the body.
a. pituitary
b. adrenal
c. pineal
d. thyroid
Difficulty: 1
Question ID: 3.1-98
Page Ref: 95
Topic: The Endocrine System
Skill: Conceptual
Objective: 3.7
Answer: a. pituitary
Rationale: The pituitary gland is described as the "master gland" that directs the other glands of the body.
% correct 90 a = 90 b = 0 c = 5 d = 5 *r* = .21

3.1-99. Nokia is preparing to take her final exam in a few hours. She is very nervous and has no appetite. This may be due to the inhibition of gastrointestinal secretions caused by
a. adrenaline.
b. cortisol.
c. testosterone.
d. estrogen.
Difficulty: 3
Question ID: 3.1-99
Page Ref: 95
Topic: The Endocrine System
Skill: Conceptual
Objective: 3.7
Answer: a. adrenaline.
Rationale: When adrenaline production increases, gastrointestinal secretions are inhibited, so we may lose our appetites.
% correct 65 a = 65 b = 28 c = 0 d = 4 *r* = .33

3.1-100. The _____ is/are sometimes called the emergency center of the body.
a. pineal gland
b. pituitary gland
c. thyroid gland
d. adrenal glands
Difficulty: 1
Question ID: 3.1-100
Page Ref: 95
Topic: The Endocrine System
Skill: Conceptual
Objective: 3.7
Answer: d. adrenal glands
Rationale: The adrenal glands manufacture adrenaline and cortisol, both of which are hormones involved in emergency response.

3.1-101. Who is likely experiencing a rise in adrenaline levels?
a. Scooter, who just stepped on a snake
b. Marcy, who is riding the "Space Mountain" ride
c. Jake, who is watching a boring television show
d. Both A and B are correct.
Difficulty: 2
Question ID: 3.1-101
Page Ref: 95–96
Topic: The Endocrine System
Skill: Applied
Objective: 3.7
Answer: d. Both A and B are correct.
Rationale: Adrenaline levels rise when we are faced with an alarming or exciting situation, such as stepping on a snake or going on a thrilling ride.

3.1-102. Which of the following statements is NOT true?
a. The main male sex hormone is testosterone.
b. The main female sex hormone is estrogen.
c. Both sexes manufacture some amount of the sex hormone associated with the opposite sex.
d. Only males secrete testosterone, and only females secrete estrogen.

Difficulty: 2
Question ID: 3.1-102
Page Ref: 96
Topic: The Endocrine System
Skill: Factual
Objective: 3.7
Answer: d. Only males secrete testosterone, and only females secrete estrogen.
% correct 95 a = 5 b = 0 c = 0 d = 95 *r* = .20

3.1-103. Rodney wants to "have his head examined" to determine certain aspects of his personality. To do this, he would have to go to a
a. psychiatrist.
b. psychologist.
c. scientologist.
d. phrenologist.

Difficulty: 2
Question ID: 3.1-103
Page Ref: 97–98
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: d. phrenologist.
Rationale: The term "having one's head examined" was first used within the practice of phrenology. Phrenology involved examining bumps on the head, supposedly to determine one's personality traits and abilities.
% correct 75 a = 5 b = 20 c = 0 d = 75 *r* = .21

3.1-104. Much as a blind person uses Braille to read, a _____ used the skull to assess personality.
a. psychiatrist
b. psychoanalysist
c. neurosurgeon
d. phrenologist

Difficulty: 2
Question ID: 3.1-104
Page Ref: 97–98
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: d. phrenologist
Rationale: Phrenology involved "reading" the bumps on a person's head to supposedly learn about his or her personality.

3.1-105. All of the following were (are) methods for mapping the brain EXCEPT
a. phrenology.
b. stereotaxic methods.
c. electrical stimulation.
d. fRNA.
Difficulty: 3
Question ID: 3.1-105
Page Ref: 97–98
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: d. fRNA.
Rationale: Brain mapping techniques include (or have included) phrenology, stereotaxic methods, and electrical stimulation.

3.1-106. A technique that permits scientists to pinpoint the location of specific brain areas using coordinates is called
a. phrenology.
b. the stereotaxic method.
c. functional imaging.
d. magnetoencephalography.
Difficulty: 2
Question ID: 3.1-106
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: b. the stereotaxic method.
Rationale: The stereotaxic method is often used to locate and create lesions in specific brain areas of experimental animals, in order to determine the effects on behavior.

3.1-107. An area of damage due to injury, disease, or surgery is called.
a. a wound.
b. a lesion.
c. a stereotoxic infiltration.
d. an invasive cortical manifestation.
Difficulty: 2
Question ID: 3.1-107
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Factual
Objective: 3.8
Answer: b. a lesion.

3.1-108. The EEG is an old method that
a. is no longer used.
b. has low temporal resolution.
c. has high spatial resolution.
d. is used to detect electrical activity in the brain.

Difficulty: 2
Question ID: 3.1-108
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Factual
Objective: 3.8
Answer: d. is used to detect electrical activity in the brain.

3.1-109. The importance of Penfield's research and others like it is that it led to the hypothesis that nerves
a. might use electrical activity to send information.
b. respond to chemical stimulation.
c. have high temporal resolution.
d. have high spatial resolution.

Difficulty: 3
Question ID: 3.1-109
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: a. might use electrical activity to send information.
Rationale: Penfield stimulated parts of the human motor cortex during brain surgery and produced specific movements in those patients, which showed that neurons respond to electrical stimulation.

3.1-110. Hideki has had difficulty sleeping. His doctor wishes to examine his sleep patterns to determine the cause of Hideki's sleep problems. The doctor will most like perform a(n)
a. EEG.
b. CT scan.
c. PET scan.
d. MRI.

Difficulty: 2
Question ID: 3.1-110
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: a. EEG.
Rationale: The EEG measures electrical activity in the brain, and is useful for determining whether a person is awake or asleep, or which stage of sleep the person is in.
% correct 55 a = 55 b = 20 c = 10 d = 15 *r* = .35

3.1-111. Professor Hopkins wants to locate the precise area of the brain that controls our appetite. Who is likely to make up her subject pool?
   a. Rats
   b. Obese individuals
   c. Anorexic individuals
   d. All of the above.

Difficulty: 2
Question ID: 3.1-111
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: a. Rats
Rationale: Most studies that involve precise mapping of functions to specific brain regions involve lesioning the brain, a technique used only on non-human species.

3.1-112. Which lesion method allows researchers to identify specific brain areas based on a pinpoint approach to destroying brain tissue?
   a. Lateral methods
   b. Stereotaxic methods
   c. Localized methods
   d. Transcranial methods

Difficulty: 3
Question ID: 3.1-112
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: b. Stereotaxic methods
Rationale: The stereotaxic method is often used to locate and create lesions in specific brain areas of experimental animals, in order to determine the effects on behavior.

3.1-113. _____ records the brain's electrical activity at the surface of the skull.
   a. EEG
   b. CT
   c. MRI
   d. PET

Difficulty: 3
Question ID: 3.1-113
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Factual
Objective: 3.8
Answer: a. EEG

3.1-114. Zhuo is playing the game "Marco Polo" in the pool with her friends. She knows they are shouting, but is having trouble figuring out where the shouting is coming from. Which brain-mapping technique produces a similar problem?
a. Computed topography
b. Magnetic resonance imaging
c. Electroencephalograph
d. Positron emission tomography
Difficulty: 3
Question ID: 3.1-114
Page Ref: 98
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: c. Electroencephalograph
Rationale: Although EEGs are useful in many situations, they have low spatial resolution, which means it's difficult to determine where in the brain the activity is occurring.

3.1-115. _____ is a scanning technique using multiple x-rays to construct three-dimensional images.
a. Electroencephalograph (EEG)
b. Magnetic resonance imaging (MRI)
c. Functional MRI (fMRI)
d. Computed tomography (CT)
Difficulty: 2
Question ID: 3.1-115
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Factual
Objective: 3.8
Answer: d. Computed tomography (CT)

3.1-116. Samantha's doctor is concerned that Samantha may have a brain tumor. Which method of neuroimaging will he likely use to detect the tumor?
a. EEG
b. CT scan
c. MRI
d. PET scan
Difficulty: 3
Question ID: 3.1-116
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: c. MRI
Rationale: The MRI is useful for identifying problems with the structure of the brain, such as tumors.

3.1-117. A functional MRI (fMRI) measures
a. structures of the brain.
b. structural detail of various structures.
c. the release of energy from water in biological tissue.
d. changes in the brain's activity levels.
Difficulty: 2
Question ID: 3.1-117
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: d. changes in the brain's activity levels.
Rationale: The fMRI relies on magnetic fields to examine activity in different parts of the brain.
% correct 80 a = 5 b = 10 c = 5 d = 80 *r* = .22

3.1-118. A functional MRI
a. applies magnetic fields to the brain.
b. measures tiny magnetic fields.
c. shows promise as a treatment for depression.
d. measures the change in blood oxygen level.
Difficulty: 2
Question ID: 3.1-118
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Factual
Objective: 3.8
Answer: d. measures the change in blood oxygen level.

3.1-119. Triangle is to pyramid as x-ray is to
a. MRI.
b. PET.
c. CT.
d. fMRI.
Difficulty: 3
Question ID: 3.1-119
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: c. CT
Rationale: A CT scan is a three-dimensional reconstruction of many x-rays taken through a part of the body. Likewise, a pyramid is composed of many individual triangles.

3.1-120. Professor Gamos is interested in the specific regions of the brain that are active when subjects are engaged in problem-solving tasks. Which of the following techniques will be most informative?
a. CT scan
b. MRI
c. PET
d. EEG
Difficulty: 2
Question ID: 3.1-120
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: c. PET
Rationale: PET scans measure changes in the brain's activity based on neurons' use of glucose when they are active.

3.1-121. Transcranial magnetic stimulation (TMS)
a. uses strong and rapidly changing magnetic fields to induce electric fields in the brain.
b. can enhance brain function.
c. can interrupt brain function.
d. All of the above.
Difficulty: 1
Question ID: 3.1-121
Page Ref: 99–100
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: d. All of the above.
Rationale: TMS involves applying strong and quickly changing magnetic fields and seeing whether brain activity goes up or down. It allows us to infer whether certain parts of the brain are *causing* changes in behavior, thoughts, or perceptions.

3.1-122. _____ is a technique that applies strong and quickly changing magnetic fields to the surface of the skull that can either enhance or interrupt brain function.
a. Transcranial magnetic stimulation (TMS)
b. Magnetic resonance imaging (MRI)
c. Computed tomography (CT)
d. Magnetoencephalography (MEG)
Difficulty: 2
Question ID: 3.1-122
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Factual
Objective: 3.8
Answer: a. Transcranial magnetic stimulation (TMS)

3.1-123. Evidence AGAINST the 10 percent myth (we only use 10 percent of our brains) comes from
a. courses to improve our brain power that are generally successful.
b. the effectiveness of self-help books to increase mental capacity.
c. neuroimaging studies, which fail to find any consistently silent areas.
d. psychics who are able to perform extraordinary feats of mental powers.

Difficulty: 2
Question ID: 3.1-123
Page Ref: 100–101
Topic: How Much of Our Brain Do We Use?
Skill: Conceptual
Objective: 3.8
Answer: c. neuroimaging studies, which fail to find any consistently silent areas.
Rationale: The 10 percent myth is commonly held, but has been shown to be false by neuroimaging studies, which have found no areas of the brain that consistently show little or no activity.
% correct 67 a = 13 b = 17 c = 67 d = 2 *r* = .36

3.1-124. Which of the following statements is true?
a. Every part of the brain has a function.
b. Losses of small areas of certain parts of the brain can cause devastating, often permanent, losses of function.
c. All the brain areas become active on brain scans at one time or another as we think, feel, and perceive.
d. All of the above statements are true.

Difficulty: 1
Question ID: 3.1-124
Page Ref: 100–101
Topic: How Much of Our Brain Do We Use?
Skill: Conceptual
Objective: 3.8
Answer: d. All of the above statements are true.
Rationale: Despite perpetuation of the myth that we use only 10 percent of our brains, more recent evidence from clinical neurologists and neuropsychologists proves otherwise.

3.1-125. Who is most accurate in discussing how much of our brain we use?
a. Jed, who says that at one time or another we use our entire brain
b. Lance, who says that most people use only about 70–80 percent of their brain
c. Florence, who says if you removed 90 percent of your brain, you would probably die
d. Both A and C are correct.

Difficulty: 2
Question ID: 3.1-125
Page Ref: 100–101
Topic: How Much of Our Brain Do We Use?
Skill: Applied
Objective: 3.8
Answer: d. Both A and C are correct.
Rationale: Both Jed and Florence are correct. All parts of the brain show activity, depending on the specific task, and if any significant portion of the brain is removed, function is likely to be impaired.

3.1-126. What is the danger of relying too much on neuroimaging tests?
a. We will give up using traditional psychological tests for assessing brain functions.
b. We may focus too much on activity in areas that are not traditionally thought to be specialized for a particular function.
c. We run the risk of assigning narrowly defined functions to brain regions, rather than remembering that most functions are distributed.
d. We will pay too much attention to how different parts of the brain work together rather than focusing on individual parts and how they function.

Difficulty: 3
Question ID: 3.1-126
Page Ref: 101
Topic: Which Parts of Our Brain Do We Use for What?
Skill: Conceptual
Objective: 3.9
Answer: c. We run the risk of assigning narrowly defined functions to brain regions, rather than remembering that most functions are distributed.
Rationale: Multiple brain regions contribute to each psychological function, and any given brain area contributes to multiple psychological functions.

3.1-127. Which of the following statements is true?
a. Few, if any, complex psychological functions are likely to be confined to a single brain area.
b. Most people use only 10 percent of their brains.
c. Not every part of the brain has a function.
d. Scientists have discovered a specific "God spot" in the brain because it becomes active when an individual thinks of God.

Difficulty: 3
Question ID: 3.1-127
Page Ref: 101
Topic: Which Parts of Our Brain Do We Use for What?
Skill: Conceptual
Objective: 3.9
Answer: a. Few, if any, complex psychological functions are likely to be confined to a single brain area.
Rationale: Multiple brain regions contribute to each psychological function, and any given brain area contributes to multiple psychological functions.

3.1-128. Sometimes a person's corpus callosum is split, which separates the two hemispheres completely. This is done to
a. study the effects of a split brain.
b. change a person's personality.
c. determine the precise area of cognitive functioning.
d. control severe epilepsy.

Difficulty: 2
Question ID: 3.1-128
Page Ref: 101
Topic: Which Side of Our Brain Do We Use for What?
Skill: Applied
Objective: 3.9
Answer: d. control severe epilepsy.
Rationale: When a person has severe epilepsy that cannot be controlled with medication, neurosurgeons will sometimes sever the corpus callosum surgically. This usually results in a reduction in seizures.

3.1-129. During split-brain surgery, the _____ is severed to reduce the spread of epileptic seizures.
a. central sulcus
b. prefrontal cortex
c. corpus callosum
d. cerebral cortex
Difficulty: 1
Question ID: 3.1-129
Page Ref: 101
Topic: Which Side of Our Brain Do We Use for What?
Skill: Factual
Objective: 3.9
Answer: c. corpus callosum

3.1-130. When a cognitive function relies on one cerebral hemisphere more than the other, this phenomenon is known as
a. long-term potentiation.
b. lateralization.
c. self-awareness.
d. right-brained or left-brained people.
Difficulty: 2
Question ID: 3.1-130
Page Ref: 102
Topic: Which Side of Our Brain Do We Use for What?
Skill: Conceptual
Objective: 3.9
Answer: b. lateralization.
Rationale: In lateralization, the right and left brain hemispheres are specialized, so that each has slightly different functions.

3.1-131. Venus suffered damage to her left hemisphere. Which of the following tasks is she most likely to have trouble with?
a. Recognizing herself in the mirror
b. Recognizing her friends
c. Reading
d. Painting a picture
Difficulty: 2
Question ID: 3.1-131
Page Ref: 102
Topic: Which Side of Our Brain Do We Use for What?
Skill: Applied
Objective: 3.9
Answer: c. Reading
Rationale: Certain functions are lateralized (relying more on one side of the brain than the other), particularly specific language and verbal skills. The left hemisphere (in most people) is involved in reading.

3.1-132. The corpus callosum
   a. shares information between the two halves of the cerebral cortex.
   b. when cut, allows integration of function between the left and right sides.
   c. when intact, allows speech comprehension to occur in both sides of the brain.
   d. causes a vegetative state when severed accidentally.

Difficulty: 1
Question ID: 3.1-132
Page Ref: 102
Topic: Which Side of Our Brain Do We Use for What?
Skill: Factual
Objective: 3.9
Answer: a. shares information between the two halves of the cerebral cortex.
% correct 61 a = 2 b = 61 c = 32 d = 4 *r* = .27

3.1-133. Your friend Sheila says she is definitely a right-brained person because she excels in her language and art classes but performs miserably in her math classes. You tell her
   a. indeed there is scientific evidence for some specialization across hemispheres so she must have greater activation of one hemisphere compared to the other.
   b. there is no scientific evidence for this type of hemispheric asymmetry for complex tasks, and actually the two hemispheres function together.
   c. she has it backwards: if she likes language but dislikes math, she must be left-brained.
   d. she needs to also assess her handedness before reaching this conclusion.

Difficulty: 3
Question ID: 3.1-133
Page Ref: 102–103
Topic: Which Side of Our Brain Do We Use for What?
Skill: Conceptual
Objective: 3.9
Answer: b. there is no scientific evidence for this type of hemispheric asymmetry for complex tasks, and actually the two hemispheres function together.
Rationale: Though the left and right hemispheres have slightly different specialties, it is an overstatement to say that someone is "left-brained" or "right-brained"—the two hemispheres work together, especially for complex tasks.

3.1-134. Left-brained people are
   a. scholarly.
   b. logical.
   c. analytical.
   d. none of the above; being left- or right-brained is a myth.

Difficulty: 2
Question ID: 3.1-134
Page Ref: 102–103
Topic: Which Side of Our Brain Do We Use for What?
Skill: Factual
Objective: 3.9
Answer: d. none of the above; being left- or right-brained is a myth.
Rationale: Though the left and right hemispheres have slightly different specialties, it is an overstatement to say that someone is "left-brained" or "right-brained"—the two hemispheres work together, especially for complex tasks.
% correct 85 a = 5 b = 10 c = 0 d = 85 *r* = .37

3.1-135. The myth of exaggerated right-brain versus left-brain differences can be traced to
a. vast oversimplifications.
b. misinterpretations of what scientists reported.
c. self-help books.
d. all of the above.
Difficulty: 1
Question ID: 3.1-135
Page Ref: 102–103
Topic: Which Side of Our Brain Do We Use for What?
Skill: Conceptual
Objective: 3.9
Answer: d. all of the above
Rationale: Each of the answers can explain why people buy into exaggeration of left-brain, right-brain differences.

3.1-136. Your friend Maurice is a gifted musician. What hemipshere(s) of the brain does he rely most heavily on?
a. Left
b. Right
c. Both
d. Neither
Difficulty: 2
Question ID: 3.1-136
Page Ref: 102–103
Topic: Which Side of Our Brain Do We Use for What?
Skill: Applied
Objective: 3.9
Answer: c. Both
Rationale: Though there is some degree of hemispheric specialization, we all use our whole brain, all the time. In popular psychology, we often read about "left-brained" or "right-brained" people, but this is an oversimplification—we are all "whole-brained".

3.1-137. People's genetic makeup is their
a. genotype.
b. phenotype.
c. mRNA.
d. genome.
Difficulty: 2
Question ID: 3.1-137
Page Ref: 104
Topic: How We Came to Be Who We Are
Skill: Factual
Objective: 3.10
Answer: a. genotype.
% correct 90 a = 90 b = 10 c = 0 d = 0 *r* = .22

3.1-138. Each cell in the human body contains _____ chromosomes, which consist of _____.
a. 46; 23 genes
b. 23; 23 genes
c. 46; 23 pairs
d. 23; 23 pairs
Difficulty: 2
Question ID: 3.1-138
Page Ref: 104
Topic: How We Came to Be Who We Are
Skill: Factual
Objective: 3.10
Answer: c. 46; 23 pairs

3.1-139. Sophia is brown-haired, blue-eyed, and dark-skinned. It is likely that Sophia.
a. has dominant genes only.
b. has recessive genes only.
c. is adopted.
d. has both dominant and recessive genes.
Difficulty: 1
Question ID: 3.1-139
Page Ref: 104
Topic: How We Came to Be Who We Are
Skill: Factual
Objective: 3.10
Answer: d. has both dominant and recessive genes.
% correct 85 a = 5 b = 10 c = 0 d = 85 *r* = .53

3.1-140. Phenotype is
a. a person's genetic makeup.
b. a person's set of observable traits.
c. made up of dominant genes only.
d. made up of recessive genes only.
Difficulty: 1
Question ID: 3.1-140
Page Ref: 104
Topic: How We Came to Be Who We Are
Skill: Factual
Objective: 3.10
Answer: b. a person's set of observable traits.
% correct 85 a = 10 b = 85 c = 0 d = 5 *r* = .47

3.1-141. Darwin hypothesized that populations of organisms, rather than individuals, change by selective breeding with other organisms possessing some apparent advantage. This is known as
a. natural selection.
b. behavioral adaptation.
c. brain evolution.
d. behavioral genetics.
Difficulty: 2
Question ID: 3.1-141
Page Ref: 104
Topic: How We Came to Be Who We Are
Skill: Conceptual
Objective: 3.10
Answer: a. natural selection.
Rationale: Natural selection is a process through which traits that are advantageous to survival are passed from generation to generation.
% correct 90 a = 90 b = 0 c = 5 d = 5 *r* = .37

3.1-142. Professor McMillian wants to breed a dog that can survive the high temperatures of the desert. What aspect of genetics is he hoping to improve?
a. Adaptability
b. Fitness
c. Genotype
d. Phenotype
Difficulty: 3
Question ID: 3.1-142
Page Ref: 104
Topic: How We Came to Be Who We Are
Skill: Applied
Objective: 3.10
Answer: a. Adaptability
Rationale: Species evolve physical and behavioral adaptations that help them survive in particular environments.

3.1-143. The citrus industry has worked hard to develop oranges that can survive the unpredictable cold weather that occasionally visits Florida. One could say that today's oranges have a high level of
a. toughness.
b. fitness.
c. resistance.
d. invulnerability.
Difficulty: 3
Question ID: 3.1-143
Page Ref: 105
Topic: How We Came to Be Who We Are
Skill: Applied
Objective: 3.10
Answer: b. fitness.
Rationale: Fitness refers to an organism's capacity to pass on its genes.

3.1-144. Which of the following is likely to be most highly heritable?
a. Weight
b. Intelligence
c. Accent in speech
d. Height
Difficulty: 2
Question ID: 3.1-144
Page Ref: 105
Topic: Behavioral Genetics: How We Study Heritability
Skill: Applied
Objective: 3.11
Answer: d. Height
Rationale: Height tends to be highly heritable, with a typical value between 70 and 80 percent. Weight and intelligence tend to be heritable to a lower degree, and accent in speech is almost entirely due to environment (i.e., not heritable).

3.1-145. Which of the following in NOT a major misconception about heritability?
a. Heritability applies to a single individual rather than differences among individuals.
b. Heritability tells us whether a trait can be changed.
c. Heritability is estimated by family studies, twin studies, and adoption studies.
d. Heritability is a fixed number.
Difficulty: 3
Question ID: 3.1-145
Page Ref: 106
Topic: Behavioral Genetics: How We Study Heritability
Skill: Conceptual
Objective: 3.11
Answer: c. Heritability is estimated by family studies, twin studies, and adoption studies.
Rationale: Heritability is indeed estimated by means of family, twin, and adoption studies; therefore, it is not a misconception, as the other three statements are.

3.1-146. Which of the following studies would NOT be used to determine the relative contribution of genetics to the expression of a trait or disorder?
a. Family studies, where researchers examine the extent to which a trait "runs" in an intact family
b. Twin studies, where researchers investigate whether identical twins are more alike on a psychological characteristic than are fraternal twins
c. Adoption studies, where adoption agencies frequently place children in homes similar to those of the biological parents
d. All of the above studies would be used.
Difficulty: 3
Question ID: 3.1-146
Page Ref: 106–107
Topic: Behavioral Genetics: How We Study Heritability
Skill: Conceptual
Objective: 3.11
Answer: c. Adoption studies, where adoption agencies frequently place children in homes similar to those of the biological parents
Rationale: Family, twin, and adoption studies all help scientists determine how strongly genetics influences a particular trait. However, the selective placement of adopted children into homes similar to the ones in which they were born is a problem for this kind of research, because it confounds the influence of genetics and environment.

Fill-in-the-Blank

3.2-1. Dr. Yancey is using systematic brain lesioning in rats to determine where they store their memories. Dr. Yancey is likely to be a(n) _____ psychologist.

Difficulty: 3
Question ID: 3.2-1
Page Ref: 80
Topic: Introduction
Skill: Applied
Objective: 3.1
Answer: biological (or bio-)

3.2-2. Removing the antenna from your cell phone would be similar to severing the _____ of a neuron.

Difficulty: 3
Question ID: 3.2-2
Page Ref: 82
Topic: Neurons: The Brain's Communicators
Skill: Applied
Objective: 3.1
Answer: dendrite

3.2-3. The _____ serves a role in the brain similar to the moats that surrounded castles during times of war.

Difficulty: 3
Question ID: 3.2-3
Page Ref: 83
Topic: Glial Cells: Supporting Roles
Skill: Applied
Objective: 3.1
Answer: blood-brain barrier

3.2-4. _____ protect neurons, release chemicals to promote healing, and help form the blood-brain barrier and the myelin sheath.

Difficulty: 2
Question ID: 3.2-4
Page Ref: 83
Topic: Glial Cells: Supporting Roles
Skill: Factual
Objective: 3.1
Answer: Glial cells

3.2-5. The process by which the synaptic vesicle engulfs the neurotransmitter and brings it back into the axon terminal is called _____.

Difficulty: 2
Question ID: 3.2-5
Page Ref: 83
Topic: Chemical Communication: Neurotransmission
Skill: Conceptual
Objective: 3.2
Answer: reuptake

3.2-6. _____ are short strings of amino acids found in the nervous system. They act somewhat like neurotransmitters.
Difficulty: 1
Question ID: 3.2-6
Page Ref: 84
Topic: Chemical Communication: Neurotransmission
Skill: Factual
Objective: 3.2
Answer: Neuropeptides

3.2-7. _____ are abrupt waves of electric discharge that allow neurons to communicate.
Difficulty: 2
Question ID: 3.2-7
Page Ref: 85
Topic: Electrifying Thought
Skill: Factual
Objective: 3.3
Answer: Action potentials

3.2-8. The brief time during which another action potential cannot occur is called the _____.
Difficulty: 3
Question ID: 3.2-8
Page Ref: 85
Topic: Electrifying Thought
Skill: Factual
Objective: 3.3
Answer: absolute refractory period

3.2-9. Bo is running wind sprints. He runs as hard as he can for 40 yards, but must walk back before he can run again. Bo's brief walk mimics the _____ observed in the firing of neurons.
Difficulty: 3
Question ID: 3.2-9
Page Ref: 85
Topic: Electrifying Thought
Skill: Applied
Objective: 3.3
Answer: absolute refractory period

3.2-10. Scientists use the term _____ to describe the nervous system's ability to change.
Difficulty: 2
Question ID: 3.2-10
Page Ref: 86
Topic: Neural Plasticity: How and When the Brain Changes
Skill: Factual
Objective: 3.4
Answer: plasticity

3.2-11. _____ is the creation of new cells in the adult brain.
Difficulty: 1
Question ID: 3.2-11
Page Ref: 86
Topic: Neural Plasticity: How and When the Brain Changes
Skill: Factual
Objective: 3.4
Answer: Neurogenesis

3.2-12. In the human brain, the _____ is the most highly developed area.
Difficulty: 1
Question ID: 3.2-12
Page Ref: 88
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: forebrain or cerebrum

3.2-13. The large band of fibers connecting the two cerebral hemispheres is called the _____.
Difficulty: 2
Question ID: 3.2-13
Page Ref: 88
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: corpus callosum

3.2-14. In the brain, the _____ most resembles a bridge.
Difficulty: 3
Question ID: 3.2-14
Page Ref: 88
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: corpus callosum

3.2-15. An orchestra consists of many sections, each with its own specialty. The conductor of an orchestra performs the same duty as the _____ lobes of the cerebral cortex.
Difficulty: 2
Question ID: 3.2-15
Page Ref: 89
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: frontal

3.2-16. The frontal lobe is responsible for motor function, language, and memory, as well as the job of overseeing most other mental functions. We call this ability _____.
Difficulty: 1
Question ID: 3.2-16
Page Ref: 89
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: executive function

3.2-17. Jacob is an outfielder on the baseball team. As a high fly ball is hit in his direction, he will rely most on the _____ lobes of the cerebral cortex.
Difficulty: 3
Question ID: 3.2-17
Page Ref: 90
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: parietal

3.2-18. The _____ cortex is responsible for allowing you to enjoy the new silk sheets you just purchased for your bed.
Difficulty: 3
Question ID: 3.2-18
Page Ref: 90
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: somatosensory

3.2-19. While pointing to some blocks on the table, Evan hears his teacher say, "Football apple with shoestrings and an iron." Evan has probably suffered damage to _____ in the temporal lobe of his cerebral cortex.
Difficulty: 2
Question ID: 3.2-19
Page Ref: 91
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: Wernicke's area

3.2-20. Pete's eyes function perfectly, yet he cannot see. More than likely, Pete has suffered damage to his _____ lobe.
Difficulty: 2
Question ID: 3.2-20
Page Ref: 91
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: occipital

3.2-21. Sensory information travels to cortical regions that integrate information to perform more complex functions; we call these areas _____ , and they play key roles in perception, memory, attention, and conscious awareness.

Difficulty: 2
Question ID: 3.2-21
Page Ref: 91
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: association cortex

3.2-22. Irene is a receptionist at a doctor's office. "Nobody sees the doctor without seeing me first," she says. Irene's role is analogous to the role of the _____ in sensory processing in the brain.

Difficulty: 2
Question ID: 3.2-22
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: thalamus

3.2-23. Sean is a very anxious child. He literally jumps at his own shadow. It is quite possible that he has an overactive _____.

Difficulty: 2
Question ID: 3.2-23
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: amygdala

3.2-24. The parts of the brain dedicated to emotion are housed within the _____.

Difficulty: 1
Question ID: 3.2-24
Page Ref: 92
Topic: The Limbic System
Skill: Factual
Objective: 3.5
Answer: limbic system

3.2-25. The _____ regulates and maintains constant internal bodily states.

Difficulty: 1
Question ID: 3.2-25
Page Ref: 92
Topic: The Limbic System
Skill: Factual
Objective: 3.5
Answer: hypothalamus

3.2-26. Damage to the _____ causes problems with forming new memories, but usually leaves older memories intact.
Difficulty: 2
Question ID: 3.2-26
Page Ref: 93
Topic: The Limbic System
Skill: Factual
Objective: 3.5
Answer: hippocampus

3.2-27. The _____ are the waterways of the CNS, carrying cerebrospinal fluid and extending throughout the entire brain and spinal cord.
Difficulty: 2
Question ID: 3.2-27
Page Ref: 94
Topic: The Brain Stem
Skill: Factual
Objective: 3.5
Answer: cerebral ventricles

3.2-28. The _____ nervous system carries messages from the CNS to muscles throughout the body.
Difficulty: 1
Question ID: 3.2-28
Page Ref: 94
Topic: The Somatic Nervous System
Skill: Factual
Objective: 3.5
Answer: somatic

3.2-29. The autonomic nervous system is made up of the _____ division and the _____ division.
Difficulty: 1
Question ID: 3.2-29
Page Ref: 95
Topic: The Autonomic Nervous System
Skill: Factual
Objective: 3.6
Answer: sympathetic; parasympathetic

3.2-30. The sympathetic nervous system becomes aroused and prepares animals for the _____.
Difficulty: 3
Question ID: 3.2-30
Page Ref: 95
Topic: The Autonomic Nervous System
Skill: Conceptual
Objective: 3.6
Answer: fight-or-flight response

3.2-31. Lei has just completed her first marathon and is back home in her apartment. Her _____ system is helping her body return to normal.
Difficulty: 2
Question ID: 3.2-31
Page Ref: 95
Topic: The Autonomic Nervous System
Skill: Applied
Objective: 3.6
Answer: parasympathetic

3.2-32. The endocrine system is composed of _____ , blood-borne molecules that influence target tissues.
Difficulty: 1
Question ID: 3.2-32
Page Ref: 95
Topic: The Endocrine System
Skill: Factual
Objective: 3.7
Answer: hormones

3.2-33. Cameron is under a lot of stress. She has three finals in two days and has to pass all three in order to graduate. One might surmise that her _____ levels are high.
Difficulty: 3
Question ID: 3.2-33
Page Ref: 96
Topic: The Endocrine System
Skill: Applied
Objective: 3.7
Answer: cortisol

3.2-34. The study of _____ assessed the bumps on a person's head and attributed various personality traits and abilities to those with certain skull enlargements.
Difficulty: 1
Question ID: 3.2-34
Page Ref: 97–98
Topic: A Tour of Brain-Mapping Methods
Skill: Factual
Objective: 3.8
Answer: phrenology

3.2-35. If you wanted to investigate the possibility of a brain tumor, the best type of neuroimaging technique to use would be the _____.
Difficulty: 2
Question ID: 3.2-35
Page Ref: 99
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: MRI

3.2-36. The _____ is severed during split-brain surgery.
Difficulty: 2
Question ID: 3.2-36
Page Ref: 101
Topic: Which Side of Our Brain Do We Use for What?
Skill: Conceptual
Objective: 3.9
Answer: corpus callosum

3.2-37. People's set of observable traits is their _____.
Difficulty: 2
Question ID: 3.2-37
Page Ref: 104
Topic: How We Came to Be Who We Are
Skill: Factual
Objective: 3.10
Answer: phenotype

Essay

3.3-1. Describe what is meant by the statement that communication in the brain is electrochemical.
Difficulty: 3
Question ID: 3.3-1
Page Ref: 85
Topic: Electrifying Thought
Skill: Applied
Objective: 3.3
Answer: Explain that the release of neurotransmitters, which are chemicals in the brain, trigger action potentials, which are electrical signals in the brain.

3.3-2. Identify the lobes of the cerebral cortex including the functions of each.
Difficulty: 2
Question ID: 3.3-2
Page Ref: 88–91
Topic: CNS: The Command Center
Skill: Factual
Objective: 3.5
Answer: Answers will vary but should contain the following for full credit.

- The cerebral cortex contains four lobes in each of the two hemispheres, each lobe associated with somewhat different functions. The **frontal lobe** occupies the front of the cortex and is responsible for motor function, language, and memory, as well as executive function (overseeing and organizing most other mental functions). The motor cortex handles body movement, while the prefrontal cortex is responsible for higher functions and Broca's area handles speech production.
- The **parietal lobe** lies behind the frontal lobe, and processes all sensory information related to touch in the somatosensory cortex. It is sensitive to pressure, temperature, and pain, and integrates and communicates visual and touch information with the motor cortex.
- The **temporal lobe,** at the side of the brain, is the site of hearing, understanding language, and storing autobiographical memories. The temporal lobe contains the auditory cortex, devoted to hearing, and Wernicke's area, which is involved in understanding speech.
- At the very back of the brain lies the **occipital lobe,** containing visual cortex, dedicated to vision.

3.3-3. Describe an outcome associated with damage to Broca's area.
Difficulty: 3
Question ID: 3.3-3
Page Ref: 89
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: Indicate that speech production is controlled in Broca's area and explain that the individual would evidence difficulty in speaking fluently or accessing a specific word.

3.3-4. Joan is a manager at an advertising firm. She has a big presentation due tomorrow and is gathering information from each of her main divisions. Describe the analogous processes in terms of cortical hierarchy; specifically, the functions of the primary sensory cortex and the association cortex.
Difficulty: 3
Question ID: 3.3-4
Page Ref: 91
Topic: CNS: The Command Center
Skill: Applied
Objective: 3.5
Answer: Discuss the primary sensory cortex and that each division represents a specific area of the company, just like each sense is represented by a specific area in the brain. Discuss the association cortex and that the role of gathering and integrating information from all the divisions is the same as gathering information from all over the brain.

3.3-5. Describe how the job of the security officer at the airport is much like the function performed by the thalamus in the brain.
Difficulty: 3
Question ID: 3.3-5
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: Explain that everyone wishing to fly must pass through security, even though their ultimate destinations and origins may be vastly different. Explain that the role of the thalamus is that of a relay station, through which nearly all sensory information must pass before going on to the other regions of the brain.

3.3-6. Provide a recommendation to Dean, who suffers from arachnophobia, in terms of a possible adjustment to his limbic system.
Difficulty: 2
Question ID: 3.3-6
Page Ref: 92
Topic: The Limbic System
Skill: Applied
Objective: 3.5
Answer: Explain that a reduction in the activity of his amygdala may reduce his fears.

3.3-7. Describe the interplay of the two divisions of the autonomic nervous system as Becky, who was just assaulted in the subway, attempts to recover.
Difficulty: 2
Question ID: 3.3-7
Page Ref: 95
Topic: The Autonomic Nervous System
Skill: Applied
Objective: 3.6
Answer: Explain that the assault should have activated Becky's sympathetic division preparing her for "fight or flight," and that as she is attempting to recover, Becky's parasympathetic division should be restoring her body to its regular state.

3.3-8. You are walking in the woods when suddenly you see a snake in your path that looks dangerous. Upon closer examination, you realize it is harmless. Explain the physiological reactions that occurred during this process, particularly in terms of the two divisions of the autonomic nervous system.
Difficulty: 2
Question ID: 3.3-8
Page Ref: 95
Topic: The Autonomic Nervous System
Skill: Conceptual
Objective: 3.6
Answer: Answers will vary but should contain the following for full credit.

- The sympathetic nervous system mobilized the fight-or-flight response.
- Since you encountered a threat, the sympathetic nervous system became aroused and prepared you for fighting or fleeing.
- Sympathetic activation triggers the flight-or-fight response, a variety of physical responses including increased heart rate, respiration, and perspiration. Autonomic nerves that reach the heart, diaphragm, and sweat glands control these actions.
- After it was determined that a threat no longer existed, the parasympathetic nervous system kicked in and reversed the physical responses. You started to calm down and things eventually returned to normal.

3.3-9. Provide two reasons why Javier, who is being chased by a bear in the woods, can see better and run faster than normal.
Difficulty: 3
Question ID: 3.3-9
Page Ref: 95
Topic: The Endocrine System
Skill: Applied
Objective: 3.7
Answer: Explain that under stress, the adrenal gland is activated, releasing adrenaline into Javier's system, which results in dilation of the pupils for better vision and increased blood flow to his legs for faster running.

3.3-10. Stefan knows that his car has a problem but cannot identify its source. Describe a similar problem associated with the EEG (electroencephalograph).
Difficulty: 3
Question ID: 3.3-10
Page Ref: 98
Topic: A Tour of Brain Mapping Methods
Skill: Applied
Objective: 3.8
Answer: Explain that the EEG has high temporal resolution, meaning it can detect very rapid changes in electrical activity in the brain. However, it has low spatial resolution, meaning the actual source of the activity is hard to determine.

3.3-11. Discuss the various types of neuroimaging, including the strengths and weaknesses of each.
Difficulty: 3
Question ID: 3.3-11
Page Ref: 99–100
Topic: A Tour of Brain-Mapping Methods
Skill: Applied
Objective: 3.8
Answer: Answers will vary but should contain the following for full credit.

- Researchers developed imaging methods to meet clinical and research needs unmet by other techniques. Each imaging method offered some advantage over previous methods. As a group, these imaging methods enable us to peer inside the brain or body.
- The CT scan is a three-dimensional reconstruction of many x-rays taken though a part of the body, such as the brain. It shows much more detail than an individual x-ray.
- The MRI measures the release of energy from water in biological tissues following exposure to a uniform magnetic field. MRI images are superior to CT scans for detecting soft tissues, such as those in the brain. A brain tumor shows up particularly well on an MRI image because a tumor consists of soft tissue.
- Positron emission tomography (PET) is a functional imaging technique, meaning that it measures changes in the brain's activity levels. PET is an invasive tool that requires the injection of radioactive glucoselike molecules into the patient. Because PET is invasive, researchers later looked for functional imaging methods that wouldn't require injections.
- The fMRI measures the change in blood oxygen level and is an indirect correlate of neural activity. The fMRI relies on magnetic fields, as does MRI. Whereas MRI has a high resolution, fMRI operates at a low resolution so that researchers can snap many scans in rapid succession. Individual fMRI images aren't very sharp, but the method shows changes in brain activity level over time because it creates a series of images.
- Transcranial magnetic stimulation (TMS) uses strong and rapidly changing magnetic fields to induce electric fields in the brain. Depending on the level of stimulation, TMS can either enhance or interrupt brain function. Whereas TMS applies magnetic fields to the brain, magnetoencephalography (MEG) measures tiny magnetic fields, and in this way detects electrical activity in the brain and in the rest of the nervous system. MEG has good spatial resolution and better temporal resolution than PET and fMRI scans.

3.3-12. Discuss the evidence for or against the popular notion that people are either left-brained or right-brained.

Difficulty: 2
Question ID: 3.3-12
Page Ref: 102–103
Topic: Which Side of Our Brain Do We Use for What?
Skill: Conceptual
Objective: 3.9
Answer: Answers will vary but should contain the following for full credit.

- Despite the great scientific contribution of split-brain studies, the notion that normal people are either "left-brained" or "right-brained" is a myth. Claims are vast oversimplifications. After reviewing numerous studies, one researcher concluded that we use both sides of our brains in a complementary way. Furthermore, the corpus callosum and other interconnections ensure that both hemispheres are in constant communication.

3.3-13. Describe how scientists use behavioral genetics to study heritability.

Difficulty: 2
Question ID: 3.3-13
Page Ref: 105–106
Topic: Behavioral Genetics: How We Study Heritability
Skill: Conceptual
Objective: 3.11
Answer: Answers will vary but should contain the following for full credit.

- Behavioral genetic designs look at both genetic and environmental influences and allow us to estimate the heritability of traits and diseases. By heritability, we mean the extent to which genes contribute to differences in a trait among individuals.
- Heritability is expressed as a percentage and indicates how much of the variability in a trait across individuals is due to genes.
- Student may include the three major misconceptions: Heritability applies to a single individual rather than differences among individuals—in fact, it applies only to groups; Heritability tells us whether a trait can be changed—in fact, highly heritable traits can be malleable; Heritability is a fixed number—in fact, in can differ across time periods and populations.
- Scientists estimate heritability by means of one of three behavioral genetic designs: family studies, twin studies, and adoption studies. In such studies, scientists note the presence or absence of a behavioral trait or a psychological disorder among different relatives. These studies determine how much genetics contributes to the expression of that trait or disorder.

3.3-14. If it was discovered that the heritability of intelligence was 100 percent, should that affect your psychology professor's willingness to continue teaching?

Difficulty: 3
Question ID: 3.3-14
Page Ref: 106
Topic: Behavioral Genetics: How We Study Heritability
Skill: Applied
Objective: 3.11
Answer: Explain that although an index of 100 suggests that the basis for intelligence is determined solely by genetics, it still can be modified by the environment, and thus your professor should teach on.

Critical Thinking Short Answer

3.4-1. With all the different methods for studying the brain, how does one decide which method to use?

Difficulty: 2
Question ID: 3.4-1
Page Ref: 97–100
Topic: A Tour of Brain-Mapping Methods
Skill: Conceptual
Objective: 3.8
Answer: Answers will vary but should contain the following for full credit.

- There are many different methods for studying the brain. The method one uses often is determined by factors such as the invasiveness of the procedure or the purpose of the study. For example, because it's noninvasive, researchers frequently use EEG in both animal and human experiments. The EEG has high temporal resolution, meaning it can detect very rapid changes in electrical activity in the brain. However, it has low spatial resolution, meaning the actual source of the activity is hard to determine.
- Although electrical recording and stimulation provided the initial probes to map mind functions onto brain areas, a virtual explosion of brain research occurred with the advent of brain scans or what we call neuroimaging. Researchers developed imaging methods to meet clinical and research needs unmet by other techniques. Each imaging method offered some advantage over previous methods. As a group, these imaging methods enable us to peer inside the brain or body.
- The CT scan shows much more detail than an individual x-ray. The MRI shows structural detail using a totally different principle. MRI images are superior to CT scans for detecting soft tissues, such as those in the brain. Neuroscientists interested in thinking and emotion typically don't use CT or MRI scans, except to localize brain damage. Instead, they typically use the functional imaging techniques.
- Positron emission tomography (PET) is a functional imaging technique, which means that it measures changes in the brain's activity levels. Because PET is invasive, researchers later looked for functional imaging methods that wouldn't require injections of radiotracers.
- Because fMRI measures the change in blood oxygen level, it's an indirect correlate of neural activity. Neuroscientists frequently use fMRI to image brain activity. The fMRI relies on magnetic fields, as does MRI. Whereas MRI has a high resolution, fMRI operates at a low resolution so that researchers can snap many scans in rapid succession. Individual fMRI images aren't very sharp, but the method shows changes in brain activity level over time because it creates a series of images.