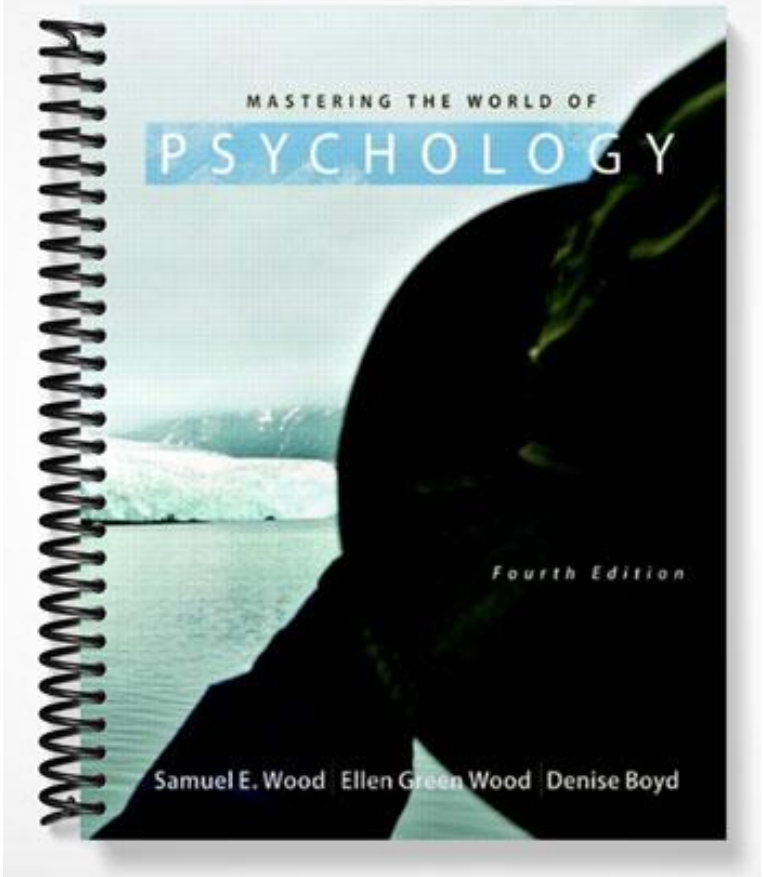
TEST BANK


MASTERING THE WORLD OF
PSYCHOLOGY
Fourth Edition
Samuel E. Wood Ellen Green Wood Denise Boyd

TEST BANK
Chapter 2: Biology and Behavior

Multiple Choice

1) Which of the following statements is accurate regarding electrical activity and the brain?
A) Beta waves are a clear indicator of deep sleep.
B) Electrical activity of individual neurons can be detected with the electroencephalograph.
C) The alpha waves are associated with mental and physical activity.
D) Computerized electroencephalograph (EEG) imaging can show epileptic seizures and other neurological disturbances such as Alzheimer's disease.
E) Because electrical activity in the brain cannot be detected by noninvasive means, using electroencephalography often carries substantial risk.
Answer: D
Diff: 2 Page Ref: 36 *Skill: Factual*
Topic: The EEG and the Microelectrode *Objective: Learning Objective 2.1*

2) _____ was responsible for inventing the electroencephalograph (EEG) in 1924.
A) Luigi Galvani
B) Hans Berger
C) Roger Sperry
D) Ramon Cajal
E) Ronald Ranvier
Answer: B
Diff: 1 Page Ref: 36 *Skill: Factual*
Topic: The EEG and the Microelectrode *Objective: Learning Objective 2.1*

3) Eight-year-old Daria was having some disturbances in her sleep, so her parents took her to a Children's Hospital in her state to undergo various tests. Though she was young, she recalls having to sleep in the hospital room with a bunch of wires stuck to her scalp. She also remembers the doctor telling her parents that the computerized print out of her brain waves offered clues as to why she was having such difficulty sleeping. What device was used in Daria's sleep study?
A) functional magnetic resonance imaging (fMRI)
Incorrect. Daria would have remembered lying still for an hour in a large machine that surrounded her head. She'd also remember the loud banging of the magnets.
B) MEG (magnetoenchephalography)
C) electroencephalograph (EEG)
Correct. The description of the wires and print out is evidence that Daria had an EEG.
D) PET scan (positron-emission tomography)
E) CT scan (computer axial tomography)
Answer: C
Diff: 1 Page Ref: 36 *Skill: Applied*
Topic: The EEG and the Microelectrode *Objective: Learning Objective 2.1*

4) Which of the following imaging technologies would be most appropriate for studying the electrical activity of a single neuron?
A) CT scan (computer axial tomography)

Incorrect. CT scans are excellent for showing anatomy, not single neurons.
B) PET scan (positron-emission tomography)
C) fMRI (functional magnetic resonance imaging)
D) MEG (magnetoenchephalography)
E) Microelectrodes
Correct. This is the strength of using microelectrodes.
Answer: E
Diff: 1 Page Ref: 36 *Skill: Conceptual*
Topic: The EEG and the Microelectrode *Objective: Learning Objective 2.1*

5) The _____ is a brain-scanning technique that uses a rotating, computerized X-ray tube to produce cross-sectional images of the structures of the brain.
A) microelectrode
B) CT scan (computer axial tomography)
C) EEG (the electroencephalogram)
D) MRI (magnetic resonance imaging)
E) deep brain stimulation
Answer: B
Diff: 1 Page Ref: 37 *Skill: Factual*
Topic: Imaging Techniques *Objective: Learning Objective 2.2*

6) Which of the following uses X-rays to detect various abnormalities of the brain including injury sites, tumors, and evidence of recent strokes?
A) a microelectrode
B) MRI (magnetic resonance imaging)
Incorrect. MRIs do not use X-rays.
C) EEG (the electroencephalogram)
D) CT scan (computer axial tomography)
Correct. CT scans are excellent for showing anatomy and use X-rays to do so.
E) deep brain stimulation
Answer: D
Diff: 2 Page Ref: 37 *Skill: Conceptual*
Topic: Imaging Techniques *Objective: Learning Objective 2.2*

7) Conan brought his mother to the hospital when he noticed she couldn't move one side of her body and had great difficulty speaking. The physician informed Conan that his mother may have had a stroke and wanted permission to confirm this speculation by using an imaging device that utilized X-rays. Which of the following was used on Conan's mother?
A) CT scan (computer axial tomography)
Correct. CT scans are excellent for showing anatomy and use X-rays to do so.
B) MRI (magnetic resonance imaging)
Incorrect. MRIs do not use X-rays.
C) EEG (the electroencephalogram)
D) fMRI (functional magnetic resonance imaging)
E) PET scan (positron-emission tomography)
Answer: A
Diff: 2 Page Ref: 37 *Skill: Applied*
Topic: Imaging Techniques *Objective: Learning Objective 2.2*

8) The _____ is a diagnostic scanning technique that produces high-resolution images of the structures of the brain.
A) X-ray
B) microelectrode
C) MRI (magnetic resonance imaging)
D) EEG (the electroencephalogram)
E) CT scan (computer axial tomography)
Answer: C
Diff: 1 Page Ref: 37 *Skill: Factual*
Topic: Imaging Techniques *Objective: Learning Objective 2.2*

9) Lucinda needs find the location of her patient's tumor, but she does not want to expose the patient to X-rays. Which of the following imaging technologies would be best suited for this task?
A) a microelectrode
B) CT scan (computer axial tomography)
Incorrect. CT scans use X-rays.
C) EEG (the electroencephalogram)
D) MRI (magnetic resonance imaging)
Correct. MRIs offer excellent resolution of the image and do not use X-rays in doing so.
E) deep brain stimulation
Answer: D
Diff: 1 Page Ref: 37 *Skill: Applied*
Topic: Imaging Techniques *Objective: Learning Objective 2.2*

10) The _____ maps patterns of blood flow, oxygen use, and glucose consumption in the brain.
A) CT scan (computer axial tomography)
B) MRI (magnetic resonance imaging)
C) EEG (the electroencephalogram)
D) fMRI (functional magnetic resonance imaging)
E) PET scan (positron-emission tomography)
Answer: E
Diff: 2 Page Ref: 37 *Skill: Factual*
Topic: Imaging Techniques *Objective: Learning Objective 2.2*

11) RaeAnn is a researcher who studies the effects of drug use in humans. She is specifically looking to understand the action of particular drugs on the brain and other bodily organs. Which of the following imaging techniques will allow her to engage in this type of research?
A) CT scan (computer axial tomography)
B) MRI (magnetic resonance imaging)
Incorrect. MRI scans do not show activity or action in the brain.
C) PET scan (positron-emission tomography)
Correct. PET scans can show action and activity in the brain.
D) fMRI (functional magnetic resonance imaging)
E) EEG (the electroencephalogram)
Answer: C
Diff: 3 Page Ref: 37 *Topic: Imaging Techniques*

Skill: Applied *Objective: Learning Objective 2.2*

12) Which of the following is FALSE regarding brain imaging?
A) Recent research indicates, to varying degrees, that the structure and function of the brain differ in people who have serious psychological disorders.
B) MRI (magnetic resonance imaging) utilizes X-rays to create high resolution images of the brain.
C) CT (computer axial tomography) scans and MRI (magnetic resonance imaging) scans can show what the brain looks like, but they cannot reveal what the brain is doing.
D) PET (positron-emission tomography) scans capture both the structure and the function of the brain.
E) Some of the imaging techniques used now can reveal where and how drugs affect the brain.
Answer: B
Diff: 3 Page Ref: 37 *Skill: Factual*
Topic: Imaging Techniques *Objective: Learning Objective 2.2*

13) _____ are specialized cells that conduct impulses through the nervous system.
A) Hormones
B) Gametes
C) Neurons
D) Lesions
E) Convolutions
Answer: C
Diff: 1 Page Ref: 37 *Skill: Factual*
Topic: The Neurons & the Neurotransmitters *Objective: Learning Objective 2.3*

14) Neurotransmitters are
A) protein molecules found on dendrites.
B) small, sphere shaped containers that fuse with the cell membrane.
C) chemical messengers that carry information from neuron to neuron.
D) protein molecules found on somas.
E) white, fatty substances that serve to insulate axons.
Answer: C
Diff: 1 Page Ref: 38 *Skill: Factual*
Topic: The Neurons & the Neurotransmitters *Objective: Learning Objective 2.3*

15) All of the following are types of neurons EXCEPT
A) motor neurons.
B) afferent neurons.
C) sensory neurons.
D) systemic neurons.
E) interneurons.
Answer: D
Diff: 2 Page Ref: 38 *Skill: Factual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

16) Which type of neuron transmits information from the brain and spinal cord to the rest of the body for movement?
A) efferent neurons
Correct. Also known as motor neurons, efferent neurons allow for movement.
B) afferent neurons
Incorrect. Afferent neurons, also known as sensory neurons, are not for movement of the body.
C) sensory neurons
D) interneurons
E) systemic neurons
Answer: A
Diff: 2 Page Ref: 38 *Skill: Conceptual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

17) Which type of neuron is responsible for getting information from the senses to the brain?
A) motor neurons
B) interneurons
C) efferent neurons
Incorrect. Also known as motor neurons, efferent neurons allow for movement.
D) systemic neurons
E) afferent neurons
Correct. Afferent neurons, also known as sensory neurons, for taking sensory information into the brain.
Answer: E
Diff: 2 Page Ref: 38 *Skill: Conceptual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

18) Which type of neuron is responsible for transmitting information from neurons in the brain to neurons in the spinal cord?
A) efferent neurons
B) interneurons
C) afferent neurons
D) sensory neurons
E) motor neurons
Answer: B
Diff: 1 Page Ref: 38 *Skill: Factual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

19) _____ neurons relay messages from the senses to the brain whereas _____ neurons relay information from the brain to the body for movement.
A) Motor; sensory
B) Sensory; afferent
C) Efferent; systematic
D) Afferent; efferent
E) Efferent; afferent

Answer: D
Diff: 3 Page Ref: 38 *Skill: Factual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

20) Information that a football is heading directly toward your face is transmitted via _____ neurons while the ability of your arms and hands rising up to prevent you from taking the hit is due to your _____ neurons.
A) motor; systematic
B) sensory; efferent
Correct. Sensory neurons take in sensory information, so they'll be key in allowing us to see a football is heading toward our face. Our efferent (motor) neurons will allow us to catch it or move out of the way.
C) afferent; sensory
Incorrect. Afferent neurons are the same as sensory neurons so the sensory information will get transmitted to the brain, but we wouldn't be able to move.
D) efferent; sensory
E) systematic; sensory
Answer: B
Diff: 3 Page Ref: 38 *Skill: Applied*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

21) The purpose of the cell body, or soma, is to
A) transmit the information down the length of the neuron.
Incorrect. This is referring to the axon.
B) remove waste products from the brain.
C) hold the neurons together.
D) carry out the metabolic functions essential for the neuron to remain alive.
Correct. The cell body is the life force of the neuron.
E) speed up the transmission of the information.
Answer: D
Diff: 2 Page Ref: 38 *Skill: Conceptual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

22) Which of the following is TRUE regarding the cell body?
A) They are specialized cells in the brain and spinal cord that support neurons, remove waste products, and nourish neurons.
B) They are sprouts from the axon that end in bulbous terminals which create neurotransmitters.
C) It is a cable-like structure that transmits information down the length of the neuron.
D) It is the part of the neuron that contains the nucleus and carries out the metabolic functions of that neuron.
E) It is made of chemicals that are ultimately responsible for interfering with neural transmission.
Answer: D
Diff: 2 Page Ref: 38 *Skill: Factual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

23) Of the following choices, which best completes this statement? The _____ take(s) in information, which is then sent to the _____ and finally to the _____ where it travels down the length of the neuron.

A) dendrites; cell body; axon
Correct. Neural information passes in this order.
B) axon; dendrites; soma
C) soma; axon; dendrites
D) cell body; axon; dendrite
Incorrect. While somas can take in information due to receptors on them, the information wouldn't end up at the dendrite.
E) dendrites; synapse; axon
Answer: A
Diff: 2 Page Ref: 38 *Skill: Conceptual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

24) Which of the following would occur if the dendrites were no longer able to do their job?
A) No new information would ever reach the cell body.
Incorrect. Receptor sites are present on cell bodies, so some information would still be taken in.
B) No changes in the processing of neural information would take place because dendrites play no role in neural transmission.
C) The axon terminals would begin to take in information from other neurons.
D) The axons would split and take over the function of the dendrites.
E) Because cell bodies also receive signals directly from other neurons, some neural communication would continue to take place.
Correct. If functioning of the dendrites were impaired, some neural communication could still take place due to the receptor sites on cell bodies.
Answer: E
Diff: 3 Page Ref: 38 *Skill: Conceptual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

25) In addition to being involved in the transmission of pain sensations and providing support to brain cells, _____ are specialized cells in the brain and spinal cord that make up more than one-half of the brain's volume.
A) glial cells
B) hormones
C) neurons
D) lesions
E) polygenic cells
Answer: A
Diff: 2 Page Ref: 38 *Skill: Factual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

26) Which of the following is FALSE regarding the glial cells?
A) They provide nourishment to neurons.
B) They remove waste products.
C) They make up more than one half the volume of the brain.
D) They communicate with receiving neurons.
E) Glial cells in the spinal cord appear to be involved in the transmission of pain sensations.
Answer: D
Diff: 2 Page Ref: 38 *Skill: Factual*
Topic: The Structure of the Neuron *Objective: Learning Objective 2.3*

27) Where does the actual exchange of neural information between neurons take place?
A) dendritic branches
B) axon
Incorrect. The neural message runs down the axon, but communication <u>between</u> neurons does not take place here.
C) nucleus
D) synapse
Correct. The synapse is the site for important neural communication.
E) myelin sheath
Answer: D
Diff: 1 Page Ref: 38 *Skill: Conceptual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

28) The fluid filled space that separates axon terminals is referred to as the _____.
A) node of Ranvier.
B) glial space.
C) synaptic cleft.
D) myelin sheath.
E) soma.
Answer: C
Diff: 1 Page Ref: 38 *Skill: Factual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

29) Which of the following is FALSE regarding the communication between neurons?
A) Neural communication occurs every time an individual moves or has a thought.
B) The synapse is the site where the pre-synaptic neuron communicates with the post-synaptic neuron.
Incorrect. The neuron before the synapse is called pre-synaptic and the neuron after the synapse is called post-synaptic.
C) The permeability of the cell membrane is what allows the electrical impulse to travel down the length of the neuron.
D) A single neuron may form synapses with thousands of other neurons.
E) Neurons send and receive information via physical contact between one another.
Correct. Neurons do not actually touch at their transmission site. There exists a tiny space (synapse) instead.
Answer: E
Diff: 3 Page Ref: 38 *Skill: Conceptual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

30) When a neuron is at rest, it carries
A) a slightly positive electrical potential.
B) a largely positive electrical potential.
C) a neutral electrical potential.
D) a slightly negative electrical potential.
E) a largely negative electrical potential.
Answer: D
Diff: 3 Page Ref: 38-39 *Topic: Communication between Neurons*

Skill: Factual *Objective: Learning Objective 2.4*

31) At rest, a neuron carries the electrical potential of _____ millivolts, which is called the _____.
A) -70; resting potential
B) -30; refractory period
C) 0; neural threshold
D) 30; refractory period
E) 50; resting potential
Answer: A
Diff: 2 Page Ref: 39 *Skill: Factual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

32) A neuron's resting potential is _____ millivolts.
A) –-70
B) –-30
C) 0
D) 50
E) 70
Answer: A
Diff: 1 Page Ref: 39 *Skill: Factual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

33) Jared was playing trivia at his local family restaurant. When a question came up about neurons, he was pretty excited because he had just aced his introductory psychology course. In order for him to win the game, he needed to answer one more question. Then he heard this: "*What is the resting potential of a neuron?*" Jared excitedly shouted out _____ and won the game.
A) -100 megavolts
B) -70 millivolts
Correct. Jared must have been paying attention in class because -70 millivolts is the answer.
C) 50 millivolts
D) 70 megavolts
Incorrect. The correct resting potential is negative.
E) 100 millivolts
Answer: B
Diff: 1 Page Ref: 39 *Skill: Applied*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

34) Suppose a neuron was resting comfortably when, all of the sudden and for a brief moment, it experienced an inflow of positive neurons. What did the neuron just experience?
A) an action potential
Correct. This is an alternate explanation of an action potential.
B) a refractory period
Incorrect. This is the brief period of time when a neuron cannot fire.
C) a synapse
D) a generative period
E) the all-or-none law
Answer: A

Diff: 2 Page Ref: 39 *Skill: Conceptual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

35) A(n) _____ is the sudden reversal of the resting potential, which initiates the firing of a neuron.
A) node of Ranvier
B) all-or-none law
C) ionic fusion
D) action potential
E) parasympathetic reflex
Answer: D
Diff: 2 Page Ref: 39 *Skill: Factual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

36) Which of the following would likely occur if an individual's brain lost the ability to create any action potentials?
A) The individual would have some impairment in movement, but no other obvious deficit in functioning.
Incorrect. The person would experience more than impairment in movement. All movement (heartbeat, breathing) would stop and death would result.
B) This person would show speech impairments.
C) Because information in the brain could no longer be transmitted, death would likely result.
Correct. No action potentials mean no communication. The body would no longer function.
D) The individual would retain most function, but vision would be impaired.
E) Because action potentials are not necessary for neural communication, no deficits in functioning would be noted.
Answer: C
Diff: 3 Page Ref: 39 *Skill: Conceptual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

37) What causes the action potential to move down the axon?
A) the resting potential initiates all ions channels to close
B) positive ions surf down the dendrites
C) the all-or-none law
D) the opening and closing of ion channels, segment by segment, down the length of the axon
E) the fusion of two neurons
Answer: D
Diff: 3 Page Ref: 39 *Skill: Factual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

38) Imagine that Max is a neuron who is engaging in neuron-like activities. Max can't help but notice that after he fires, he becomes exhausted and cannot fire again for a moment. What might Max be experiencing?
A) a synapse
B) a generative period
C) a refractory period
Correct. This is the brief period of time when a neuron cannot fire until the resting potential is restored.
D) an action potential

Incorrect. An action potential is the firing of a neuron.
E) the all-or-none law
Answer: C
Diff: 2 Page Ref: 39 *Skill: Applied*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

39) When does a neuron experience the refractory period?
A) just before binding
B) immediately after that particular neuron fires
Correct. For that brief moment (the refractory period), the neuron needs to wait to fire again until the resting potential is restored.
C) just after the neurotransmitter is released into the synapse
D) soon after reuptake
E) just before that particular neuron fires
Incorrect. This is when the neuron has the energy to fire.
Answer: B
Diff: 3 Page Ref: 39 *Skill: Conceptual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

40) Imagine you are jogging in the park and see a vicious, stray dog running right toward you. How will that neural message be different from the one sent after seeing a child playing on the swing with his Dad?
A) The neurons involved in seeing the child only partially fire thus creating a weaker sensation.
Incorrect. When any neuron fires, it follows the all-or-none law, so there is no partial firing of anything.
B) The neurons involved in seeing the dog fire completely thus creating a stronger sensation.
C) Many neurons carrying a calm sensation fire upon seeing the child.
D) Many neurons fire within a short period of time upon seeing the dog.
Correct. This rate of firing is a way in which our brains distinguish how relevant stimuli are.
E) The neurons fire very quickly upon seeing the child.
Answer: D
Diff: 3 Page Ref: 40 *Skill: Applied*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

41) Which of the following is FALSE of the myelin sheath?
A) It insulates the axon.
B) It plays a role in multiple sclerosis (MS).
C) It serves to speed up transmission of a neural impulse.
D) It often contains numerous gaps, called nodes of Ranvier.
E) It fuels the synaptic cleft.
Answer: E
Diff: 2 Page Ref: 41 *Skill: Factual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

42) Multiple sclerosis (MS) involves a deterioration of the _____.
A) neurotransmitters
B) myelin sheath
C) dendrites
D) axon

E) synaptic cleft
Answer: B
Diff: 1 Page Ref: 41 *Skill: Factual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

43) According to your text, which of the following would NOT result if the myelin sheath began to deteriorate?
A) coordination would become impaired and eventually lost
B) action potentials will become more intense
Correct. Action potentials fire in an all-or-none manner.
C) movements would become jerky
Incorrect. This is a symptom of MS.
D) muscles would become weak
E) speech would become impaired
Answer: B
Diff: 3 Page Ref: 42 *Skill: Conceptual*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

44) Lisa has recently noticed that her muscles seem weaker than normal and she has experienced some difficulty with her speech. Because the symptoms did not seem to be going away, she made an appointment with her doctor. In the three weeks she had to wait for her appointment day to arrive, she began to notice jerky movements when she was engaged in various tasks. After some brain imaging was completed, her doctor learned that her myelin sheath was beginning to deteriorate. What will the doctor likely tell Lisa?
A) "I am sorry, Lisa, but you have multiple sclerosis."
Correct. Lisa's symptoms and brain imaging results equal a diagnosis of MS.
B) "Lisa, the changes in your myelin sheath are age related."
C) "The good news is that your imaging results show you have the brain age of a teenager."
D) "While it is difficult to report, you have Alzheimer's disease."
Incorrect. Alzheimer's would affect memory long before it would affect muscle movement.
E) "I am sorry to tell you, Lisa, but you have cystic fibrosis."
Answer: A
Diff: 1 Page Ref: 41 *Skill: Applied*
Topic: Communication between Neurons *Objective: Learning Objective 2.4*

45) _____ are small, sphere-shaped containers with thin membranes that hold neurotransmitters.
A) Synaptic clefts
B) Nodes of Ranvier
C) Synaptic vesicles
D) Reuptake sites
E) Ion channels
Answer: C
Diff: 2 Page Ref: 41 *Skill: Factual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

46) What structure houses the neurotransmitters until the action potential arrives at the axon terminal?
A) nodes of Ranvier

B) receptor sites on post-synaptic neurons
C) the nucleus
D) synaptic vesicles
E) soma
Answer: D
Diff: 3 Page Ref: 41 *Skill: Factual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

47) Imagine that you are a hotel manager. Your hotel allows guests with names like Ace Etylcholine, Dopa Meen, and Sara Tonin. Considering you live in the village of Neural Transmission, what would be the most accurate name for your hotel?
A) Myelin Sheath Mansion
B) Watson's Warehouse
C) The Soma House
Incorrect. The soma does not store neurotransmitters, but the synaptic vesicles do.
D) The Synaptic Vesicle Extended Stay
Correct. The synaptic vesicle houses acetylcholine, dopamine, and serotonin (etc.) for neural transmission.
E) Glial Guesthouse
Answer: D
Diff: 3 Page Ref: 41 *Skill: Applied*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

48) Which of the following statements is true regarding neurotransmitters and receptor sites?
A) Neurotransmitters have the ability to bind with any open receptor.
Incorrect. Certain neurotransmitters will fit into certain receptors.
B) Because receptor sites never change, they only admit particular neurotransmitters.
C) Most receptor sites are universal and thus can accept hundreds of neurotransmitters.
D) Binding is a simple, fixed, and inflexible process.
E) Because receptors are somewhat changeable, they will accept certain neurotransmitters at particular times.
Correct. Although the receptor sites are flexible, a certain selectivity still applies when it comes to which neurotransmitters will fit into which receptor sites.
Answer: E
Diff: 3 Page Ref: 41–42 *Skill: Conceptual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

49) Imagine you are in Florida and plan to travel to an island. The only way to get onto that island is by way of a little boat. Some boats can fit into the port the island has, but some cannot. Starting in Florida and using this scenario, which best completes this sentence? Florida represents _____, the boat represents _____, the distance between Florida and the island represents _____, the port represents _____, and the island represents _____.
A) the axon; the neurotransmitter; the synapse; the receptor; the dendrite
Correct. The long, protruding part of Florida is the axon; the boat which travels from the axon (Florida) to the island (dendrite) by way of the water (synapse) is the neurotransmitter. The port into which the boat fits is the receptor.
B) the axon; the synapse; the receptor; the synaptic cleft; the dendrite
C) the axon; the synapse; receptor; the neurotransmitter; another axon

Incorrect. The boat represents a neurotransmitter, not the synapse.
D) the dendrite; the vesicle; the soma; the receptor; the axon
E) the dendrite; the neurotransmitter; the receptor; the synapse; the axon
Answer: A
Diff: 3 Page Ref: 41–42 *Skill: Conceptual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

50) Which of the following is FALSE regarding the concept of binding?
A) Neurotransmitters can bind on the dendrites of receiving neurons.
B) After binding to the appropriate receptor site, the neurotransmitter's action can be excitatory.
C) Neurotransmitters can bind on the axons of receiving neurons.
Correct. Neurotransmitters can bind with dendrites and cell bodies, not axons.
D) After binding to the appropriate receptor site, the neurotransmitter's action can be inhibitory.
E) Neurotransmitters can bind on the cell bodies of receiving neurons.
Incorrect. As the book states, neurotransmitters can also bind with receptors on cell bodies.
Answer: C
Diff: 3 Page Ref: 42 *Skill: Conceptual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

51) _____ are protein molecules on the surface of the dendrites and cell bodies that have distinctive shapes and only interact with specific neurotransmitters.
A) Neurohormones
B) Receptors
C) Synaptic vesicles
D) Somas
E) Nodes of Ranvier
Answer: B
Diff: 1 Page Ref: 42 *Skill: Factual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

52) Once neurotransmitters are released into the synapse, which of the following IS NOT an accurate option?
A) The neurotransmitters may go through the reuptake process.
B) The neurotransmitters may bind with receptor sites found on nearby cell bodies.
Incorrect. As the book states, neurotransmitters <u>can</u> also bind with receptors on cell bodies.
C) The neurotransmitters may not bind and eventually be recycled by the axon terminals from which they were released.
D) The neurotransmitters will adhere to each other and form new synapses.
Correct. This is an inaccurate statement because neurotransmitters do not bind/adhere with each other.
E) The neurotransmitters may bind with receptor sites found on nearby dendrites.
Answer: D
Diff: 2 Page Ref: 42 *Skill: Conceptual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

53) Reuptake occurs when
A) neurotransmitters bind with their appropriate receptor sites.
B) unused neurotransmitters are broken down and recycled for later use.

Incorrect. This is not an accurate description of reuptake.
C) neurotransmitters are reabsorbed by the axon terminal from the synapse, intact and ready for later use.
Correct. This is an explanation of reuptake.
D) receptors change shape to allow for the binding of neurotransmitters.
E) the synaptic vesicles merge with the cell membrane to release neurotransmitters.
Answer: C
Diff: 3 Page Ref: 42 *Skill: Conceptual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

54) _____ is the main neurotransmitter involved in the contraction and release of muscles.
A) GABA
B) Glutamate
C) Serotonin
D) Epinephrine
E) Acetylcholine
Answer: E
Diff: 1 Page Ref: 42 *Skill: Factual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

55) _____ is the primary neurotransmitter involved in mood, sleep, appetite, impulsivity, and aggression.
A) Acetylcholine
B) Norepinephrine
C) Serotonin
D) Glutamate
E) GABA
Answer: C
Diff: 1 Page Ref: 42 *Skill: Factual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

56) Mary is waiting to be evaluated by a physician. She complains of problems eating, sleeping, and changes in mood. She also reports that she is quick to become frustrated. Mary likely has issues with _____.
A) serotonin.
Correct. Serotonin is involved in appetite, mood, sleeping, and aggression (frustration/anger tolerance).
B) dopamine.
Incorrect. Dopamine is involved with movement, attention, learning, and pleasure.
C) glutamate.
D) norepinephrine.
E) acetylcholine.
Answer: A
Diff: 2 Page Ref: 42 *Skill: Applied*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

57) Aaron has been taking college classes for the past four semesters, but is really struggling to pass his courses. He has had difficulty learning since he was young. Which of the following neurotransmitters is most likely involved in Aaron's learning difficulties?

A) endorphins
B) GABA
C) epinephrine
D) serotonin
Incorrect. Serotonin is involved in appetite, mood, sleeping, and aggression.
E) acetylcholine
Correct. Acetylcholine is involved in learning and memory.
Answer: E
Diff: 3 Page Ref: 42 *Skill: Applied*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

58) While sliding into home plate to score the winning run, Chris scraped her leg and elbow. What would account for her not really feeling that pain until all of the excitement about winning the game wore off?
A) a release of serotonin
B) a release of endorphins
Correct. Endorphins are our natural pain reliever.
C) a release of glutamate
D) a release of acetylcholine
Incorrect. Acetylcholine is involved in movement and learning.
E) a release of GABA
Answer: B
Diff: 2 Page Ref: 42 *Skill: Applied*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

59) Which of the following is FALSE?
A) Dopamine plays a role in movement.
B) Serotonin plays a role in mood.
C) Epinephrine plays the primary role in controlling anxiety.
D) Acetylcholine plays a role in learning.
E) Endorphins play a role in feelings of well being and pain relief.
Answer: C
Diff: 2 Page Ref: 42 *Skill: Factual*
Topic: Neurotransmitters *Objective: Learning Objective 2.5*

60) The central nervous system is made up of
A) the neurotransmitters and entire hormone system.
B) the brain and spinal cord.
C) the cerebral cortex and hypothalamus.
D) nerve bundles not encased in bone.
E) the endocrine system and the spinal cord.
Answer: B
Diff: 1 Page Ref: 43 *Skill: Factual*
Topic: The Human Nervous System *Objective: Learning Objective 2.6*

61) When deciphering the difference between the peripheral nervous system and the central nervous system, which of the following is true?
A) The central nervous system contains nerves surrounded only by neural tissue.

B) The peripheral nervous system includes the brain and spinal cord.
C) The peripheral nervous system contains the spinal nerves and endocrine system.
D) The peripheral nervous system transmits messages to and from the body and brain.
E) The central nervous system is a component within the peripheral nervous system.
Answer: D
Diff: 2 Page Ref: 43 *Skill: Factual*
Topic: The Human Nervous System *Objective: Learning Objective 2.6*

62) Which of the following is FALSE regarding the peripheral nervous system?
A) It is devised of the brain and spinal cord.
B) It has the somatic nervous system as one of its components.
C) It connects the CNS to the rest of the body.
D) It has the autonomic nervous system as one of its components.
E) It plays a role in the fight-or-flight response.
Answer: A
Diff: 2 Page Ref: 43-44 *Skill: Factual*
Topic: The Peripheral Nervous System *Objective: Learning Objective 2.6*

63) The somatic nervous system, which is part of the _____, helps control _____.
A) central nervous system; voluntary muscle movement
Incorrect. The somatic nervous system is a division of the PNS, not the central nervous system.
B) peripheral nervous system; voluntary muscle movement
Correct. The somatic nervous system is a division of the PNS and is involved in voluntary movement.
C) autonomic nervous system; involuntary muscle movement
D) peripheral nervous system; involuntary muscle movement
E) central nervous system; involuntary muscle movement
Answer: B
Diff: 2 Page Ref: 43–44 *Skill: Conceptual*
Topic: The Peripheral Nervous System *Objective: Learning Objective 2.6*

64) The autonomic nervous system, which is part of the _____, helps control _____.
A) central nervous system; voluntary muscle movement
Incorrect. The autonomic nervous system is a division of the PNS, not the central nervous system.
B) peripheral nervous system; voluntary muscle movement
C) autonomic nervous system; involuntary muscle movement
D) peripheral nervous system; involuntary muscle movement
Correct. The autonomic nervous system is a division of the PNS and is involved in involuntary movement.
E) central nervous system; involuntary muscle movement
Answer: D
Diff: 2 Page Ref: 44 *Skill: Conceptual*
Topic: The Peripheral Nervous System *Objective: Learning Objective 2.6*

65) The _____ nervous system prepares our bodies for action whereas the _____ nervous system helps our bodies return to a normal state.
A) central; peripheral
B) peripheral; central
C) somatic; autonomic

D) parasympathetic; sympathetic
E) sympathetic; parasympathetic
Answer: E
Diff: 1 Page Ref: 44 *Skill: Factual*
Topic: The Peripheral Nervous System *Objective: Learning Objective 2.6*

66) While hiking in the Rocky Mountains, you happen to cross the path of a mountain lion. Almost immediately, your heart rate increases, your breathing quickens, and your pulse increases. This physiological response is referred to as the _____ which is activated by the _____.
A) endocrine response; sympathetic nervous system
B) endocrine response; parasympathetic nervous system
C) fight-or-flight response; sympathetic nervous system
D) fight-or-flight response; parasympathetic nervous system
E) endocrine response; autonomic nervous system
Answer: C
Diff: 2 Page Ref: 44 *Skill: Applied*
Topic: The Peripheral Nervous System *Objective: Learning Objective 2.6*

67) Which of the following statements is true of the fight-or-flight response?
A) Both the pupils and the lungs dilate.
Correct. This allows for better vision and more efficient breathing to get away from the predator.
B) When activated, your digestive system activity increases.
C) Your heart rate and breathing slows.
D) It is controlled by the somatic nervous system.
Incorrect. The fight-or-flight response is controlled by the autonomic nervous system.
E) Your pulse rate decreases.
Answer: A
Diff: 2 Page Ref: 44 *Skill: Conceptual*
Topic: The Peripheral Nervous System *Objective: Learning Objective 2.6*

68) Michael notices that every time he gets what he calls an "adrenalin rush," his heart rate and pulse quicken and he feels a surge of energy. He also notices that it takes his body longer than normal to return back to feeling calm and normal. What might explain Michael's delay in coming down from his "adrenalin rush"?
A) It is clear that Michael's so-called "adrenalin rush" is a rare psychological disorder.
B) Michael's parasympathetic nervous system may not be activating as quickly as other people's parasympathetic nervous system.
Correct. The parasympathetic nervous system calms us down after sympathetic nervous system activation. Michael's is taking a bit longer to activate.
C) Michael's somatic nervous system might have prevented the transmission of all action potentials.
D) He must focus on engaging his sympathetic nervous system, because that is what calms him after the energy surge.
Incorrect. It is the parasympathetic nervous system calms us down after sympathetic nervous system activation.
E) His sympathetic nervous system might be too slow.
Answer: B
Diff: 3 Page Ref: 44 *Skill: Applied*
Topic: The Peripheral Nervous System *Objective: Learning Objective 2.6*

69) Which of the following is FALSE regarding the spinal cord?
A) The spinal cord links the body with the brain.
B) It is protected by bone and fluid.
C) The spinal cord allows sensory information, such as touching something soft, to reach the brain.
D) It always requires assistance from the brain to function.
E) The spinal cord transmits messages between the brain and nerves in other parts of the body.
Answer: D
Diff: 3 Page Ref: 45 *Skill: Factual*
Topic: The Spinal Cord *Objective: Learning Objective 2.7*

70) The part of the brain involved in controlling heart rate, breathing, blood pressure, and many other functions is the
A) forebrain.
B) motor cortex.
C) midbrain.
D) substantia nigra.
E) hindbrain.
Answer: E
Diff: 1 Page Ref: 45 *Skill: Factual*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

71) The brainstem is made up of which three components?
A) corpus callosum, medulla, and motor cortex
B) pons, thalamus, and amygdala
C) hypothalamus, pons, and reticular formation
D) motor cortex, limbic system, and medulla
E) medulla, pons, and reticular formation
Answer: E
Diff: 2 Page Ref: 45 *Skill: Factual*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

72) Darnell got into a terrible boating accident one weekend. The doctors found that he had substantial damage to his brainstem. Based on the function of the brainstem, what effect will the injury have?
A) an impairment in speech
B) an impairment in regulating feelings
C) a visual impairment
D) death
Correct. Because the brainstem is so essential for life, substantial damage will likely result in death.
E) complete paralysis, although he will remain conscious and able to speak
Incorrect. Paralysis is often caused by a spinal cord injury.
Answer: D
Diff: 2 Page Ref: 45 *Skill: Applied*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

73) The _____, which is part of the brainstem, plays a role in arousal and attention.

A) hypothalamus
B) reticular formation
C) forebrain
D) thalamus
E) pons
Answer: B
Diff: 2 Page Ref: 45 *Skill: Factual*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

74) LaVerne consumed alcohol and then got behind the wheel to drive her car. Unfortunately, she caused a serious accident that resulted in a pedestrian getting hurt. She immediately called 911 to report the accident and stayed with the injured pedestrian. Once the ambulance arrived, she could hear the EMS worker shout that the pedestrian kept dozing off and that poor arousal was a concern. LaVerne was deeply concerned about the pedestrian and hoped he didn't have an injury to his _____.
A) amygdala.
Incorrect. The amygdala is involved in processing fear and anger. These are not of concern at this point.
B) cerebellum.
C) reticular formation.
Correct. The reticular formation is involved in maintaining proper arousal and alertness.
D) temporal lobe.
E) corpus callosum.
Answer: C
Diff: 3 Page Ref: 45–46 *Skill: Applied*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

75) Gianna was worried if she fell asleep, she would not hear the cries of her new infant. Which of the following brain structures will allow Gina to hear her child even if she is asleep?
A) the midbrain
B) the parietal lobe
C) the cerebellum
D) the reticular formation
Correct. The reticular formation is involved in maintaining proper arousal and alertness.
E) Broca's area
Incorrect. Broca's area is for speech production.
Answer: D
Diff: 2 Page Ref: 46 *Skill: Applied*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

76) Austin developed a brain tumor in part of his hindbrain. He experienced difficulty with movement, could not sleep as well as he used to, and seemed to have very bizarre dreams. Based on this information, Austin's tumor was likely affecting his _____.
A) thalamus.
B) reticular formation.
Incorrect. If the tumor were here, Austin would have problems maintaining arousal.
C) pons.
Correct. The pons is located in the hindbrain and is involved in sleep, movement, and dreaming.
D) medulla.
E) corpus callosum.

Answer: C
*Diff: 3 Page Ref: 4*6 *Skill: Applied*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

77) The _____ is the part of the brain involved in smooth muscle movement, tone, and posture.
A) corpus callosum
B) cerebellum
C) cerebral cortex
D) cerebrum
E) convolution
Answer: B
Diff: 1 Page Ref: 46 *Skill: Factual*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

78) Jose's friend has an injury to her cerebellum. This injury will likely result in an impairment of which of the following?
A) jogging
Correct. The cerebellum is involved in posture and balance. Jogging will be affected.
B) comprehending speech
C) breathing
D) watching TV
E) creating speech
Incorrect. The cerebellum is not involved in speech production.
Answer: A
Diff: 2 Page Ref: 46 *Skill: Applied*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

79) Damage to the cerebellum will likely result in
A) an inability to solve problems.
B) problems with hearing.
C) an inability to understand language.
Incorrect. The cerebellum is not involved in speech production or reception.
D) difficulty with movement and balance.
Correct. The cerebellum is involved in posture, movement, and balance.
E) a short attention span.
Answer: D
Diff: 1 Page Ref: 46 *Skill: Conceptual*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

80) Andrea was pulled over by the police for swerving in and out of her lane as she was driving. She was instructed to get out of her car and answer some questions. Then she was told to walk in a straight line for about ten steps. Finally, she was instructed to touch her finger to the tip of her nose. These tasks are a quick assessment of the functioning of Andrea's _____, which is temporarily impaired by consuming too much alcohol.
A) amygdala
B) hypothalamus
C) corpus callosum

D) Wernicke's area
Incorrect. Wernicke's area is involved in understanding language.
E) cerebellum
Correct. These tasks Andrea had to perform assess cerebellar function.
Answer: E
Diff: 2 Page Ref: 46–47 *Skill: Applied*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

81) The structure that links the physiological functions of the hindbrain to the cognitive functions of the forebrain is the
A) reticular formation.
B) midbrain.
C) cerebral cortex.
D) corpus callosum.
E) spinal cord.
Answer: B
Diff: 1 Page Ref: 47 *Skill: Factual*
Topic: The Midbrain *Objective: Learning Objective 2.7*

82) The substantia nigra is part of the
A) cerebral cortex.
B) forebrain.
C) hindbrain.
D) midbrain.
E) cerebellum.
Answer: D
Diff: 1 Page Ref: 47 *Skill: Factual*
Topic: The Midbrain *Objective: Learning Objective 2.7*

83) Travis picked up his toddler son and ran up the stairs to put him to bed. His _____ allowed him to run up the stairs without giving his muscles any conscious thought.
A) thalamus
B) medulla
C) substantia nigra
Correct. The substantia nigra controls unconscious motor (movement) actions.
D) reticular formation
Incorrect. While the reticular formation is for arousal, the focus of the question is on running up the stairs without giving it much thought.
E) amygdala
Answer: C
Diff: 2 Page Ref: 47 *Skill: Applied*
Topic: The Midbrain *Objective: Learning Objective 2.7*

84) Which of the following impairments would most likely result from damage to the midbrain?
A) an inability to relay information between particular physiological functions and cognitive functions
Correct. This is the duty of the midbrain. Impairment would cause problems in relaying physiological and cognitive functions.

B) an inability to fall asleep
C) an incongruence between what one thinks and what one says
D) an inability to regulate body temperature and respond to signals of thirst and hunger
Incorrect. This choice is referring to the hypothalamus, not the midbrain.
E) an inability to stay asleep
Answer: A
Diff: 3 Page Ref: 47 *Skill: Conceptual*
Topic: The Midbrain *Objective: Learning Objective 2.7*

85) Current research suggests that deficits in dopamine-producing neurons in the substantia nigra may play a large role in which of the following diseases?
A) major depression
B) Alzheimer's disease
C) multiple sclerosis
D) Parkinson's disease
E) anorexia nervosa
Answer: D
Diff: 2 Page Ref: 47 *Skill: Factual*
Topic: The Midbrain *Objective: Learning Objective 2.7*

86) Which of the following brain structures is implicated in Parkinson's disease, a neurological disorder that involves impairment in movement?
A) parietal lobe
B) reticular formation
C) hindbrain
D) pons
E) substantia nigra
Answer: E
Diff: 2 Page Ref: 47 *Skill: Factual*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

87) Which of the following is FALSE regarding the forebrain?
A) It is where cognitive functions are controlled.
B) It contains the brainstem.
C) It is the largest part of the brain.
D) It contains the thalamus and hypothalamus.
E) It contains the limbic system.
Answer: B
Diff: 2 Page Ref: 47 *Skill: Factual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

88) The _____ plays the role of a relay station and is responsible for information flowing in or out of the forebrain.
A) hypothalamus
B) amygdala
C) thalamus
Correct. The thalamus is the brain's sensory switchboard and directs neural information.

D) hippocampus
E) limbic system
Incorrect. The limbic system is involved in emotional expression.
Answer: C
Diff: 2 Page Ref: 47 *Skill: Conceptual*
Topic: The Hindbrain *Objective: Learning Objective 2.7*

89) Where is the thalamus located?
A) above the brainstem
B) below the occipital lobes
C) on the outer surface of the brain nearest the ears
D) attached to the spinal cord just beneath the cerebellum
E) on the outer surface of the brain nearest the forehead
Answer: A
Diff: 3 Page Ref: 47 *Skill: Factual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

90) A receptionist's job is to take incoming phone calls and send them to the appropriate employees so customers' questions can be answered accordingly. Receptionists also welcome visitors and ensure they speak to whomever they came to visit. Which of the following brain structures would have a job similar to that of a receptionist?
A) pons
B) hypothalamus
Incorrect. The hypothalamus is involved in thirst, hunger, and sexual behavior.
C) cerebellum
D) amygdala
E) thalamus
Correct. The thalamus is the brain's sensory switchboard and directs neural information.
Answer: E
Diff: 3 Page Ref: 47 *Skill: Applied*
Topic: The Forebrain *Objective: Learning Objective 2.7*

91) The _____ is a vital brain structure required for the proper processing of sensory information such as vision and hearing.
A) amygdala
B) hippocampus
Incorrect. The hippocampus is for memory and learning.
C) thalamus
Correct. The thalamus directs sensory information (vision and hearing) to the proper part of the brain for processing.
D) substantia nigra
E) temporal lobe
Answer: C
Diff: 3 Page Ref: 47 *Skill: Conceptual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

92) Which of the following brain structures is involved in regulating hunger, thirst, temperature, and

sexual behavior?
A) pons
B) thalamus
C) cerebellum
D) amygdala
E) hypothalamus
Answer: E
Diff: 1 Page Ref: 47 *Skill: Factual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

93) The limbic system includes which two brain structures?
A) cerebrum and cerebellum
B) amygdala and substantia nigra
C) medulla and hippocampus
D) hippocampus and amygdala
E) thalamus and hypothalamus
Answer: D
Diff: 2 Page Ref: 47 *Skill: Factual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

94) Ahmad is about to give his first speech in front of his coworkers. He is trembling slightly, has sweaty palms, can feel his heart racing, and is getting very warm. Which brain structure is likely playing a role in Ahmad's bodily response to giving his speech?
A) thalamus
B) cerebrum
C) hypothalamus
Correct. The hypothalamus regulates body temperature.
D) reticular formation
Incorrect. The reticular formation regulates arousal, not body temperature.
E) hippocampus
Answer: C
Diff: 2 Page Ref: 47 *Skill: Applied*
Topic: The Forebrain *Objective: Learning Objective 2.7*

95) Which of the following is FALSE?
A) An injury to the hypothalamus may result in disturbances in sleep and wakefulness.
Incorrect. The hypothalamus is involved in regulating the circadian rhythm which is involved in sleep/wake cycles.
B) Damage to the hypothalamus might impair one's ability to cool himself/herself by sweating when he/she is overheating.
C) An injury to the hypothalamus may result in changes in sexual behavior.
D) An injury to the hypothalamus may result in impairments in unconscious motor movement.
Correct. This statement is false. The substantia nigra is involved in unconscious motor movements.
E) Damage to the hypothalamus might impair one's ability to warm himself/herself by shivering when he/she is too cold.
Answer: D
Diff: 3 Page Ref: 47 *Skill: Conceptual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

96) Santiago was in a biking accident and sustained brain damage to his limbic system. Which of the following impairments will he likely have?
A) impairment in reading fear on someone's face
Correct. The limbic system helps us to process emotions and is involved in reading fear on facial expressions.
B) jerky movements
C) poor muscle tone
D) impairment in speech
Incorrect. The limbic system is not involved in speech.
E) impairment in sleep regulation
Answer: A
Diff: 3 Page Ref: 47 *Skill: Applied*
Topic: The Forebrain *Objective: Learning Objective 2.7*

97) Which of the following limbic system structures is involved in our response to unpleasant or punishing stimuli?
A) hypothalamus
B) amygdala
Correct. The amygdala is involved in processing fear and anger.
C) substantia nigra
D) hippocampus
Incorrect. While the hippocampus is part of the limbic system, it is involved in learning and memory, not fear and anger.
E) the midbrain
Answer: B
Diff: 2 Page Ref: 47 *Skill: Conceptual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

98) Where is the amygdala located?
A) attached to the spinal cord just beneath the cerebellum
B) below the occipital lobes
C) on the outer surface of the brain nearest the forehead
D) in very close relation to the hippocampus
E) above the cerebral cortex
Answer: D
Diff: 3 Page Ref: 48 *Skill: Factual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

99) Ahli has a tumor growing on his amygdala. His family and team of doctors are afraid that the tumor will soon prevent Ahli's amygdala from properly functioning. Which of the following would give an indication that the amygdala is being negatively affected by the tumor growth?
A) Ahli is beginning to display problems with language use.
Incorrect. The amygdala is not involved in language.
B) Ahli is having an increasingly difficult time remembering the names of those on his medical team.
C) Though Ahli nearly got hit by a car the other day, he continues to walk into the street without looking

for oncoming traffic.
Correct. Ahli's brain is not able to process fear and dangerous situations indicating problems with the amygdala.
D) It appears that Ahli is losing the ability to regulate his response to hunger and thirst.
E) Though his right arm is fine, he is now starting to lose the ability to use his left arm.
Answer: C
Diff: 3 Page Ref: 48 *Skill: Applied*
Topic: The Forebrain *Objective: Learning Objective 2.7*

100) The _____ plays a central role in the storing of new memories, the response to new or unexpected stimuli, and navigational ability.
A) hypothalamus
B) cerebellum
C) amygdala
D) hippocampus
E) pons
Answer: D
Diff: 1 Page Ref: 48 *Skill: Factual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

101) Where is the hippocampus located?
A) above the cerebral cortex
B) below the occipital lobes
C) on the outer surface of the brain nearest the ears
D) attached to the spinal cord just beneath the cerebellum
E) in the interior temporal lobes
Answer: E
Diff: 2 Page Ref: 48 *Skill: Factual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

102) Damage to the hippocampus would likely result in
A) an inability to produce speech.
Incorrect. Speech production would be retained.
B) an inability to store new memories.
Correct. This hippocampus is involved in learning and memory.
C) an impairment in vision.
D) immediate death.
E) an inability to experience fear.
Answer: B
Diff: 2 Page Ref: 48 *Skill: Conceptual*
Topic: The Forebrain *Objective: Learning Objective 2.7*

103) Since Jan's automobile accident, she cannot seem to remember new things, such as names and telephone numbers of the new people she meets. Jan most likely has damage to which region of her brain?
A) amygdala
B) hypothalamus
Incorrect. The hypothalamus is for regulation of thirst, hunger, body temperature, … etc.

C) pons
D) hippocampus
Correct. The hippocampus allows for new learning.
E) substantia nigra
Answer: D
Diff: 2 Page Ref: 48 *Skill: Applied*
Topic: The Forebrain *Objective: Learning Objective 2.7*

104) Movement on the _____ side of the body is controlled by the _____ hemisphere of the brain, by way of the _____.
A) right; right; corpus callosum
B) left; left; occipital lobe
C) right; left; corpus callosum
Correct. The corpus callosum allows for contralateral processing.
D) left; right; occipital lobe
Incorrect. Although the first two answers (left, right) are correct, the occipital lobe is not involved.
E) right; right; occipital lobe
Answer: C
Diff: 1 Page Ref: 48 *Skill: Conceptual*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

105) The corpus callosum is located within the _____ and is important to overall functioning because _____.
A) cerebral cortex; it allows neurotransmitters to bind to receptor sites
B) cerebrum; allows the hemispheres to communicate and coordinate
Correct. The corpus callosum allows for contralateral processing.
C) hindbrain; it allows for humans to sustain life
D) cerebrum; it regulates hunger, thirst, and sexual behavior
E) cerebellum; allows the hemispheres to work in symphony with one another
Incorrect. The corpus callosum is not located in the cerebellum.
Answer: B
Diff: 3 Page Ref: 48 *Skill: Conceptual*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

106) Gray matter gets its color from _____ whereas white matter gets its color from _____.
A) cell bodies; dendrites
B) myelinated axons; dendrites
C) cell bodies; myelinated axons
D) synaptic clefts; neurotransmitters
E) neurotransmitters; myelinated axons
Answer: C
Diff: 3 Page Ref: 48–49 *Skill: Factual*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

107) Which of the following structures is NOT located within the cerebrum?
A) the frontal lobe
B) association areas

C) corpus callosum
D) substantia nigra
E) the temporal lobe
Answer: D
Diff: 3 Page Ref: 48-49 *Skill: Factual*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

108) The outermost layer of the brain, which contains the wrinkles and folds, is called the
A) cerebellum.
B) corpus callosum.
C) brainstem.
D) limbic system.
E) cerebral cortex.
Answer: E
Diff: 2 Page Ref: 49 *Skill: Factual*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

109) In her human anatomy class, Janna was able to view and handle a human brain. She was amazed when she saw it for the first time and was surprised when she saw the many wrinkles on this particular brain. It seemed to be more than the photos of human brains she had seen in the class period before. Which of the following statements made by Janna is most accurate?
A) Because of all the wrinkles, this brain must be very old.
B) My prediction is that the person whom this brain belonged to was highly intelligent based on the sheer numbers of convolutions I see here.
Correct. More convolutions indicate more cortex surface area, which is associated with intelligence.
C) All of these wrinkles and folds must have gotten in the way of proper neural transmission.
Incorrect. A brain with many convolutions is highly desired.
D) Because of the number of convolutions, it is clear that this person was male and incredibly artistic.
E) Since this brain is so wrinkly, it indicates that the person had Parkinson's disease.
Answer: B
Diff: 3 Page Ref: 49 *Skill: Applied*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

110) In research by Narr (2007), it was determined that gray matter and intelligence are positively correlated. Based on this research, we can
A) predict that as gray matter increases, intelligence decreases.
B) conclude that gray matter must cause high intelligence.
Incorrect. Correlation does not prove causation.
C) predict that as gray matter increases, intelligence likely increases.
Correct. A positive correlation indicates that both variables are moving in the same direction (increasing).
D) conclude that gray matter must cause low intelligence.
E) make no conclusions or predictions at all.
Answer: C
Diff: 3 Page Ref: 49 *Skill: Conceptual*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

111) The _____ contains the parietal, occipital, frontal, and temporal lobes.
A) cerebral cortex
B) brainstem
C) cerebellum
D) reticular activating system
E) hypothalamus
Answer: A
Diff: 2 Page Ref: 49 *Skill: Factual*
Topic: Components of the Cerebrum *Objective: Learning Objective 2.8*

112) Lateralization refers to
A) the idea that the right side of the brain controls the left side of the body.
Incorrect. This is contralateral processing.
B) the notion that each hemisphere of the brain specializes in particular functions.
Correct. This is an alternate explanation of lateralization.
C) the procedure in which the corpus callosum is severed.
D) the inability to produce speech.
E) communication between the central nervous system and the peripheral nervous system.
Answer: B
Diff: 1 Page Ref: 49 *Skill: Conceptual*
Topic: The Cerebral Hemispheres *Objective: Learning Objective 2.9*

113) Which of the following statements is true regarding right and left hemisphere functioning?
A) Scientific research supports the claim that "right-brained" people are more creative.
B) Scientific research supports the claim that "left-brained" people are more logical.
C) Each hemisphere does have some specialized function; however, the hemispheres are in constant contact when a person has an intact corpus callosum.
D) Scientific research suggests that the right hemisphere mostly handles the language functions.
E) Scientific research suggests that there is no specialized function in either hemisphere.
Answer: C
Diff: 2 Page Ref: 49–51 *Skill: Factual*
Topic: The Cerebral Hemispheres *Objective: Learning Objective 2.9*

114) Based on research presented in your text, which of the following WOULD NOT tend to be left hemisphere function?
A) understanding nonverbal behavior
B) reading
C) comprehension of written information
D) mathematics
E) information regarding one's self
Answer: A
Diff: 3 Page Ref: 50 *Skill: Factual*
Topic: The Left Hemisphere *Objective: Learning Objective 2.9*

115) Lenny suffered from severe grand mal seizures for years. He tried many medications but nothing seemed to work. Finally, his doctor suggested he undergo the split-brain operation. If Lenny chooses to go along with that suggestion, what changes should he expect after the surgery?

A) Lenny's seizures will stop but he will become paralyzed.
B) While he will not have any more seizures, he will also completely lose his ability to speak.
C) Lenny will likely experience a drastic change in personality.
Incorrect. This procedure does not affect his frontal lobe.
D) It is likely that his seizures will decrease and that he will experience very little cognitive impairment.
Correct. This procedure involves splitting the corpus callosum and is associated with little impairment and a decrease in seizures.
E) Lenny will no longer suffer from seizures, but his vision and hearing will become impaired during the procedure.
Answer: D
Diff: 3 Page Ref: 52 *Skill: Applied*
Topic: The Split Brain *Objective: Learning Objective 2.9*

116) Broca's area and the motor cortex can be found in the _____.
A) occipital lobe.
B) frontal lobe.
C) partietal lobe.
D) cerebellum.
E) temporal lobe.
Answer: B
Diff: 1 Page Ref: 53 *Skill: Factual*
Topic: The Frontal Lobes *Objective: Learning Objectives 2.10*

117) Jayla sustained an injury to her brain while rock climbing. She was left with difficulty speaking even though she knew exactly what she wanted to say. Though she had problems getting words out, she had no difficulty understanding them. What would explain Jayla's symptoms?
A) Wernicke's aphasia
Incorrect. Wernicke's aphasia would involve an impairment in comprehension.
B) synaptogenesis
C) a severed corpus callosum
D) Broca's aphasia
Correct. She could still understand, but had problems with speech production.
E) severe occipital lobe damage
Answer: D
Diff: 2 Page Ref: 53 *Skill: Applied*
Topic: The Frontal Lobes *Objective: Learning Objectives 2.10*

118) Leroy sustained a blow to the head recently which resulted in damage to his frontal lobe. Which of the following will NOT be a likely result?
A) He may experience Broca's aphasia.
Correct. Broca's area is located in the left frontal lobe, so this area may be affected.
B) He may have an impairment in planning for the future.
C) He may have difficulty moving muscles voluntarily.
D) He may have problems with impulsivity.
E) He may lose his vision.
Correct. Vision is not processed in the frontal lobe.
Answer: E
Diff: 3 Page Ref: 53-54 *Topic: The Frontal Lobes*

Skill: Applied *Skill: Applied*
Objective: Learning Objectives 2.10 *Objective: Learning Objectives 2.10*

119) Much was learned of the brain by the famous case study involving Phineas Gage. Which of the following is NOT a valid conclusion?
A) Because he survived, it teaches us that, to an extent, the brain is remarkably resilient.
B) Most people who experience brain injuries will go on to lead a similar life as before the injury occurred.
Correct. Gage's accident showed us just how much the brain is involved in function.
C) It suggested that certain areas of the brain may be involved in different functions.
D) Damage to the frontal lobe does not necessarily result in death.
E) Frontal lobe damage may result in drastic personality changes.
Incorrect. This statement is true.
Answer: B
Diff: 3 Page Ref: 54-55 *Objective: Learning Objectives 2.10*
Topic: The Frontal Lobes
Skill: Conceptual

120) What was the outcome of Phineas Gage's accident?
A) His head injury was so severe, did not survive it.
B) His head injury produced very subtle changes in his personality and motivation.
C) The changes Phineas Gage underwent were undetectable.
D) His personality changed so drastically that he became depressed and committed suicide.
E) Once polite and hardworking, Phineas Gage turned into an impulsive and rude man who eventually joined the circus.
Answer: E
Diff: 3 Page Ref: 54–55 *Skill: Factual*
Topic: The Frontal Lobes *Objective: Learning Objectives 2.10*

121) Which of the following brain structures is responsible for spatial orientation, body awareness, and helps to process touch?
A) parietal lobe
B) temporal lobe
C) substantia nigra
D) occipital lobe
E) frontal lobe
Answer: A
Diff: 1 Page Ref: 55 *Skill: Factual*
Topic: The Parietal Lobes *Objective: Learning Objective 2.10*

122) Wong used to have a great sense of direction before his head injury. Now, however, his sense of direction is poor. Based on research from your text, it seems that Wong's injury is located in his
A) temporal lobe.
Incorrect. The temporal lobe processes hearing.
B) parietal lobe.
Correct. The parietal lobe seems top be the place for our sense of direction.
C) occipital lobe.

D) hypothalamus.
E) medulla.
Answer: B
Diff: 2 Page Ref: 55 *Skill: Applied*
Topic: The Parietal Lobes *Objective: Learning Objective 2.10*

123) Bindu recently found out she has a tumor in her brain. She is having problems making sense of things that she touches and determining what stimuli cause pain and which do not. Based on this information, Bindu's tumor is likely located in her _____.
A) occipital lobe.
Incorrect. Bindu does not have impairments in her vision.
B) cerebellum.
C) motor cortex.
D) frontal association area.
E) somatosensory cortex.
Correct. The somatosensory cortex allows us to recognize objects by touch.
Answer: E
Diff: 3 Page Ref: 55 *Skill: Applied*
Topic: The Parietal Lobes *Objective: Learning Objective 2.10*

124) The somatosensory cortex is located in the _____ lobe whereas the motor cortex is located in the _____ lobe.
A) parietal; temporal
B) frontal; parietal
C) temporal; occipital
D) temporal; frontal
E) parietal; frontal
Answer: E
Diff: 2 Page Ref: 55 & 53 *Skill: Factual*
Topic: The Parietal & Frontal Lobes *Objective: Learning Objectives 2.10*

125) Where are the occipital lobes located?
A) behind the parietal lobes at the rear of the brain
B) slightly above the ears
C) just above the brainstem near the middle of the brain
D) near the forehead
E) toward the top of the head behind the frontal lobes
Answer: A
Diff: 1 Page Ref: 55 *Skill: Factual*
Topic: The Occipital Lobes *Objective: Learning Objective 2.10*

126) The _____ is a/are vital brain structure(s) required for the proper processing of vision.
A) amygdala
B) hippocampus
C) occipital lobes
Correct. The occipital lobe contains the visual cortex, which processes vision.

D) substantia nigra
E) temporal lobes
Incorrect. The temporal lobe contains the auditory cortex, which processes hearing.
Answer: C
Diff: 1 Page Ref: 55 *Skill: Conceptual*
Topic: The Occipital Lobes *Objective: Learning Objective 2.10*

127) Although he can see, Jim cannot identify a soda can by simply looking at. Once he touches it, he knows what it is. He did not have this problem before his skiing accident in which he suffered a brain injury. What is a likely explanation for this?
A) Jim has Wernicke's aphasia.
B) Jim has frontal lobe damage.
C) Jim has occipital lobe damage.
Correct. The occipital lobe allows us to recognize objects by sight. Jim likely injured this particular area of the occipital lobe.
D) Jim has damage to his brainstem.
E) Jim has parietal lobe damage.
Incorrect. Parietal lobe damage would result in problems with sense of direction and spatial orientation.
Answer: C
Diff: 3 Page Ref: 55 *Skill: Applied*
Topic: The Occipital Lobes *Objective: Learning Objective 2.10*

128) Jackson has damage to half of his primary visual cortex. Which of the following will likely result?
A) He will lose his ability to see entirely.
Incorrect. Jackson will likely retain some ability to see.
B) He will be able to see, but only out of the left eye.
C) He will be able to see, but only out of the right eye.
D) He will be able to see somewhat from his right eye and somewhat from his left eye.
Correct. Because visual information from each eye goes to each side of the visual cortex, some of his sight from each eye will be retained.
E) He will only be able to see shadows, but will not be able to make out everything he is looking at.
Answer: D
Diff: 3 Page Ref: 55 *Skill: Applied*
Topic: The Occipital Lobes *Objective: Learning Objective 2.10*

129) Visual processing is to the _____ lobes as auditory processing is to the _____ lobes.
A) occipital; temporal
Correct. Visual processing is done by the primary visual cortex located in the occipital lobe whereas auditory processing is done by the primary auditory cortex located in the temporal lobe.
B) parietal; occipital
C) temporal; frontal
D) temporal; parietal
E) occipital; frontal
Incorrect. While the occipital lobe is responsible for visual processing, the frontal lobe is not involved in auditory processing.
Answer: A
Diff: 1 Page Ref: 55 *Skill: Conceptual*
Topic: The Occipital & Temporal Lobes *Objective: Learning Objectives 2.10*

130) Which of the following brain structures is needed for proper auditory processing and function?
A) the occipital lobes
B)) limbic system
C) parietal lobes
Incorrect. The parietal lobe processes our sense of direction and spatial orientation.
D) hippocampus
E) the temporal lobes
Correct. Auditory processing is done by the primary auditory cortex located in the temporal lobe.
Answer: E
Diff: 1 Page Ref: 55 *Skill: Conceptual*
Topic: The Temporal Lobes *Objective: Learning Objectives 2.10*

131) Chae sustained brain damage that left her with an inability to hear. Which area of the brain was likely affected?
A) the occipital lobe
B) the temporal lobe
Correct. Auditory processing is done by the primary auditory cortex located in the temporal lobe.
C) the parietal lobe
Incorrect. The parietal lobe processes our sense of direction and spatial orientation.
D) the frontal lobe
E) the hippocampus
Answer: B
Diff: 1 Page Ref: 55 *Skill: Applied*
Topic: The Temporal Lobes *Objective: Learning Objective 2.10*

132) In terms of the brain structures involved in hearing, the _____ is necessary for auditory information to be properly transmitted to the _____.
A) amygdala; frontal lobe
B) hypothalamus; temporal lobe
Incorrect. While the temporal lobe is involved in hearing, the hypothalamus does not play a role.
C) hippocampus; corpus callosum
D) thalamus; temporal lobe
Correct. The thalamus directs sensory information (sound) to the proper lobe (temporal) for processing.
E) corpus callosum; occipital lobe
Answer: D
Diff: 3 Page Ref: 55 *Skill: Conceptual*
Topic: The Temporal Lobes *Objective: Learning Objective 2.10*

133) Danielle was born with an absence of her primary auditory cortex. Which of the following will likely result?
A) Danielle will not be about to hear from her right ear.
B) Danielle will not be able to hear from her left ear.
C) Danielle will not be able to hear at all.
Correct. No primary auditory cortex will likely result in no hearing.
D) Danielle will be able to hear a little from each ear.
E) Danielle will need to get tubes put in her ears and then wear a hearing aid in order to hear.

Incorrect. Hearing aids only amplify sound. She wouldn't be able to process any of the sound with no auditory cortex.
Answer: C
Diff: 3 Page Ref: 55 *Skill: Applied*
Topic: The Temporal Lobes *Objective: Learning Objective 2.10*

134) Which of the following structures house Wernicke's area?
A) cerebellum
B) the frontal lobe
C) the limbic system
D) hippocampus
E) the temporal lobe
Answer: E
Diff: 1 Page Ref: 56 *Skill: Factual*
Topic: The Temporal Lobes *Objective: Learning Objective 2.10*

135) Which of the following is true of Wernicke's aphasia?
A) The person uses words or word fragments but does not make sense.
B) The person has problems in producing fluent speech.
C) The person knows what he/she wants to say but has trouble articulating his/her thoughts.
D) The person is aware of his/her problems in speech.
E) It has only been reported in males.
Answer: A
Diff: 2 Page Ref: 56 *Skill: Factual*
Topic: The Temporal Lobes *Objective: Learning Objective 2.10*

136) Jane fluently utters the following sentence: "*Her norest for the sklike but the correct of hilmer does not show tense*." Jane most likely has
A) a stuttering problem.
B) Broca's aphasia.
Incorrect. Broca's aphasia would result in speech production and fluency problems.
C) damage to the cerebellum.
D) Wernicke's aphasia.
Correct. She speaks fluently (no problems in production), but it makes no sense.
E) parietal lobe damage.
Answer: D
Diff: 2 Page Ref: 56 *Skill: Applied*
Topic: The Temporal Lobes *Objective: Learning Objective 2.10*

137) Joss is listening to her favorite melody, though there is no music playing in her apartment. Remarkably, it is all coming from her memory. What brain structure allows her to do this?
A) Broca's area
B) the temporal lobe
Correct. The temporal lobe stores memories of auditory content.
C) the parietal lobe
Incorrect. The parietal lobe processes our sense of direction and spatial orientation.
D) Wernicke's area

E) the frontal lobe
Answer: B
Diff: 3 Page Ref: 56 *Skill: Applied*
Topic: The Temporal Lobes *Objective: Learning Objective 2.10*

138) _____ occurs at various intervals throughout the lifespan as a result of dendrite and axon growth.
A) Pruning
B) Lateralization
C) Synaptogenesis
D) Plasticity
E) Myelination
Answer: C
Diff: 2 Page Ref: 56 *Skill: Factual*
Topic: The Ever-Changing Brain *Objective: Learning Objective 2.11*

139) Which of the following can help adolescents in thinking more quickly than younger children?
A) maturity of the occipital lobes
B) somaticity
Incorrect. This is fictional terminology.
C) a decrease in acetylcholine
D) Wernicke's area
E) myelination
Correct. Myelination allows for faster neural processing.
Answer: E
Diff: 3 Page Ref: 57 *Skill: Conceptual*
Topic: The Ever-Changing Brain *Objective: Learning Objective 2.11*

140) Though very rare, 3-year-old Zora suffered a stroke. After surviving the stroke and participating in two full years of rehabilitation, Zora was able to regain many aspects of her functioning. What afforded Zora this degree of recovery?
A) pruning
B) the split-brain procedure
C) adrenal gland activation
Incorrect. The adrenal gland would not play a role in recovery of brain function.
D) plasticity
Correct. Plasticity is the brain's ability to reorganize when faced with an injury.
E) behavioral genetics
Answer: D
Diff: 2 Page Ref: 57 *Skill: Applied*
Topic: The Ever-Changing Brain *Objective: Learning Objective 2.11*

141) Which of the following is FALSE regarding gender differences in the adult brain?
A) Studies show that men and women use different areas of the brain when searching for the location of sounds.
B) Women have more gray matter than men in areas that control emotion.
C) Men have a lower proportion of white matter as compared to women.
D) Women seem to have an equivalent proportion of gray and white matter in the two hemispheres.

E) Men tend to use the left hippocampus to process navigational information.
Answer: C
Diff: 3 Page Ref: 57-58 *Objective: Learning Objective 2.11*
Topic: The Ever-Changing Brain
Skill: Factual

142) The endocrine system consists of various _____ that create and release _____.
A) glands; neurotransmitters
Incorrect. The glands do not create and release neurotransmitters.
B) neurons; hormones
C) brain structures; neurotransmitters
D) glands; hormones
Correct. Glands are important for functioning; the endocrine system regulates the delicate balance of hormones.
E) neurons; neurotransmitters
Answer: D
Diff: 1 Page Ref: 58 *Skill: Conceptual*
Topic: The Endocrine System *Objective: Learning Objective 2.13*

143) The _____, often referred to as the master gland because it activates other glands, is located _____.
A) pituitary gland; just above the kidneys
B) pineal gland; in the lower neck
C) pituitary gland; near the hypothalamus
D) pineal gland; just above the kidneys
E) parathyroid gland; near the hypothalamus
Answer: C
Diff: 2 Page Ref: 58 *Skill: Factual*
Topic: The Endocrine System *Objective: Learning Objective 2.13*

144) The _____ produce(s) hormones that activate the sympathetic nervous system.
A) thymus gland
B) adrenal glands
C) pancreas
D) pineal gland
E) thyroid gland
Answer: B
Diff: 2 Page Ref: 59 *Skill: Factual*
Topic: The Endocrine System *Objective: Learning Objective 2.13*

145) Consider the following: *Brown eyes are dominant and blue eyes are recessive*. Using the dominant-recessive pattern, what color eyes will you have knowing you have one dominant and one recessive gene for eye color?
A) You'll have blue eyes.
Incorrect. You'll need two recessive genes for blue eyes.
B) You'll have green eyes.
C) You'll have brown eyes.

Correct. Because brown eyes are dominant and you have one gene, you'll have brown eyes.
D) You'll have hazel eyes.
E) You'll have blue eyes that sometimes change to brown.
Answer: C
Diff: 3 Page Ref: 60 *Skill: Conceptual*
Topic: The Mechanisms of Heredity *Objective: Learning Objective 2.14*

146) _____ refers to many genes influencing a trait whereas _____ refers to the notion that genes and environment influence a trait.
A) Multifactorial inheritance; dominant-recessive pattern
B) Polygenetic inheritance; dominant recessive pattern
C) Sex-linked inheritance; polygenetic inheritance
D) Polygenetic inheritance; multifactorial inheritance
E) Sex-linked inheritance; dominant-recessive pattern
Answer: D
Diff: 3 Page Ref: 61 *Skill: Factual*
Topic: The Mechanisms of Heredity *Objective: Learning Objective 2.14*

147) Which of the following statements is true regarding sex-linked disorders?
A) Males seem to suffer from sex-linked disorders at a higher rate than females.
Correct. Males do not have a "backup" X chromosome to overcompensate for any errors on their lone X chromosome.
B) Females seem to suffer from sex-linked disorders at a higher rate than males.
Incorrect. Males actually have a higher rate of sex-linked disorders than do women.
C) Males and females experience sex-linked disorders at about the same rate.
D) The rate differs depending on the sex-linked disorder in question.
E) Because scientists are just beginning to study sex-linked disorders, we have yet to see the difference or similarity between males and females.
Answer: A
Diff: 2 Page Ref: 61 *Skill: Conceptual*
Topic: The Mechanisms of Heredity *Objective: Learning Objective 2.14*

148) What accounts for the difference of sex-linked disorders between males and females?
A) Males have a lower rate because they are protected from sex-linked disorders due to their hormonal make up.
B) Females have a lower rate because they have a back up X chromosome that can override a harmful gene on the other X chromosome.
C) Females have a lower rate because they are protected from sex-linked disorders due to their hormonal make up.
D) Males have a lower rate because the Y chromosome has twice as much genetic information as their X chromosome.
E) No difference exists between males and females with respect to sex-linked disorders.
Answer: B
Diff: 3 Page Ref: 61 *Objective: Learning Objective 2.14*
Topic: The Mechanisms of Heredity
Skill: Factual

149) Luca studies twin sets and adopted children in an effort to learn more about attention deficit/hyperactivity disorder (ADHD). He is interested to see if the symptoms are either environmental or genetic, or a combination of both. Luca is most likely a/an _____.
A) industrial/organizational psychologist.
B) psychoanalyst
C) behavioral geneticist
Correct. Luca uses twin studies to sort out environmental and genetic factors of psychological functioning.
D) cognitive psychologist
Incorrect. A cognitive psychologist would examine mental processes in an effort to understand ADHD.
E) school counselor
Answer: C
Diff: 2 Page Ref: 61 *Skill: Applied*
Topic: Behavioral Genetics *Objective: Learning Objective 2.14*

Completion (Fill-in-the-Blank)

1) The branch-like structures that take in information are the _____ whereas the long, cable-like structures that transmit information down the length of the neuron are _____.
Answer: dendrites; axons
Diff: 1 Page Ref: 38 *Skill: Conceptual*
Topic: The Structure of the Neuron *Objective: 2.3*

2) It is not the strength of the neural message that determines how strongly we experience something, but rather the _____ and the _____.
Answer: speed of neural message/rate of neural firing; number of neural impulses/how many are firing
Diff: 3 Page Ref: 40 *Skill: Conceptual*
Topic: Communication between Neurons *Objective: 2.4*

3) Neurotransmitters have the ability to bind with receptors located on _____ and _____.
Answer: dendrites; cell bodies
Diff: 3 Page Ref: 41 *Skill: Conceptual*
Topic: Neurotransmitters *Objective: 2.5*

4) _____ is the neurotransmitter known for affecting movement and causing muscle contractions in humans.
Answer: Acetylcholine
Diff: 1 Page Ref: 42 *Skill: Factual*
Topic: Neurotransmitters *Objective: 2.5*

5) According to your text, the neurotransmitters directly involved in learning are _____, _____, and _____.
Answer: acetylcholine; dopamine; glutamate
Diff: 3 Page Ref: 42 *Skill: Factual*
Topic: Neurotransmitters *Objective: 2.5*

6) Imagine you are playing in a championship basketball game. You have just taken a fall while trying to get a rebound and your ankle begins to hurt. Moments later, you notice the pain in your ankle seems to have subsided. You immediately attribute this pain relief to a release of _____, which is a type of neurotransmitter that relieves pain.
Answer: endorphins
Diff: 1 Page Ref: 43 *Skill: Applied*
Topic: Neurotransmitters *Objective: 2.5*

7) The _____ is an extension of the brain that transmits messages between the brain and peripheral nervous system.
Answer: spinal cord
Diff: 1 Page Ref: 45 *Skill: Factual*
Topic: The Spinal Cord *Objective: 2.7*

8) The brainstem is devised of the _____, _____, and _____.
Answer: pons; medulla; reticular formation
Diff: 2 Page Ref: 45 *Skill: Factual*
Topic: The Hindbrain *Objective: 2.7*

9) Two deficits typically observed in individuals with damage to the hippocampus are _____ and _____.
Answer: the inability to form new memories or store new personal cognitive information; difficulties with navigational ability
Diff: 3 Page Ref: 48 *Skill: Applied*
Topic: The Forebrain *Objective: 2.7*

10) The cerebrum is devised *primarily* of the following brain components: _____, _____, and _____.
Answer: cerebral cortex; corpus callosum; cerebral hemispheres (OR right hemisphere; left hemisphere; corpus callosum)
Diff: 2 Page Ref: 48 *Skill: Conceptual*
Topic: Components of the Cerebrum *Objective: 2.8*

11) The outermost layer of the brain, called the _____, is mostly responsible for higher mental functions such as language, memory, and thinking.
Answer: cerebral cortex
Diff: 1 Page Ref: 48–49 *Skill: Factual*
Topic: Components of the Cerebrum *Objective: 2.8*

12) Correlational research by Narr (2007) suggests that in humans, an increase in gray matter corresponds to an increase in _____.
Answer: intelligence
Diff: 3 Page Ref: 49 *Skill: Factual*
Topic: Components of the Cerebrum *Objective: 2.8*

13) The human cerebral cortex appears to have many folds called _____; the purpose of these wrinkles is _____.
Answer: convolutions; it allows the large cerebral cortex to fit over the cerebrum and within the skull
Diff: 2 Page Ref: 49 *Skill: Conceptual*
Topic: Components of the Cerebrum *Objective: 2.8*

14) As a part of the cerebral cortex, the _____ allows for voluntary body movement and is located within the _____ lobe.
Answer: motor cortex; frontal
Diff: 2 Page Ref: 53 *Skill: Factual*
Topic: The Frontal Lobes *Objective: 2.10*

15) Danelle knows exactly what she wants to say, but is having great difficulty articulating her thoughts. The few times she has spoken since her car accident, friends and family have reported that her speech is very slow, labored, and poorly articulated due to her brain injury. Danelle likely suffers from _____.
Answer: Broca's aphasia
Diff: 2 Page Ref: 53–54 *Skill: Applied*
Topic: The Frontal Lobes *Objective: 2.10*

16) Jordan can reach into his backpack and find his set of keys without looking. His ability to identify this stimulus solely by touch is afforded to him by his _____ lobe.
Answer: parietal
Diff: 2 Page Ref: 55 *Skill: Applied*
Topic: The Parietal Lobes *Objective: 2.10*

17) A severe injury to both portions of the primary auditory cortex will likely result in _____.
Answer: the inability to hear; the inability to process sound; deafness; a severe impairment in hearing depending how severe the injury
Diff: 3 Page Ref: 55 *Skill: Conceptual*
Topic: The Temporal Lobes *Objective: 2.10*

18) Janay has been diagnosed with Wernicke's aphasia. According to your text, the deficits she will experience are _____ and _____.
Answer: problems comprehending spoken word/speech; problems formulating cohesive speech and written speech (NOTE: Janay will have no problems with the fluency of her speech.)
Diff: 3 Page Ref: 56 *Skill: Applied*
Topic: The Temporal lobes *Objective: 2.10*

19) The brain's ability to adapt and/or reorganize as a result of an injury is called _____.
Answer: plasticity
Diff: 1 Page Ref: 57 *Skill: Conceptual*
Topic: The Ever-Changing Brain *Objective: 2.11*

20) A _____ results when an artery is blocked and the blood supply to a particular area of the brain is cut off.
Answer: stroke
Diff: 2 Page Ref: 57 *Skill: Factual*
Topic: The Ever-Changing Brain *Objective: 2.11*

21) Neurons are to neurotransmitters as glands are to _____.
Answer: hormones
Diff: 2 Page Ref: 58 *Skill: Conceptual*
Topic: The Endocrine System *Objective: 2.13*

22) While driving, you notice that the car in front of you has come to a screeching halt. You, in turn, slam on the breaks. During this time, your sympathetic nervous system is activated due to your _____ glands' production of the neurotransmitters _____ and _____.
Answer: adrenal; epinephrine; norepinephrine
Diff: 3 Page Ref: 59 *Skill: Applied*
Topic: The Endocrine System *Objective: 2.13*

23) Except for the _____ and _____, the nuclei of normal human body cells contain _____ pair(s) of chromosomes.
Answer: egg cell; sperm cell; 23
Diff: 2 Page Ref: 60 *Skill: Factual*
Topic: The Mechanisms of Heredity *Objective: 2.14*

24) When a trait is influenced by both genes AND the environment, it is said to have a(n) _____ pattern of inheritance.
Answer: multifactorial
Diff: 2 Page Ref: 61 *Skill: Conceptual*
Topic: The Mechanisms of Heredity *Objective: 2.14*

25) According to your text, _____ and _____ are two sex-linked disorders that can affect both males and females.
Answer: red-green color blindness; Fragile X Syndrome
Diff: 3 Page Ref: 61 *Skill: Factual*
Topic: The Mechanisms of Heredity *Objective: 2.14*

Critical Thinking Questions (Short Answer)

1) Explain the difference between afferent and efferent neurons.
Answer: Afferent neurons (sometimes called sensory neurons) relay messages from the senses to the brain, whereas efferent neurons (sometimes called motor neurons) relay messages from the brain and spinal cord to the body for movement.
Page Ref: 38

2) Can neurons fire at a constant rate all of the time? Why or why not?
Answer: No. Immediately after a neuron fires, it enters the refractory period. This is a short break or a resting time that lasts about 1 to 2 milliseconds.
Page Ref: 39–40

3) In terms of neural firing, how can we tell the difference between a strong stimulus (such as a stray dog running toward you) and a weak stimulus (such as seeing a butterfly)?
Answer: The strong stimulus will cause *more neurons* to fire at the same time whereas the weak stimulus will cause only a few neurons to fire at the same time. In addition, a strong stimulus will cause those neurons to fire at a very fast rate (several hundred times per second) whereas the weak stimulus will cause the neurons to fire at a much slower rate.
Page Ref: 40–41

4) How do neurons receive information once the neurotransmitters are in the synapse?
Answer: Though dendrites are the primary receivers of signals carried by neurotransmitters, cell bodies also have this ability. Both dendrites and cell bodies have receptor sites which allow the neurotransmitter to fit in (or bind) to the appropriate receptor sites. This binding allows the neuron to receive, or take in, the message/information that is being transmitted.
Page Ref: 42

5) Name the neurotransmitters directly involved in learning. Why do you think there is there more than one?
Answer: At present, it is known that acetylcholine, dopamine, and glutamate are involved in learning. Learning is a very complex process. Perhaps that is why there is more than one neurotransmitter involved in it.
Page Ref: 42

6) What might result if an individual's sympathetic nervous system is overactive?
Answer: An overactive sympathetic nervous system would likely result in an extended stay in the "fight-or-flight" mode. It may also result in repeated fight-or-flight responses. The body would experience increased heart rate, increased pulse rate, increased respiratory rate, decreased digestion, and so on. This could lead to chronic anxiety or perhaps even cardiac problems.
Page Ref: 44

7) What will likely result from an injury to the limbic system?
Answer: The limbic system includes both the amygdala and the hippocampus. As a whole, the limbic system is involved in expression of emotions, memory, and motivation. Thus, injury to this site will likely involve impairments in emotional expression, memory, and motivation.
Page Ref: 47

8) Why can an individual usually hear and see even when the corpus callosum has been severed?
Answer: Because the ears and the eyes have direct sensory connections to both hemispheres, these sensory experiences should remain in tact.

Page Ref: 52

9) In terms of brain development, what might account for the differences in processing speed and level of thinking between children and adults?
Answer: The brain continues to develop through young adulthood. The frontal lobes do not become fully myelinated until about age 12. The frontal lobes also undergo growth spurts (due to synaptogenesis) well into adulthood. With more brain matter, more synapses, and full myelination, level of thinking and processing speed (in addition to many other skills) substantially increase from childhood to adulthood.
Page Ref: 56–57

10) What is the significance of brain plasticity?
Answer: Plasticity is the brain's ability to reorganize in light of any change in the brain. This plasticity allows for a range of events, from learning a new skill all the way to relearning how to speak after a stroke. Note that plasticity is higher among very young children than adults. Additionally, plasticity also has its limits. Not everyone will regain functions that were lost after a stroke or other brain insult.
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Essay Questions

1) Explain at least three of the following techniques used to study the brain: EEG, CT scan, MRI, PET scan, fMRI. What is the significance of these brain-imaging techniques?

Answer: *EEG*. Electrodes placed on the scalp allow for the measurement of brain waves. Beta waves suggest mental and/or physical activity. Alpha waves suggest relaxation. Delta waves suggest sleep. Computerizing these waves allows for the study of various disorders such as Alzheimer's disease, epilepsy, etc.
CT scan. Rotating X-rays produce cross-sectional images of the various brain structures. This allows for the detecting of tumors, brain injuries, etc.
MRI. This scanning technique offers detailed images of the brain. It allows for the discovery of various brain abnormalities without exposing people to harmful X-rays.
PET scan. This imaging technique shows brain activity in various locations. It can offer information such as how much oxygen is being used, how much glucose is being consumed, and how various substances affect the brain. This tool affords scientists the ability/potential to unlock some of the brain's mysteries.
fMRI This imaging technique allows for the study of both the structure AND activity of the brain. It offers more precise information as compared to the PET scan.

Brain-scanning techniques have helped us learn much about brain anatomy, structures, and activity. They have allowed scientists to not only study the abnormal, but also what is normal or expected. Once scientists know what should be happening in the brain, they will be better able to detect when things are going awry. Overall, these techniques have played a large role, and will continue to do so, in the development of treatments.
Page Ref: 37

2) Explain in detail how information is sent from one neuron to the next.

Answer: The information, once received from the dendrite or cell body, travels down the length of the neuron via the axon. The axon then splits into the axon terminals, which house the synaptic vesicles. The

vesicles merge with the membrane and then release neurotransmitters into the synapse, or the junction between the two neurons. Some of the neurotransmitters will fit into the receptor sites on the dendrites or cell bodies of a nearby neuron. If they do, that particular neurotransmitter binds with that receptor site. Once binding occurs, the information carried by the neurotransmitter is sent to the next neuron. When neurotransmitters do not find receptor sites, they are often broken down, reabsorbed, and recycled for the next time around. They may also have not had a chance to bind if reuptake occurred.
Page Ref: 38–42

3) Aiden was hit by a drunk driver and sustained a severe injury to his left frontal lobe. What should Aiden and his family expect now? What difference, if any, might Aiden's age make on the situation?

Answer: If Aiden is an adult, his impairments may be numerous. First of all, because research suggests that the frontal lobe houses the motor cortex, we can speculate that voluntary muscle movement on his right side will be affected. He may lose the ability to move, or he may have much impairment in moving the right side of his body. Second, research tells us that Broca's area is in the left frontal lobe, so Aiden will either have difficulty producing speech or not be able to produce speech at all. (This is called Broca's aphasia.) Finally, the frontal lobe houses the frontal association areas. Many abilities come from this region of the brain, such as impulse control, thinking, planning, motivation, and emotional responses. Thus, it is likely that Aiden will have impairments in those areas. For example, Aiden could become more impulsive and not think of the consequences of his behaviors. He may not think ahead due to his problems with planning. His thinking abilities may be greatly impaired. He may demonstrate a lack of motivation. Maybe most important is that Aiden will likely not be the same person he was before the accident. His family may see drastic changes in emotional behavior or personality.

If Aiden happens to be a very young child, the picture may not be as grim. Very young children have a higher degree of brain plasticity in which parts of their brain can take over for injured sites. In that case, Aiden will likely have some impairment, but not to the degree an adult would.
Page Ref: 53–54

4) Describe the two different types of twins and explain their significance to the field of psychology.

Answer: Identical twins are called monozygotic twins. Monozygotic twinning occurs when one egg is fertilized by one sperm. After fertilization, the egg splits into two thereby creating two eggs with the same genetic material. Fraternal twins are called dizygotic twins. This occurs when two eggs are released at the same time and the eggs happen to be fertilized each with a different sperm. Dizygotic twins are no more genetically similar than any sibling pairs from the same biological mom and dad.

Behavioral geneticists are those in the field of psychology who dedicate their careers to studying the effects of heredity and environment on behavior. Twin studies help behavioral geneticists unravel environmental versus genetic influences on traits and characteristics. This is especially true in the case of monozygotic twins reared together and apart. Because they share 100% of the same DNA, researchers can begin to figure out which traits are inherited or learned from the environment.
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MyPsychLab Connection Essay Question

5) Detail the case of Phineas Gage, as discussed in MyPsycLab, and explain its significance.
Answer: To access this information, enter MyPsychLab and click on Index of Multimedia. Once in the multimedia library, select chapter 2. Check the "select all" box and click "find now." Under "Explore" locate and click on The Classic Case of Phineas Gage.

In 1848, Phineas Gage was a 25-year-old railroad worker. He was known as a bright, conscientious, and polite young man. An accident occurred on the railroad that resulted in a metal rod shooting from his left cheek through his frontal lobe, destroying most of his tissue of his frontal lobe. At the time, the function of the frontal lobe was relatively unknown as was the ramification of head injuries such as Gage's. Though many thought Gage was dead, they were surprised to see him regain consciousness and basically walk away. Interestingly, though Gage's injury site seemed to recover well after some time, there were major differences noted in his personality. After the accident, the once polite and hard-working Gage was rude, socially inappropriate, impulsive, had difficulties with motivation, and had problems maintaining a job.

The case study of Phineas Gage is significant in many ways. First, the case taught us that not everyone dies after sustaining a major head trauma. Next, it taught us that different portions of the brain are involved in various skills and abilities. Lastly, we learned that personality characteristics such as impulsivity, social appropriateness, conscientiousness, and motivation seem to be controlled by the frontal lobe.
Page Ref: MyPsychLab