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Chapter 2 – Biology and Behaviour

1) The specialized cell that transmits signals throughout the nervous system is called the

a. neuron.

b. glial cell.

c. myelin.

d. neurotransmitter.

Answer: a
Correct: *The neuron is the specialized cell that carries signals throughout the nervous system.*

Diff: 1

Type: MC
Page Reference: 30

Topic: Factual

Objective: 2.1 Define the function of the three types of neurons.

2) All of our thoughts, feelings, and behaviour can be traced to the activity of the

a. neurons.

b. ganglia.

c. genes.

d. nerve fibres.

Answer: a
Correct: *Every thought and action we undertake begins as a result of biological connections among neurons.*

Diff: 1

Type: MC
Page Reference: 30

Topic: Conceptual

Objective: 2.1 Define the function of the three types of neurons

3) The function of the dendrites is to

a. support the cell bodies.

b. send the neural impulse to the next neuron.

c. act as the primary receivers of signals from other neurons.

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d. feed the remainder of the neurons in the brain.

Answer: c
Correct: *Dendrites receive signals from neighbouring neurons.*

Diff: 2

Type: MC
Page Reference: 30

Topic: Factual

Objective: 2.2 Identify the three key structures of a neuron.

4) The part of the neuron that transmits signals to another neuron is called the

a. myelin.

b. cell body.

c. dendrites.

d. axon.

Answer: d
Correct: *The axon is the extension of the neuron that can receive signals directly, but it is primarily responsible for moving a signal from the dendrites to the axon terminals*

Diff: 1

Type: MC
Page Reference: 30

Topic: Factual

Objective: 2.2 Identify the three key structures of a neuron.

5) A typical neuron might have more than one

a. nucleus.

b. cell body.

c. axon.

d. dendrite.

Answer: d

Correct: *While there is only one cell body, nucleus, and axon in a typical neuron, there are usually multiple dendrites.*

Diff: 3

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Type: MC
Page Reference: 30

Topic: Factual

Objective: 2.2 Identify the three key structures of a neuron.

6) Where are the receptor sites for neurotransmitters located on the neuron?

a. the myelin sheath

b. the clefts

c. the dendrites and cell body

d. the synaptic vesicles

Answer: c
Correct: *Both the dendrites and the cell body are able to receive neurotransmitters.*

Diff: 3

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.2 Identify the three key structures of a neuron.

7) Receiving information is to transmitting information as

a. dendrite is to axon.

b. synapse is to axon.

c. cell body is to dendrite.

d. axon is to dendrite.

Answer: a

Correct: *The dendrite is responsible for receiving information from neighbouring axons, while the axon is responsible for releasing neurotransmitters that pass along signals to neighbouring neurons.*

Diff: 3

Type: MC
Page Reference: 30

Topic: Conceptual

Objective: 2.2 Identify the three key structures of a neuron.

8) The fluid-filled gap between a sending neuron and a receiving neuron is called the

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a. axon terminal.

b. synaptic cleft.

c. reuptake site.

d. neural gap.

Answer: b
Correct: *The gap between the axon terminal and a neighbouring dendrite is known as the synaptic cleft.*
Diff: 2

Type: MC
Page Reference: 31

Topic: Factual

Objective: 2.2 Identify the three key structures of a neuron.

9) Each neuron potentially connects

a. physically with dozens of neurons.

b. with one or two other neurons.

c. with thousands of other neurons.

d. physically with a few axons.

Answer: c

Correct: *Each dendrite belonging to one neuron may receive signals from hundreds or thousands of neighbouring axon terminals. The same neuron's axon terminals may rest close to numerous other dendrites. As a result, an individual neuron may send and receive signals simultaneously in the thousands.*

Diff: 1

Type: MC
Page Reference: 31

Topic: Conceptual

Objective: 2.2 Identify the three key structures of a neuron.

10) Professor Bennett is studying how neurons communicate with each other. Which of the following areas would most likely be of greatest interest to him?

a. the cell body

b. the sodium pump

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c. the synapse

d. the mitochondria

Answer: c
Correct: *Neurotransmitters, which are responsible for communication between neurons, are released from the axon terminal, within the synapse.*

Diff: 2

Type: MC
Page Reference: 30-31

Topic: Conceptual

Objective: 2.2 Identify the three key structures of a neuron.

11) Which of the following is a function of glial cells?

a. receiving signals for sensory systems

b. storing and releasing neurotransmitters

c. generating action potentials

d. removing waste products, including dead neurons, from the brain

Answer: d

Correct: *Glial cells are responsible for the removal of waste products from the brain, and support the function of neurons, but do not generate action potentials on their own.*

Diff: 2

Type: MC
Page Reference: 30

Topic: Factual

Objective: 2.2 Identify the three key structures of a neuron.

12) Which of the following functions has ***not*** been associated with glial cells ?

a. They hold neurons together.

b. They help remove waste from the brain.

c. They aid in the inhibition of emotional memories.

d. They assist in the production of myelin.

Answer: c
Correct: *Glial cells help hold neurons together, remove waste, and transmit pain sensations.*

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Diff: 2

Type: MC
Page Reference: 30

Topic: Factual

Objective: 2.2 Identify the three key structures of a neuron.

13) When a neuron is at rest, the inside of the cell

a. has no charge.

b. has a slight positive charge relative to the outside.

c. has a charge identical to the outside.

d. has a slight negative charge relative to the outside.

Answer: d
Correct: *During resting potential, the axon contains more negatively charged ions than positively charged ions.*

Diff: 2

Type: MC
Page Reference: 31

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

14) The "resting potential" refers to

a. action potential.

b. synaptic potential.

c. the state during which a neuron contains more negatively charged particles inside the cell than outside the cell.

d. the state during which a neuron contains more positively charged particles inside the cell than outside the cell.

Answer: c
Correct: *During resting potential, the axon contains more negatively charged ions than positively charged ions.*

Diff: 2

Type: MC
Page Reference: 31

Topic: Factual

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Objective: 2.3 Explain how neural impulses work.

15) The process that produces an action potential is best described as

a. a change that occurs as a result of neuroelectrical stimulation.

b. the creation of chemical transmitters by electrical energy.

c. an exchange of positive and negative ions through the cell membrane.

d. a molecular chain reaction.

Answer: c
Correct: *It is through the exchange of negative and positive ions through the cell membrane that a neuron is capable of "firing," or releasing neurotransmitters.*

Diff: 3

Type: MC
Page Reference: 31

Topic: Conceptual

Objective: 2.3 Explain how neural impulses work.

16) What happens when a neuron is sufficiently stimulated by incoming signals from other neurons that ion channels open and positive ions move into a neuron?

a. The cell goes into refraction.

b. An action potential occurs.

c. The polarization of the cell increases.

d. Transmitter substances are synthesized.

Correct: *An action potential of a neuron occurs when a critical balance of negatively charged ions exit through the axon and positively charged ions enter it.*

Answer: b
Diff: 2

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

17) The sudden reversal of the electrical potential within a neuron is called

a. a nerve impulse.

b. a refraction.

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c. a neural discharge.

d. an action potential.

Answer: d
Correct: *Action potential of a neuron occurs when the necessary number of negatively charged ions exit through the axon and positively charged ions enter it.*

Diff: 2

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

18) When the cell membrane of a neuron changes its permeability, allowing more positively charged ions to flow into the cell and other ions to flow out, the neuron has been induced to create a(an)

a. transmission potential.

b. resting potential.

c. synaptic potential.

d. action potential.

Answer: d
Correct: *Action potential of a neuron occurs when the necessary number of negatively charged ions exit through the axon, and positively charged ions enter it.*

Diff: 3

Type: MC
Page Reference: 32

Topic: Conceptual

Objective: 2.3 Explain how neural impulses work.

19) Action potentials operate according to the "all-or-none law" because

a. all the axon terminals must be in refraction or the neuron does not fire.

b. neurons either fire at full strength or not at all.

c. all the dendrites must be activated before a neuron fires.

d. all the neurons in a nerve fire or none of them fire.

Answer: b

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Correct: *A neuron cannot fire "only a little bit." Either it fires at full strength or it does not fire at all.*

Diff: 2

Type: MC
Page Reference: 31

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

20) If a neuron only fires at full strength how is it possible for us to perceive the difference between a weak stimulus and a strong stimulus?

a. It is the number of neurons firing, and their rate of fire, that determines this.

b. The brain must determine from other factors how strong or weak a stimulus is.

c. Memory of past similar stimuli determines this.

d. We still don't know this. It is being researched.

Answer: a
Correct: *A perception is never determined by one neuron, it is always many neurons firing. It is the number of neurons that determines the strength of a stimulus.*

Diff: 2

Type: MC
Page Reference: 31

Topic: Conceptual

Objective: 2.3 Explain how neural impulses work.

21) The insulation around a neuron's axon that has an effect on the speed of the action potential is called the

a. axonal insulation

b. myelin sheath.

c. fatty insulation.

d. Nodes of Ranvier.

Answer: b
Correct: *"Myelin sheath" is the termed used for the fatty insulation around a neuron's axon.*

Diff: 2

Type: MC
Page Reference: 31

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Topic: Conceptual

Objective: 2.3 Explain how neural impulses work.

22) The white, fatty coating wrapped around some axons is called

a. an effective potential enhancer.

b. a myelin sheath.

c. the axon band.

d. a mylar insulator.

Answer: b
Correct: *The myelin sheath, a fatty coating around some neurons, aids in the transmission of impulses.*

Diff: 1

Type: MC
Page Reference: 31

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

23) The myelin sheath _____ the neural impulse.

a. terminates

b. starts up

c. slows down

d. speeds up

Answer: d
Correct: *The myelin sheath, a fatty coating around some neurons, aids in the transmission of impulses.*

Diff: 2

Type: MC
Page Reference: 31

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

24) The function of synaptic vesicles is to

a. store neurotransmitters.

b. produce potassium ions.

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c. deactivate action potentials.

d. produce sodium ions.

Answer: a
Correct: *The chemicals called neurotransmitters are stored in small sacs called synaptic vesicles held within the axon terminal.*

Diff: 2

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

25) Just before they release their neurotransmitters, synaptic vesicles are located

a. throughout the neuron's structure.

b. in the cell body's nucleus.

c. in the synapses.

d. within the axon terminal.

Answer: d
Correct: *The chemicals called neurotransmitters are stored in small sacs called synaptic vesicles held within the axon terminal.*

Diff: 2

Type: MC
Page Reference: 32-33

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

26) When a neuron fires, neurotransmitters are released from the synaptic vesicles in the _____ into the synaptic cleft.

a. receptor

b. dendrite

c. cell body

d. axon

Answer: d
Correct: *Neurotransmitters are stored in small sacs called synaptic vesicles held within the axon terminal. It is from here that they are released into the synaptic cleft.*

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Diff: 2

Type: MC
Page Reference: 32-33

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

27) Receptor sites on the receiving neuron

a. receive any available neurotransmitter molecules.

b. can only be influenced by neurotransmitters from a single neuron.

c. receive only neurotransmitter molecules of a specific shape.

d. are located only on the dendrites.

Answer: c
Correct: *Because receptor sites on dendrites have a particular shape, they are only able to receive neurons that match that shape.*

Diff: 3

Type: MC
Page Reference: 32

Topic: Conceptual

Objective: 2.3 Explain how neural impulses work.

28) The chemicals stored in neurons that excite or inhibit other neurons are called

a. neurotransmitters.

b. vesicles.

c. somas.

d. inhibitors.

Answer: a
Correct: *It is the neurotransmitters' function to send the message to excite or inhibit neighbouring neurons.*

Diff: 1

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

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29) At receptor sites a certain neurotransmitter may compete for the same receptor with

a. glial cells.

b. another neurotransmitter of a slightly different shape.

c. viruses.

d. amino acids.

Answer: b
Correct: *It is the shape of neurotransmitter that determines its effect on a receptor site.*

Diff: 2

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

30) The interaction between a neurotransmitter and a receptor is controlled by their mutual _____ on each other.

a. influence

b. attraction

c. chemical structure

d. charge

Answer: a
Correct: *It is not the direct influence of neurotransmitter on receptor that determines the effect.*

Diff: 3

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

31) Professor Momar is interested in studying what takes place when a neuron communicates with another neuron. Which of the following will he LEAST LIKELY study?

a. neurotransmitters

b. mitochondria

c. reuptake

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d. action potential

Answer: b
Correct: *Mitochondria are involved in the working of a neuron, but not as directly as the other three choices.*

Diff: 2

Type: MC
Page Reference: 31-32

Topic: Applied

Objective: 2.3 Explain how neural impulses work.

32) Chemicals released by neurons that increase the likelihood that neuron cells will fire are referred to as

a. inhibitory.

b. excitatory

c. receptors.

d. receivers.

Answer: b
Correct: *An excitatory neurotransmitter is a chemical that sends the messages to neurons.*

Diff: 1

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.4 Contrast excitatory and inhibitory effects of neurotransmitters and how they affect behaviour.

33) The process by which neurotransmitter molecules are taken back into the axon terminal is called

a. reuptake.

b. reabsorption.

c. synaptic cleft.

d. inhibitory action.

Answer: a

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Correct: *Occasionally neurotransmitters are not used or received by neighbouring dendrites. In some instances, these neurotransmitters are reabsorbed by the axon terminal in a process called reuptake.*

Diff: 2

Type: MC
Page Reference: 33

Topic: Factual

Objective: 2.4 Contrast excitatory and inhibitory effects of neurotransmitters and how they affect behaviour.

34) How can synaptic vesicles continue to pour out their neurotransmitters, and yet still have a ready supply of neurotransmitters to respond to continuing stimulation?

a. Through the process of reuptake, they absorb some of the neurotransmitter left in the gap between the axon and the dendrite.

b. Other nearby cells donate a portion of neurotransmitter to the vesicle in need, through a process called "synaptic transfer."

c. The vesicles never fire completely, always holding a little amount of neurotransmitter back.

d. The cells re-energize with every firing.

Answer: a
Correct: *Occasionally neurotransmitters are not used or received by neighbouring dendrites. In some instances, these neurotransmitters are reabsorbed by the axon terminal in a process called reuptake. This is one process by which neurons continue to have a supply of neurotransmitters available to them.*

Diff: 2

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.4 Contrast excitatory and inhibitory effects of neurotransmitters and how they affect behaviour.

35) Neurotransmitter substances can have either of two effects:

a. continuous or discrete.

b. global or analytical.

c. excitatory or inhibitory.

d. positive or negative.

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Answer: c
Correct: *It is the neurotransmitter's function to send the message to excite or inhibit neighbouring neurons.*

Diff: 2

Type: MC
Page Reference: 33

Topic: Factual

Objective: 2.4 Contrast excitatory and inhibitory effects of neurotransmitters and how they affect behaviour.

36) Chemicals released by neurons that reduce the likelihood that neuron cells will fire, are referred to as

a. excitatory.

b. receptors.

c. receivers.

d. inhibitory.

Answer: d
Correct: *An inhibitory neurotransmitter is a chemical that sends the messages to neurons not to fire.*

Diff: 1

Type: MC
Page Reference: 32

Topic: Factual

Objective: 2.4 Contrast excitatory and inhibitory effects of neurotransmitters and how they affect behaviour.

37) Which of the following has, among other effects, an excitatory effect on skeletal muscle fibres and an inhibitory effect on the muscles of the heart?

a. serotonin

b. endorphins

c. norepinephrine

d. acetylcholine

Answer: d
Correct: *Depending on the receiving neuron, acetylcholine may have either an excitatory or inhibitory effect on nearby neurons.*

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Diff: 3

Type: MC
Page Reference: 33

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

38) Endorphins, norepinephrine, dopamine and serotonin are all examples of

a. neuropeptides.

b. hormones.

c. neuromodulators.

d. neurotransmitters.

Answer: d
Correct: *There are numerous neurotransmitters in the brain, among which are endorphins, norepinephrine, dopamine and serotonin.*

Diff: 1

Type: MC
Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

39) A deficiency in _____ would be associated with movement, pleasure, learning, attention, and reinforcement.

a. dopamine

b. endorphin

c. acetylcholine

d. norepinephrine

Answer: a
Correct: *All of these functions rely, at least in part, on dopamine.*

Diff: 2

Type: MC
Page Reference: 34

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Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

40) All of the following are monoamines, ***except***

a. dopamine.

b. serotonin.

c. GABA.

d. norepinephrine.

Answer: c
Correct: *GABA is an amino acid.*

Diff: 1

Type: MC
Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

41) Epilepsy is

a. a problem with understanding speech.

b. involved with the central hypothalamus and the occipital lobes.

c. almost always unnoticed by the person who is experiencing a seizure.

d. a disorder in which neural activity can become so heightened that seizures result.

Answer: d
Correct: *Due to the disruption of normal electrical activity in the brain, patients with severe forms of epilepsy experience frequent episodes of grand mal seizures.*

Diff: 1

Type: MC
Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

42) Both _____ and _____ have been associated with positive moods, while deficiencies in both have been associated with depression.

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a. endorphins; serotonin

b. glutamate; acetylcholine

c. norepinephrine; serotonin

d. serotonin; acetylcholine

Answer: c
Correct: *Among other functions, norepinephrine and serotonin are known to affect moods, such that their presence is associated with positive moods, and deficiencies in both may result in depression.*

Diff: 3

Type: MC
Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

43) Which of the following is ***not*** associated with mood or emotional state in humans?

a. norepinephrine

b. GABA

c. acetylcholine

d. serotonin

Answer: c
Correct: *Acetylcholine is associated with learning and movement.*

Diff: 2

Type: MC
Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

44) _____ is to the control of anxiety as _____ is (are) to pain.

a. Serotonin; glutamate

b. Norepinephrine; epinephrine

c. L-dopa; GABA

d. GABA; endorphins

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Answer: d
Correct: *GABA is a neurotransmitter that inhibits anxiety, just as endorphins relieve pain.*

Diff: 2

Type: MC
Page Reference: 34

Topic: Conceptual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

45) The brain produces its own opiate-like substances known as

a. heroins.

b. morphemes.

c. endorphins.

d. monoamines.

Answer: c
Correct: *"Endorphins" means naturally occurring morphine.*

Diff: 2

Type: MC
Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

46) _____ is the main inhibitory neurotransmitter in the brain.

a. Serotonin

b. Norepinephrine

c. Acetylcholine

d. GABA

Answer: d
Correct: *GABA is considered to be the main inhibitory neurotransmitter, and is distributed widely throughout the brain and spinal cord.*

Diff: 2

Type: MC

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Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

47) The central nervous system includes

a. the brain only.

b. the spinal cord only.

c. the entire nervous system except the brain and the spinal cord.

d. both the brain and the spinal cord.

Answer: d
Correct: *The central nervous system consists of the brain and spinal cord.*

Diff: 1

Type: MC
Page Reference: 35

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

48) The central nervous system consists of the

a. brain and spinal cord.

b. autonomic system and the somatic system.

c. forebrain, midbrain, and hindbrain.

d. afferent system and efferent system.

Answer: a
Correct: *The brain and spinal cord make up the central nervous system.*

Diff: 1

Type: MC
Page Reference: 35

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

49) Which of the following is ***not*** a function of the spinal cord?

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a. It controls the release of neurotransmitters from the synaptic vesicles.

b. It carries sensory information to the brain.

c. It allows reflexive behaviour to occur.

d. It carries information from the brain to the muscles and glands.

Answer: a
Correct: *The spinal cord is not responsible for transmission of neurotransmitters, but it does provide all of the other functions listed.*

Diff: 2

Type: MC
Page Reference: 35

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

50) What connects the brain with the peripheral nervous system?

a. the reticular formation

b. the autonomic nervous system

c. the spinal cord

d. the brainstem

Answer: c
Correct: *The spinal cord allows nerve signals to travel from the brain to the peripheral nervous system.*

Diff: 2

Type: MC
Page Reference: 35

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

51) Damage to the cerebellum is likely to disrupt which of the following?

a. thinking

b. homeostasis

c. sleeping

d. playing basketball

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Answer: d
Correct: *The cerebellum is responsible for graceful or skilled physical movement, of which basketball is one example.*

Diff: 3

Type: MC
Page Reference: 36

Topic: Conceptual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

52) The main functions of the _____ are to execute smooth, skilled movements and to regulate muscle tone and posture.

a. pons

b. medulla

c. cerebellum

d. hypothalamus

Answer: c
Correct: *The cerebellum is responsible for graceful or skilled physical movement and muscle tone.*

Diff: 1

Type: MC
Page Reference: 36

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

53) The reticular formation is to alertness as the cerebellum is to _____.

a. skilled movements

b. blood pressure

c. sleep

d. attention

Answer: a
Correct: *The reticular formation controls alertness, while the cerebellum controls skilled or graceful movements.*

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Diff: 2

Type: MC
Page Reference: 36

Topic: Conceptual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

54) The cerebellum mainly regulates

a. digestive activities.

b. metabolic activities.

c. thinking activities.

d. motor activities.

Answer: d
Correct: *The cerebellum is responsible for graceful or skilled physical movement.*

Diff: 2

Type: MC
Page Reference: 36

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

55) Damage to your cerebellum might affect your ability to

a. become sexually aroused.

b. dance.

c. digest food.

d. sleep.

Answer: b
Correct: *The cerebellum is responsible for graceful or skilled physical movement, of which dance is one example.*

Diff: 2

Type: MC
Page Reference: 36

Topic: Conceptual

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Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

56) Skilled gymnasts and divers can perform smooth and expertly coordinated muscular movements thanks largely to their

a. occipital lobes.

b. amygdala.

c. medulla.

d. cerebellum.

Answer: d
Correct: *The cerebellum is responsible for graceful or skilled physical movement, of which gymnastics and diving are good examples.*

Diff: 3

Type: MC
Page Reference: 36

Topic: Conceptual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

57) The brainstem includes all of the following, ***except*** the

a. medulla.

b. pons.

c. reticular formation.

d. cerebellum.

Answer: d
Correct: *The cerebellum is responsible for graceful or skilled physical movement. It is near to, but outside the area known as the brain stem.*

Diff: 3

Type: MC
Page Reference: 35

Topic: Conceptual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

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58) The relay station for information flowing into and out of the higher brain centres is the

a. hypothalamus.

b. reticular activating system.

c. thalamus.

d. hippocampus.

Answer: c
Correct: *The thalamus acts as a relay station for signals entering and being sent from the higher brain.*

Diff: 2

Type: MC
Page Reference: 37

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

59) Which sense does not use the thalamus to relay information within the brain?

a. touch

b. hearing

c. smell

d. vision

Answer: c
Correct: *All of the five senses except for the sense of smell are transmitted through the thalamus before reaching the brain.*

Diff: 3

Type: MC
Page Reference: 37

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

60) The thalamus is believed to work with the pons and the reticular formation to

a. allow us to move in a straight line.

b. regulate sleep cycles.

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c. offset the influence of the brainstem.

d. determine body temperature.

Answer: b
Correct: *It is believed that the thalamus regulates sleep, in conjunction with the pons and reticular formation.*

Diff: 2

Type: MC
Page Reference: 37

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

61) Electrodes are implanted into the brain of a monkey. If the monkey is behaving aggressively, stimulation of the electrodes causes the monkey to stop. In which of the following areas is the electrode most likely implanted?

a. cerebellum

b. occipital lobe

c. hippocampus

d. hypothalamus

Answer: d
Correct: *Among other functions, the hypothalamus regulates a range of emotional responses, including those that may be associated with aggression.*

Diff: 2

Type: MC
Page Reference: 37

Topic: Applied

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

62) Which of the following is ***not*** a role of the hypothalamus?

a. regulation of food intake

b. coordination of body movements

c. regulation of thirst

d. regulation of sexual behaviour

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Answer: b
Correct: *The cerebellum is responsible for coordinating body movements; the hypothalamus is responsible for the others listed.*

Diff: 2

Type: MC
Page Reference: 37

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

63) The hypothalamus regulates all of the following ***except***

a. sexual behaviour.

b. coordinated movement.

c. hunger and thirst.

d. internal body temperature.

Answer: b
Correct: *The cerebellum is responsible for coordinating body movements; the hypothalamus is responsible for the others listed.*

Diff: 2

Type: MC
Page Reference: 37

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

64) What brain system is responsible for emotional expression, some memory functions, and motivation?

a. pons

b. cerebellum

c. brainstem

d. limbic system

Answer: d
Correct: *The limbic system includes several structures that are responsible for motivation, emotional expression, and memory functions, among other things.*

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Diff: 2

Type: MC
Page Reference: 38

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

65) Which of the following is composed of several brain structures, including the hippocampus and the amygdala?

a. limbic system

b. reticular system

c. peripheral system

d. brainstem

Answer: a
Correct: *The limbic system includes several structures, such as the hippocampus and the amygdala.*

Diff: 1

Type: MC
Page Reference: 38

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

66) The amygdala and the hippocampus are two structures that are part of the

a. cerebral cortex.

b. somatic system.

c. brainstem.

d. limbic system.

Answer: d
Correct: *The limbic system includes several structures, such as the hippocampus and the amygdala.*

Diff: 2

Type: MC
Page Reference: 38

Topic: Factual

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Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

67) The hippocampus plays a central role in

a. hunger.

b. speech.

c. emotions.

d. memory.

Answer: d
Correct: *The formation of memories is a function of the hippocampus.*

Diff: 2

Type: MC
Page Reference: 38

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

68) Laura has been involved in a serious accident; as a result she cannot form new memories about people or concepts. Which of the following areas was most likely damaged?

a. cerebellum

b. hypothalamus

c. frontal lobes

d. hippocampus

Answer: d
Correct: *The formation of memories is a function of the hippocampus.*

Diff: 2

Type: MC
Page Reference: 38

Topic: Applied

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

69) The area of the brain just above the spinal cord is called the

a. brain bulb.

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b. amygdala.

c. corpus callosum.

d. brainstem.

Answer: d
Correct: *One of the most primitive parts of the brain is the brainstem, which rests just above the spinal cord.*

Diff: 2

Type: MC
Page Reference: 35

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

70) The area of the brain that consists of the medulla, pons, and reticular formation is known as the

a. cerebral cortex.

b. midbrain.

c. brainstem.

d. limbic system.

Answer: c
Correct: *The three main parts of the brainstem are the medulla, the pons, and the reticular formation.*

Diff: 2

Type: MC
Page Reference: 35

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

71) Which of the following is ***not*** part of the brain stem?

a. pons

b. hypothalamus

c. medulla

d. reticular formation

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Answer: b
Correct: *The three main parts of the brainstem are the medulla, the pons, and the reticular formation.*

Diff: 2

Type: MC
Page Reference: 37

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

72) The medulla and pons are located in the

a. thalamus.

b. midbrain.

c. brainstem.

d. corpus callosum.

Answer: c
Correct: *The three main parts of the brainstem are the medulla, the pons, and the reticular formation.*

Diff: 2

Type: MC
Page Reference: 36

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

73) The brain structure that controls heart rate, breathing, and blood pressure is the

a. medulla.

b. cerebellum.

c. thalamus.

d. reticular formation.

Answer: a
Correct: *Among the main functions of the medulla is the control of heart rate, breathing, and blood pressure.*

Diff: 3

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Type: MC
Page Reference: 36

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

74) Which of the following is ***not*** controlled by the medulla?

a. blood pressure

b. heart rate

c. arousal

d. breathing

Answer: c
Correct: *Among the main functions of the medulla is the control of heart rate, breathing, and blood pressure. Control of arousal levels is not a function of the medulla.*

Diff: 3

Type: MC
Page Reference: 36

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

75) The structure which controls arousal and attention and screens sensory messages entering the brain is the

a. reticular formation.

b. pons.

c. amygdala.

d. hippocampus.

Answer: a
Correct: *The main function of the reticular formation is to screen messages entering the brain. It permits some and blocks others.*

Diff: 2

Type: MC
Page Reference: 36

Topic: Factual

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Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

76) Which of the following brain structures influences attention and arousal?

a. reticular formation

b. medulla

c. thalamus

d. spinal cord

Answer: a
Correct: *The main function of the reticular formation is to screen messages entering the brain. It permits some and blocks others. This also impacts on arousal levels.*

Diff: 2

Type: MC
Page Reference: 36

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

77) Linda can sleep through a thunderstorm but wakes up at the slightest cry of her baby, thanks to her

a. reticular formation.

b. pons.

c. medulla.

d. thalamus.

Answer: a
Correct: *The main function of the reticular formation is to screen messages entering the brain. It permits some and blocks others. This also impacts on arousal levels.*

Diff: 2

Type: MC
Page Reference: 36

Topic: Conceptual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

78) The bridge-like structure at the top of the medulla is called the

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a. brainstem.

b. cerebellum.

c. pons.

d. reticular formation.

Answer: c
Correct: *The pons is a bridge-like structure within the brain stem which rests above the medulla.*

Diff: 1

Type: MC
Page Reference: 36-37

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

79) After damage to a part of her brainstem, Reba is unable to perform simple reflexive actions, such as swallowing or coughing. Which part of the brainstem is most likely to have been affected?

a. the pons

b. the cerebellum

c. the medulla

d. the reticular formation

Answer: c
Correct: *The medulla is the part of the brainstem that controls heartbeat, breathing, blood pressure, coughing, and swallowing.*

Diff: 2

Type: MC
Page Reference: 36

Topic: Applied

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

80) Which structure of the limbic system is associated with the representation of special "maps" of our environment?

a. the hippocampus

b. the amygdala

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c. the corpus callosum

d. the thalamus

Answer: a
Correct: *The hippocampus plays a role in the brain's internal representation of space in the form of neural "maps" that help us learn our way around new environments.*

Diff: 2

Type: MC
Page Reference: 38

Topic: Factual

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

81) According to the text, the primary site(s) for language comprehension and production, problem solving and the use of logic is (are) the

a. thalamus.

b. cerebellum.

c. cerebrum and its cortex.

d. limbic system.

Answer: c
Correct: *Other parts of the brain are associated with these skills to some degree, but these and other "higher" cognitive functions are mainly identified with the cerebrum and the cerebral cortex.*

Diff: 2

Type: MC
Page Reference: 39

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

82) What is the largest structure of the human brain, consisting of two cerebral hemispheres and covered by the cerebral cortex?

a. the brainstem

b. the cerebellum

c. the corpus callosum

d. the cerebrum

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Answer: d
Correct: *The cerebrum is composed of the left and right hemispheres, which are covered by the cerebral cortex.*

Diff: 2

Type: MC
Page Reference: 39

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

83) The left side of our brain controls

a. our spatial abilities.

b. our thoughts.

c. the right side of the body.

d. either side of the body.

Answer: c
Correct: *Generally, cross-over applies to the functioning of the hemispheres of the brain—so the left hemisphere of the brain controls the right side of the body and the right hemisphere of the brain controls the left side of the body.*

Diff: 1

Type: MC
Page Reference: 39

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

84) The two cerebral hemispheres communicate with each other via the

a. nodes of Ranvier.

b. reticular formation.

c. amygdala.

d. corpus callosum.

Answer: d
Correct: *The corpus callosum is a band of fibres that allows the transfer of information between the hemispheres.*

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Diff: 2

Type: MC
Page Reference: 39

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

85) The wide band of nerve fibres that physically connects the two cerebral hemispheres and makes possible the transfer of information between them is called

a. the myelin sheath.

b. the hypothalamus.

c. the amygdala.

d. the corpus callosum.

Answer: d
Correct: *The corpus callosum is a band of fibres that allows the transfer of information between the hemispheres.*

Diff: 2

Type: MC
Page Reference: 39

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

86) The cerebral cortex is often referred to as the grey matter because of its colour. The area just below the cortex is often called white matter because of its colour. This area is white because

a. the axons of its neurons is insulated with myelin which is white.

b. this regions has fewer blood vessels, which alters the overall colour.

c. the cell bodies of these neurons are chemically different in a way that makes them a lighter colour.

d. both regions are actually the same colour, this is just a convention that is used for clarity of discussion.

Answer: a
Correct: *Beneath the cortex are the axons coated in white myelin that connect cortex neurons with those in other brain regions.*
Diff: 3

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Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

87) The thin outer covering of the cerebral hemispheres is called the

a. cingulate gyrus.

b. cerebral cortex.

c. corpus callosum.

d. cephalodermis.

Answer: b
Correct: *The coating that covers the two hemispheres is called the cerebral cortex, which is approximately a half centimetre in thickness.*

Diff: 2

Type: MC
Page Reference: 39

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

88) The half-centimetre outer covering of the cerebrum is the

a. white matter.

b. cortex callosum.

c. myelin sheath.

d. cerebral cortex.

Answer: d
Correct: *The coating that covers the two hemispheres is called the cerebral cortex, which is approximately a half centimetre in thickness.*

Diff: 2

Type: MC
Page Reference: 39

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

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89) Which of the following is ***not*** one of the three types of areas in the cerebral cortex?

a. bodily function areas

b. association areas

c. motor cortex

d. sensory input areas

Answer: a
Correct: *The three areas associated with the cerebral cortex are sensory input, motor areas, and association areas. There is no part of the brain referred to as the "bodily function areas."*

Diff: 3

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

90) The association areas are areas in the cerebral cortex

a. that control bodily processes vital to our survival.

b. that house our memories and are involved in thought, perception, and language.

c. that control voluntary movement.

d. where vision, hearing, touch, pressure, and temperature register in the brain.

Answer: b
Correct: *The association areas maintain memories and are involved in language, thought, and perception.*

Diff: 2

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

91) Which of the following is ***not*** one of the four lobes in the cerebral cortex?

a. the temporal lobe

b. the frontal lobe

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c. the dorsal lobe

d. the parietal lobe

Answer: c
Correct: *The four lobes of the brain are the frontal, parietal, temporal, and occipital.*

Diff: 2

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

92) The motor cortex is located in which of the four lobes?

a. temporal

b. frontal

c. occipital

d. parietal

Answer: b
Correct: *The primary motor cortex is found toward the rear of the frontal lobe.*

Diff: 2

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

93) Who is associated with mapping the motor cortex?

a. Wilder Penfield

b. Paul Broca

c. Phineas Gage

d. William Dement

Answer: a
Correct: *Wilder Penfield is a Canadian neurosurgeon who is credited with "mapping" the motor cortex.*

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Diff: 1

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

94) Which of the following statements about the motor cortex is true?

a. The neurons in the motor cortex are highly specialized and independent.

b. Seizures are not associated with the motor cortex.

c. The motor cortex is the only area of the brain that can regenerate after injury.

d. There is considerable overlap in the neurons that fire to move any body part.

Answer: d
Correct: *Since Penfield's pioneering work, it has become clear that there are clusters of neurons over a wider area of the motor cortex responsible for moving a single body part.*

Diff: 3

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

95) Which of the following is an area of the brain considered essential to the physical production of speech?

a. the primary auditory cortex

b. Wernicke's area

c. the somatosensory cortex

d. Broca's area

Answer: d
Correct: *Production of speech, as a predominantly motor function, is housed in Broca's area.*

Diff: 3

Type: MC
Page Reference: 41

Topic: Factual

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Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

96) A loss of the ability to produce or use good language is referred to as

a. Penfield's syndrome

b. Gage's dementia

c. Wernicke's aphasia

d. Broca's aphasia

Answer: d
Correct: *The association areas housed in the frontal lobe are responsible for impulse control, planning for the future, motivation, and emotional responses.*

Diff: 2

Type: MC
Page Reference: 41

Topic: Factual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

97) In which lobe is the somatosensory cortex located?

a. temporal

b. occipital

c. parietal

d. frontal

Answer: c
Correct: *The somatosensory cortex runs along the front of the parietal lobe, parallel to the primary motor cortex (which is in the frontal lobe).*

Diff: 2

Type: MC
Page Reference: 42

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

98) Which lobes are responsible for our spatial orientation, our sense of direction, and our ability to identify objects by touch alone?

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a. parietal

b. occipital

c. temporal

d. frontal

Answer: a
Correct: *Among other functions, the parietal lobes are also responsible for spatial orientation, our sense of direction, and processing of touch sensations.*

Diff: 3

Type: MC
Page Reference: 42

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

99) The site in the cerebral cortex where touch, pressure, temperature, and pain register is

a. the motor cortex.

b. Broca's area.

c. the somatosensory cortex.

d. the frontal association area.

Answer: c
Correct: *One of the main centres in the parietal lobes is the somatosensory cortex, which is responsible for processing touch sensations.*

Diff: 2

Type: MC
Page Reference: 42

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

100) The association areas that store our memory of how objects feel and enable us to identify objects by touch alone are located in the

a. occipital lobes.

b. parietal lobes.

c. temporal lobes.

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d. frontal lobes.

Answer: b
Correct: *One of the main centres in the parietal lobes is the somatosensory cortex, which is responsible for processing touch sensations.*

Diff: 2

Type: MC
Page Reference: 42

Topic: Conceptual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

101) Which lobes are located near the back of the head?

a. frontal

b. parietal

c. occipital

d. temporal

Answer: c
Correct: *The lobes which are located below the parietal lobes, toward the back of the head, are the occipital lobes.*

Diff: 1

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

102) The occipital lobes are involved primarily with

a. touch.

b. vision.

c. thinking.

d. hearing.

Answer: b
Correct: *The main function of the occipital lobes is to process visual information.*

Diff: 1

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Type: MC
Page Reference: 42

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

103) The site where vision registers in the cortex is the _____ and it is located _____.

a. primary visual cortex; in front of the occipital lobes

b. secondary visual cortex; to the back of the occipital lobes

c. primary visual cortex; to the back of the occipital lobes

d. secondary visual cortex; in front of the occipital lobes

Answer: c
Correct: *The main function of the occipital lobes is to process visual information, which is controlled mainly by the primary visual cortex.*

Diff: 2

Type: MC
Page Reference: 42

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

104) After the car accident, Theodore sees a "hole" in his field of vision. There was probably damage to his

a. frontal lobe.

b. occipital lobe.

c. parietal lobe.

d. temporal lobe.

Answer: b
Correct: *The main function of the occipital lobes is to process visual information, which is controlled mainly by the primary visual cortex.*

Diff: 3

Type: MC
Page Reference: 42-43

Topic: Applied

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Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

105) In a bad fall during a hiking trip, Lowell has injured tissue in his occipital lobe. As a result of this injury, he will probably have difficulty

a. moving his fingers.

b. seeing.

c. hearing.

d. feeling sensation in his legs.

Answer: b
Correct: *The main function of the occipital lobes is to process visual information, which is controlled mainly by the primary visual cortex.*

Diff: 2

Type: MC
Page Reference: 42-43

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

106) Which lobes of the cortex are activated first as you read this question?

a. temporal

b. parietal

c. occipital

d. frontal

Answer: c
Correct: *The main function of the occipital lobes is to process visual information, which is controlled mainly by the primary visual cortex. The first step in reading is the perception of the visual information in print.*

Diff: 2

Type: MC
Page Reference: 42-43

Topic: Conceptual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

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107) The lobes located just above the ears are called the _____ lobes.

a. occipital

b. parietal

c. frontal

d. temporal

Answer: d
Correct: *The temporal lobes are located slightly above the ears, and are involved in the reception and interpretation of auditory stimuli.*

Diff: 1

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

108) Which lobes are involved primarily with the reception and interpretation of auditory information?

a. parietal

b. temporal

c. occipital

d. frontal

Answer: b
Correct: *The main function of the temporal lobes is to process auditory information, which is controlled by the primary auditory cortex.*

Diff: 2

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

109) The temporal lobes are important for

a. coordinated movement.

b. planning.

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c. vision.

d. hearing.

Answer: d
Correct: *The main function of the temporal lobes is to process auditory information, which is controlled by the primary auditory cortex.*

Diff: 1

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

110) The site in the cerebral cortex where hearing registers is

a. the primary auditory cortex.

b. Broca's area

c. Wernicke's area.

d. the somatosensory cortex.

Answer: a
Correct: *The main function of the temporal lobes is to process auditory information, which is controlled by the primary auditory cortex.*

Diff: 2

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

111) Wernicke's area is located in the

a. temporal lobe.

b. parietal lobe.

c. occipital lobe.

d. frontal lobe.

Answer: a
Correct: *The main language processing centre in the temporal lobe is Wernicke's area.*

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Diff: 2

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

112) Which of the following is an area of the brain involved in comprehending the spoken word and in formulating coherent speech and written language?

a. Wernicke's area

b. the primary auditory cortex

c. the somatosensory cortex

d. Broca's area

Answer: a
Correct: *The main language processing centre in the temporal lobe is Wernicke's area.*

Diff: 2

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

113) Which of the following statements would be true of Rhonda, who suffers from Wernicke's aphasia?

a. She is unable to hear the spoken word.

b. She has difficulty producing the speech sounds.

c. She is unable to comprehend written language.

d. She speaks fluently, but the content is either vague or incomprehensible to the listener.

Answer: d
Correct: *The pattern of behaviour associated with damage to Wernicke's area is clearly articulated speech that makes no sense to the listener, due to word or phrase choices that are incoherent, or the use of gibberish.*

Diff: 3

Type: MC
Page Reference: 43

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Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

114) Though able to hear normally, a person with auditory aphasia

a. is unable to comprehend spoken language.

b. has difficulty producing the speech sounds.

c. produces incomprehensible speech.

d. is unable to understand the written word.

Answer: a
Correct: *While the hearing process remains intact those who suffer from auditory aphasia, are unable to process the meaning of spoken language.*

Diff: 3

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

115) Which association areas house your memory for familiar sounds and melodies?

a. frontal

b. parietal

c. temporal

d. occipital

Answer: c
Correct: *Association areas related to hearing and processing language are found in the temporal lobe.*

Diff: 3

Type: MC
Page Reference: 43

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

116) The frontal lobe is to _____ as the parietal lobe is to _____.

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a. general knowledge storage; speech production

b. planning for the future; processing of touch stimuli

c. understanding auditory input; motor control

d. sensory input; vision

Answer: b
Correct: *Planning for the future is among the functions of the frontal association areas, while the parietal lobe contains the somatosensory cortex, which is responsible for processing touch sensations.*

Diff: 3

Type: MC
Page Reference: 40-42

Topic: Conceptual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

117) Broca's area is to _____ as Wernicke's area is to _____.

a. generating speech; understanding spoken language

b. producing coordinated movement; creating music

c. listening to speech; producing sounds

d. interpreting vision; generating coherent thoughts

Answer: a
Correct: *Broca's area is responsible for the ability to produce the motor movements associated with speech, while Wernicke's area allows the individual to associate meaning with spoken language.*

Diff: 3

Type: MC
Page Reference: 41, 43

Topic: Conceptual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

118) Convolutions are found in the brain because

a. an injury to the brain occurred before, during, or after birth.

b. the cerebral cortex is much larger than the cerebrum.

c. of the natural aging process.

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d. too much fluid is retained in brain tissue.

Answer: b
Correct: *The covering of the cerebrum, known as the cerebral cortex, is larger than the size of the brain, which causes the folds or "convolutions."*

Diff: 3

Type: MC
Page Reference: 40

Topic: Conceptual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

119) What is the name of the neurosurgeon who was responsible for using electrical stimulation to map the surface of the human brain?

a. Paul Broca

b. Carl Wernicke

c. Phineas Gage

d. Wilder Penfield

Answer: d
Correct: *The Canadian neurosurgeon, Wilder Penfield, applied electrical stimulation to different areas of the motor cortex of conscious human patients undergoing neurosurgery.*

Diff: 2

Type: MC
Page Reference: 40

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

120) As a consequence of damage to the left motor cortex, one might expect to have

a. some loss of coordination on the left side of the body.

b. some loss of feeling on the right side of the body.

c. some loss of coordination on the right side of the body.

d. some loss of feeling on the left side of the body.

Answer: c

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Correct: *The motor cortex of each hemisphere controls the opposite side of the body. As a result, damage to one's left motor cortex would likely result in decreased motor control on the right side of the body.*

Diff: 3

Type: MC
Page Reference: 40-41

Topic: Conceptual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

121) As a consequence of damage to the right motor cortex, one might expect to have

a. some loss of feeling on the left side of the body.

b. some loss of coordination on the left side of the body.

c. some loss of feeling on the right side of the body.

d. some loss of coordination on the right side of the body.

Answer: b
Correct: *The motor cortex of each hemisphere controls the opposite side of the body. As a result, damage to one's right motor cortex would likely result in decreased motor control on the left side of the body.*

Diff: 3

Type: MC
Page Reference: 40-41

Topic: Conceptual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

122) Dorothy received a severe blow to her head and can no longer move the fingers on her right hand. The area of her brain that may be damaged is the

a. right somatosensory cortex

b. left motor cortex

c. central neural cortex

d. left parietal lobe

Answer: b
Correct: *The motor cortex of each hemisphere controls the opposite side of the body. As a result, damage to one's left motor cortex would likely result in decreased motor control on the right side of the body.*

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Diff: 2

Type: MC
Page Reference: 40-41

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

123) What is the term for a loss or impairment of the ability to understand or communicate through the written or spoken word, which results from damage to the brain?

a. language impairment syndrome

b. agnosia

c. aphasia

d. communication impairment syndrome

Answer: c
Correct: *When an individual's ability to process written language or comprehend spoken language is lost or impaired, this is considered aphasia.*

Diff: 2

Type: MC
Page Reference: 41

Topic: Factual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

124) Which of the following statements would be true of Darlene, who suffers from Broca's aphasia?

a. She has difficulty producing the speech sounds.

b. She is unable to comprehend the spoken word.

c. She speaks fluently but the content is either vague or incomprehensible to the listener.

d. She is unable to comprehend written language.

Answer: a
Correct: *Production of speech, as a predominantly motor function, is controlled by Broca's area.*

Diff: 2

Type: MC

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Page Reference: 41-42

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

125) As a result of a brain injury, Marc has great difficulty producing any speech sounds. He speaks very slowly, with great effort, and his words are poorly articulated. He has suffered damage to

a. Wernicke's area.

b. the somatosensory cortex.

c. Broca's area.

d. the primary auditory cortex.

Answer: c
Correct: *Production of speech, as a predominantly motor function, is controlled by Broca's area.*

Diff: 3

Type: MC
Page Reference: 41-42

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

126) Phineas Gage changed from a polite, dependable, well-liked railroad foreman to a rude and impulsive person who could no longer plan realistically for the future. In a railroad construction accident, Gage had seriously damaged his

a. frontal lobe.

b. parietal lobe.

c. temporal lobe.

d. occipital lobe.

Answer: a
Correct: *The frontal lobe is responsible for impulse control, mood, and planning.*

Diff: 2

Type: MC
Page Reference: 42

Topic: Applied

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Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

127) After a serious blow to the head, John can no longer plan for the future. What area of his brain appears to be damaged?

a. frontal lobe

b. cerebellum

c. temporal lobe

d. thalamus

Answer: a
Correct: *The association areas housed in the frontal lobe are responsible for impulse control, planning for the future, motivation, and emotional responses.*

Diff: 2

Type: MC
Page Reference: 42

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

128) As a consequence of damage to the left somatosensory cortex, one might expect to have

a. some loss of feeling on the right side of the body.

b. some loss of feeling on the left side of the body.

c. some loss of coordination on the right side of the body.

d. some loss of coordination on the left side of the body.

Answer: a
Correct: *The somatosensory cortex of each hemisphere controls the opposite side of the body. As a result, damage to one's left somatosensory cortex would likely result in decreased sensation on the right side of the body.*

Diff: 2

Type: MC
Page Reference: 42

Topic: Factual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

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129) Martha has had a stroke. She has lost the feeling in her left leg. Which of the following sites in the brain might be damaged by the stroke?

a. the right somatosensory cortex.

b. the frontal lobe.

c. the left parietal lobe.

d. Broca's area.

Answer: a
Correct: *The somatosensory cortex of each hemisphere controls the opposite side of the body. As a result, damage to one's right somatosensory cortex would likely result in decreased sensation on the left side of the body.*

Diff: 2

Type: MC
Page Reference: 42

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

130) If an individual becomes blind due to injury or disease, what change will accompany learning to read using Braille?

a. The touch area of the somatosensory cortex related to the fingers will increase in area.

b. The motor cortex controlling the eyes and face will decrease in area.

c. The frontal lobes will develop greater mapping skills.

d. The occipital lobes will decrease in size.

Answer: a
Correct: *The sudden need to learn Braille would place unusual demands on the fingers to sense information of a highly complex nature on a more frequent basis. This, in turn, is likely to result in an increase in the size of the area that corresponds to the fingers in the somatosensory cortex.*

Diff: 3

Type: MC
Page Reference: 42

Topic: Conceptual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

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131) If Perry is blindfolded, he cannot distinguish between smooth sandpaper and rough sandpaper with his left hand. He has sustained damage in his

a. right parietal lobe.

b. right frontal lobe.

c. left frontal lobe.

d. left parietal lobe.

Answer: a
Correct: *The somatosensory cortex of each hemisphere controls the opposite side of the body. As a result, damage to one's left somatosensory cortex would likely result in decreased sensation on the right side of the body.*

Diff: 3

Type: MC
Page Reference: 42

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

132) As a result of a gunshot wound in his parietal lobes, Charles is having difficulty

a. seeing.

b. feeling sensation in his fingers.

c. hearing.

d. moving his fingers.

Answer: b
Correct: *One of the main centres in the parietal lobes is the somatosensory cortex, which is responsible for processing touch sensations. Damage to these areas would likely result in diminished touch sensations.*

Diff: 3

Type: MC
Page Reference: 42

Topic: Applied

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

133) In the majority of persons, the hemisphere that handles most of the language functions is the

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a. front hemisphere.

b. left hemisphere.

c. right hemisphere.

d. back hemisphere.

Answer: b
Correct: *Hemispheric specialization refers to the skills and abilities associated with each of the hemispheres. The left hemisphere is associated with logic, language and linear thinking.*

Diff: 2

Type: MC
Page Reference: 44

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

134) Research suggests that the left hemisphere of the brain in most people handles all of the following, ***except***

a. visual-spatial skills.

b. language ability.

c. mathematical ability.

d. coordinating complex movements.

Answer: a
Correct: *Among the abilities associated with the left hemisphere, visual-spatial skills are not included, as they are predominantly associated with the right hemisphere.*

Diff: 3

Type: MC
Page Reference: 44

Topic: Conceptual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

135) The left hemisphere specializes in all of the following activities ***except***

a. communicating emotion.

b. analyzing information.

c. reading and writing.

d. speech.

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Answer: a
Correct: *Among the abilities associated with the left hemisphere, communicating emotion is not included, as this is predominantly associated with the right hemisphere.*

Diff: 2

Type: MC
Page Reference: 45

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

136) For most people, which is a specialization of the right hemisphere?

a. visual-spatial skills

b. analyzing information

c. logic

d. speech

Answer: a
Correct: *Hemispheric specialization refers to the skills and abilities associated with each of the hemispheres. The right hemisphere is associated with visual-spatial skills, among others.*

Diff: 2

Type: MC
Page Reference: 44

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

137) Which is ***not*** one of the specialized abilities usually associated with the right hemisphere?

a. singing

b. mathematics

c. visual-spatial skills

d. recognition and expression of emotion

Answer: b
Correct: *Mathematics is not among the predominantly right-brained activities as it is viewed as a primarily left-brain function.*

Diff: 2

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Type: MC
Page Reference: 44

Topic: Conceptual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

138) Carl is unaware of objects in his left visual field and sometimes even leaves food on the left side of his plate. He may be said to be suffering from

a. Broca's syndrome.

b. unilateral neglect.

c. bilateral neglect.

d. unilateral aphasia.

Answer: b
Correct: *Patients with right-brain damage may not be aware of objects in their opposite visual field. The term for this is unilateral neglect.*

Diff: 2

Type: MC
Page Reference: 45

Topic: Conceptual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

139) Why have some individuals had their corpus callosum surgically severed?

a. to treat severe depression and other mental illness

b. to control outbursts of rage and anger

c. to limit the severity of epileptic seizures

d. to provide subjects for split-brain research

Answer: c
Correct: *Severing the corpus callosum allows the pulsing electrical activity within the brain to be contained within one hemisphere, thereby eliminating the severity of the seizures.*

Diff: 2

Type: MC
Page Reference: 46

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

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140) Split-brain patients are people who

a. do not have the normal lateralization of the hemispheres.

b. have one cerebral hemisphere that is non-functional.

c. have suffered massive losses of brain tissue in one hemisphere.

d. have had their corpus callosum severed.

Answer: d
Correct: *In some patients, surgery to sever the corpus callosum is required to improve quality of life. This is the case for those who suffer serious epileptic seizures, as the severing of the corpus callosum greatly reduces the incidence of seizure activity.*

Diff: 2

Type: MC
Page Reference: 46

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

141) A split-brain patient is shown a picture of an object so that it stimulates only the right cerebral hemisphere. Which of the following can this patient do?

a. select the object with the right hand

b. neither name nor select the object

c. name the object

d. select the object with the left hand

Answer: d
Correct: *In split-brain subjects, visual input that stimulates only the right brain does not permit the subject to use language to identify the object, but the right brain does remember the image. When asked, such subjects are still able to select the item seen by using non-language responses (because these are left-brain activities). The left hand receives messages directly from the right brain.*

Diff: 3

Type: MC
Page Reference: 46

Topic: Conceptual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

142) Which of the following statements is ***not*** true of the split-brain operation?

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a. It provides a means of studying the functions of the individual hemispheres.

b. It causes major changes in intelligence, personality, and behaviour.

c. It makes transfer of information between the hemispheres impossible.

d. It is used for people suffering from severe epilepsy.

Answer: b
Correct: *There is no evidence to suggest that the split-brain operation causes changes in functioning related to intelligence, personality, or behaviour.*

Diff: 2

Type: MC
Page Reference: 46

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

143) During a test, right-handed Susan, a split-brain patient, has a basketball in her left field of vision and a volleyball in her right field of vision. When asked what she sees, what will her answer most likely be?

a. "I see a basketball."

b. "The image is very blurry, and I cannot make out what is there."

c. "I see both a volleyball and a basketball."

d. "I see a volleyball."

Answer: d
Correct: *The right visual field stimulates the left brain in which the language centres are also located, thereby allowing speech to identify visual stimuli. The right brain cannot provide a verbal label to a stimulus presented in the left visual field.*

Diff: 3

Type: MC
Page Reference: 46-47

Topic: Applied

Objective: 2.10 Contrast the functions of the left and right hemispheres.

144) The brain stops growing

a. well into old age.

b. when one retires.

c. well into adulthood.

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d. at puberty.

Answer: c
Correct: *There are spurts of growth in the brain, but it does not actually stop growing until well into the adult years.*

Diff: 2

Type: MC
Page Reference: 47

Topic: Factual

Objective: 2.11 Map out the major developmental changes of the brain across the lifespan.

145) The aspect of brain injury that determines whether or not the patient will die from the injury is

a. the overall health of the brain at the time of injury.

b. the gender of the injured person.

c. the age of the person at the time of injury.

d. the precise location of the injury.

Answer: d
Correct: *Of all the factors that can influence brain functioning, the likelihood than an injury to the brain will cause death is determined first and foremost by the precise location of the injury.*

Diff: 2

Type: MC
Page Reference: 47

Topic: Factual

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

146) The most common cause of injury to the adult brain is

a. abuse of drugs.

b. head injuries.

c. stroke.

d. tumours.

Answer: c

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Correct: *Of all the causes listed, stroke is the most common cause of injury to the adult brain.*

Diff: 3

Type: MC
Page Reference: 47

Topic: Factual

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

147) Which of the following best describes the impact on the brain across the life span of neuronal growth and loss?

a. After birth the brain develops no new neurons or synapses. The rate of loss is low for children, high for the elderly.

b. The rate of neuron and synapse gain and loss across the life span is about equal.

c. The brain gains and loses neurons and synapses across the life span, but initial gains outnumber losses. This ratio is gradually reversed with age.

d. Neuronal and synaptic loss is always greater than the gain.

Answer: c
Correct: *The brain gains and loses neurons and synapses across the life span, but initial gains outnumber losses. This ratio is gradually reversed with age.*

Diff: 3

Type: MC
Page Reference: 47

Topic: Conceptual

Objective: 2.12 Understand the impact of synaptic losses across the lifespan.

148) A recent study has suggested that _____,but not _____, is lost with normal aging in both hemispheres of the cerebellum.

a. grey matter; white matter

b. white matter; grey matter

c. neurons; axons

d. neurons; glial cells

Answer: a
Correct: *One brain-imaging study showed that grey matter, but not white matter, is lost with normal aging in both hemispheres of the cerebellum.*

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Diff: 3

Type: MC
Page Reference: 47

Topic: Factual

Objective: 2.12 Understand the impact of synaptic losses across the lifespan.

149) The brain's ability to reorganize and compensate for brain damage is called

a. neural conduction.

b. aphasic recovery.

c. plasticity.

d. cortex regeneration.

Answer: c
Correct: *When parts of the brain are damaged and other parts eventually evolve to compensate for the damaged area, this is known as plasticity.*

Diff: 2

Type: MC
Page Reference: 47

Topic: Conceptual

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

150) With age, the plasticity of the brain

a. ends.

b. improves.

c. increases.

d. decreases.

Answer: d
Correct: *As one gets older, plasticity also decreases.*

Diff: 2

Type: MC
Page Reference: 48

Topic: Factual

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

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151) Who is the neuroscientist associated with research in brain plasticity in Canada?

a. Berger

b. Kolb

c. Gage

d. Penfield

Answer: b
Correct: *The research of Bryan Kolb has provided vast understanding of the nature of plasticity.*

Diff: 2

Type: MC
Page Reference: 48

Topic: Factual

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

152) Which of the following reveals the electrical activity of the brain by producing a record of brain waves?

a. MRI

b. CT scan

c. electroencephalograph

d. PET scan

Answer: c
Correct: *The electroencephalograph or EEG produces a record of brain wave activity by placement of electrodes at various positions on the scalp.*

Diff: 2

Type: MC
Page Reference: 49

Topic: Factual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

153) Which of the following uses cross-sectional x-ray images to reveal structures in the brain?

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a. MRI, or magnetic resonance imaging

b. a PET scan, or positron-emission tomography scan

c. SQUID, or a superconducting quantum interference device

d. a CT scan, or computerized axial tomography scan

Answer: d
Correct: *Multiple, thin x-rays can provide a computerized cross-section image, known as a CT scan, of the brain.*
Diff: 2

Type: MC
Page Reference: 50

Topic: Factual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

154) Which of the following produces high-resolution images of the structure of the brain without using x-rays?

a. a SQUID, or a superconducting quantum interference device

b. a PET scan, or positron-emission tomography scan

c. a CT scan, or computerized axial tomography scan

d. MRI, or magnetic resonance imaging

Answer: d
Correct: *The MRI uses magnetic fields to produce high-resolution images of the structures of the brain.*

Diff: 2

Type: MC
Page Reference: 50

Topic: Factual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

155) Which of the following produces images of brain functions by injecting the patient with radioactive glucose?

a. a PET scan, or positron-emission tomography scan

b. a CT scan, or computerized axial tomography scan

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c. a SQUID, or superconducting quantum interference device

d. MRI, or magnetic resonance imaging

Answer: a
Correct: *Either an injection of radioactive glucose or the inhalation of oxygen with low levels of radioactivity are required to produce a PET scan.*

Diff: 2

Type: MC
Page Reference: 50

Topic: Factual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

156) A person who is having an electroencephalograph is producing mainly alpha waves on the recorder. We can say that they are in a state of

a. anxiety.

b. deep relaxation.

c. deep sleep.

d. light sleep.

Answer: b
Correct: *Of the four types of brain waves, alpha waves are associated with deep relaxation.*

Diff: 3

Type: MC
Page Reference: 49

Topic: Conceptual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

157) Which brainwave is associated with deep sleep?

a. beta

b. delta

c. alpha

d. theta

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Answer: b
Correct: *Of the four types of brain waves, delta waves are associated with slow-wave sleep.*

Diff: 2

Type: MC
Page Reference: 49

Topic: Conceptual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

158) Which brainwave is associated with mental or physical activity?

a. theta

b. delta

c. beta

d. alpha

Answer: c
Correct: *Of the four types of brain waves, beta waves are associated with mental or physical activity.*

Diff: 2

Type: MC
Page Reference: 49

Topic: Conceptual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

159) The brainwave associated with deep sleep is _____ and the brainwave associated with deep relaxation is _____.

a. beta; alpha

b. theta; beta

c. delta; alpha

d. alpha; beta

Answer: c

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Correct: *Delta waves signal deep sleep, while alpha waves designate a state of deep relaxation.*

Diff: 2

Type: MC
Page Reference: 49

Topic: Conceptual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

160) What is the name for an electrical wire so small that it can be used to monitor the electrical activity of a single neuron or to stimulate activity within it?

a. microelectrode

b. electrical probe

c. microelectronic probe

d. electroencephalograph

Answer: a
Correct: *The microelectrode is small enough to enter a neuron and monitor its activity without destroying it.*

Diff: 2

Type: MC
Page Reference: 49

Topic: Factual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

161) If we are using either the CT scan or MRI, we will produce

a. a picture of activity in various parts of the brain.

b. electrical activity maps of the brain.

c. images of the structures within the brain.

d. an x-ray of the brain.

Answer: c
Correct: *Neither of these forms of imaging involve x-rays, nor do they provide images of activity in the brain, electrical or otherwise. They do, however, produce images of the structures of the brain.*

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Diff: 2

Type: MC
Page Reference: 50

Topic: Factual

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

162) Which of the following techniques produces the clearest image of the brain?

a. CT scan

b. MRI

c. EEG

d. PET scan

Answer: b
Correct: *Of the various modalities of viewing activity and structures in the brain, the clearest images come from the MRI.*

Diff: 2

Type: MC
Page Reference: 50

Topic: Factual

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

163) The technique used to show an image depicting the amount of activity taking place in various parts of the brain is the

a. MRI.

b. CT scan.

c. PET scan.

d. EEG.

Answer: c
Correct: *Because the brain uses oxygen and glucose during any activity, the PET scan is able to detect changes in levels of these substances, and thereby determine the level of activity the brain is engaged in at any time.*

Diff: 3

Type: MC
Page Reference: 50

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Topic: Factual

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

164) Which of the following scanners reveals brain activity and function, rather than the structure of the brain

a. X-ray photography

b. MRI

c. CT scan

d. EEG

Answer: d
Correct: *The EEG reveals activity levels in the brain and the location of activity, reflecting the parts that are being used at any given time.*

Diff: 2

Type: MC
Page Reference: 49

Topic: Factual

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

165) The CT scan is to the study of _____, as the PET scan is to the study of _____.

a. brain activity; brain structure

b. sleep; awareness

c. thinking; relaxation

d. brain structure; brain activity

Answer: d
Correct: *The CT scan reveals structures within the brain, while the PET scan signals levels of activity within the brain.*

Diff: 3

Type: MC
Page Reference: 50

Topic: Conceptual

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

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166) Jennifer wants to record the electrical activity of a single neuron in a mouse brain. Which technique will she need to use to record this information?

a. a microelectrode

b. a CT scan, or computerized axial tomography scan

c. a PET scan, or positron-emission tomography scan

d. MRI, or magnetic resonance imaging

Answer: a
Correct: *Microelectrodes can be used to monitor the electrical activity of a single neuron or to stimulate activity within it.*

Diff: 2

Type: MC
Page Reference: 50

Topic: Factual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

167) The _____ nervous system connects the brain and the spinal cord to the rest of the body.

a. peripheral

b. somatic

c. central

d. autonomic

Answer: a
Correct: *The peripheral nervous system consists of all the nerves that connect the brain and spinal cord to the rest of the body.*

Diff: 2

Type: MC
Page Reference: 51

Topic: Factual

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

168) The somatic and autonomic nervous systems make up the

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a. sensory and motor nervous systems.

b. sympathetic and parasympathetic nervous systems.

c. endogenous and exogenous nervous systems.

d. peripheral nervous system.

Answer: d
Correct: *The peripheral nervous system consists of the autonomic and somatic nervous systems.*

Diff: 1

Type: MC
Page Reference: 51

Topic: Factual

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

169) Which nervous system takes information to and from the voluntary muscles throughout the body?

a. limbic

b. sympathetic

c. somatic

d. autonomic

Answer: c
Correct: *The nerves of the somatic nervous system are under our conscious control, for the most part.*

Diff: 1

Type: MC
Page Reference: 51

Topic: Factual

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

170) The autonomic nervous system is _____, whereas the somatic nervous system is largely _____.

a. conscious; unconscious

b. voluntary; involuntary

c. related to the spine; related to the cortex

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d. involuntary; voluntary

Answer: d
Correct: *The autonomic nervous system functions essentially automatically, while the nerves of the somatic nervous system are, for the most part, under our conscious control.*

Diff: 2

Type: MC
Page Reference: 51

Topic: Conceptual

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

171) The _____ nervous system mobilizes our body's resources during times of stress; the _____ nervous system brings the heightened bodily responses back to normal when the emergency is over.

a. parasympathetic; sympathetic

b. sympathetic; parasympathetic

c. somatic; autonomic

d. autonomic; somatic

Answer: b
Correct: *The sympathetic nervous system serves to increase heart rate, respiration, etc., during times of threat or excitement, while the parasympathetic nervous system helps return those functions to normal levels after the threat or excitement has passed.*

Diff: 2

Type: MC
Page Reference: 51-52

Topic: Conceptual

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

172) Which of the following activities is largely an autonomic nervous system function?

a. watching the television news

b. performing gymnastics

c. dreaming about a romantic encounter

d. digesting a hot dog

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Answer: d
Correct: *Of the four options, the digestive system is essentially outside of the realm of our conscious control, and involves the autonomic nervous system, rather than any other parts of the nervous system.*

Diff: 3

Type: MC
Page Reference: 52

Topic: Conceptual

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

173) Which of the following is ***not*** a response of the sympathetic nervous system?

a. Blood flow to the skeletal muscles increases.

b. The digestive system increases its activity.

c. Breathing quickens.

d. Heart rate increases.

Answer: b
Correct: *Sympathetic nervous system activity slows the digestive system.*

Diff: 2

Type: MC
Page Reference: 52

Topic: Conceptual

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

174) When activated, which of the following systems increases heart rate, raises blood pressure, and releases sugar into the blood?

a. somatic

b. sympathetic

c. parasympathetic

d. central

Answer: b
Correct: *Under stress, the sympathetic nervous system is responsible for increasing heart rate, blood pressure, and blood sugar levels, among other functions.*

Diff: 2

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Type: MC
Page Reference: 51-52

Topic: Factual

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

175) You see a rattlesnake and your heart rate increase, you get a dry mouth, and you sweating and trembling. Your bodily reactions are due to the

a. sympathetic nervous system.

b. somatic nervous system.

c. parasympathetic nervous system.

d. reflexive nervous system.

Answer: a
Correct: *All of the responses described in this item fall under the control of the sympathetic nervous system, which is activated in times of stress, such as when we see a rattlesnake.*

Diff: 2

Type: MC
Page Reference: 52

Topic: Applied

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

176) While walking down a dark street, you hear footsteps behind you. This results in a physiological reaction called the

a. homeostatic nervous response.

b. fight-or-flight response.

c. rest-and-digest response.

d. autonomic rebound reaction.

Answer: b
Correct: *The physiological arousal produced by the sympathetic nervous system is called the fight-or-flight response.*

Diff: 2

Type: MC
Page Reference: 52

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Topic: Applied

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

177) When the teacher was handing out this test, you noticed that your respiration rate and heartbeat increased, your palms got sweaty and your hand shook a little. Your pre-test behaviours were triggered by the

a. somatic nervous system.

b. parasympathetic nervous system.

c. cranial nervous system.

d. sympathetic nervous system.

Answer: d
Correct: *All of the responses described in this item fall under the control of the sympathetic nervous system, which is activated in times of stress, such as when we are about to take a test.*

Diff: 3

Type: MC
Page Reference: 52

Topic: Applied

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

178) After this test is over, you plan to go relax and let your parasympathetic nervous system activity _____ and your sympathetic nervous system activity _____.

a. decrease; increase

b. decrease; decrease

c. increase; decrease

d. increase; increase

Answer: c
Correct: *The sympathetic nervous system is responsible for activating our resources during times of stress (such as taking a test). The sympathetic nervous system then decreases its activity once the source of stress has passed. At this point, the parasympathetic nervous system increases activity as it returns our bodily functions to normal levels.*

Diff: 2

Type: MC

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Page Reference: 51-52

Topic: Applied

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

179) Which is ***not*** associated with the parasympathetic system?

a. Increased blood flow to the stomach

b. Lower blood pressure.

c. Release of glucose into the blood

d. Slower heartbeat

Answer: c
Correct: *The release of glucose into the blood is associated with the fight or flight response, which is under the control of the sympathetic nervous system.*

Diff: 3

Type: MC
Page Reference: 53

Topic: Conceptual

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

180) Which of the following systems lowers blood pressure, slows heart rate, and diverts blood away from skeletal muscles?

a. somatic

b. parasympathetic

c. central

d. sympathetic

Answer: b
Correct: *All of the patterns described in this item are associated with the body's response after an emergency or source of stress has passed. This is under the control of the parasympathetic nervous system.*

Diff: 2

Type: MC
Page Reference: 52-53

Topic: Factual

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Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

181) The endocrine glands secrete _____ directly into the _____.

a. enzymes; digestive tract

b. hormones; digestive tract

c. enzymes; bloodstream

d. hormones; bloodstream

Answer: d
Correct: *Hormones travel through the bloodstream and are under the control of the endocrine system.*

Diff: 2

Type: MC
Page Reference: 53

Topic: Factual

Objective: 2.18 Identify the components of the endocrine system.

182) Hormones are released into the _____ and neurotransmitters are released into the _____.

a. synapses; synapses

b. synapses; bloodstream

c. bloodstream; synapses

d. bloodstream; bloodstream

Answer: c
Correct: *Hormones travel through the bloodstream, while neurotransmitters are released by the neurons into the synapses.*

Diff: 2

Type: MC
Page Reference: 53, 32

Topic: Factual

Objective: 2.18 Identify the components of the endocrine system.

183) Because it influences all the other endocrine glands, the _____ is sometimes described as the "master gland."

a. adrenal gland

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b. thyroid gland

c. pituitary gland

d. hypothalamus

Answer: c
Correct: *The "master gland" is the term given to the pituitary gland because of its role in controlling the remaining endocrine glands.*

Diff: 2

Type: MC
Page Reference: 53

Topic: Factual

Objective: 2.18 Identify the components of the endocrine system.

184) Which of the following is ***not*** a gland in the endocrine system?

a. adrenal

b. thyroid

c. mitochondria

d. pituitary

Answer: c
Correct: *Mitochondria are functional units of cells.*

Diff: 2

Type: MC
Page Reference: 53-54

Topic: Factual

Objective: 2.18 Identify the components of the endocrine system.

185) Which endocrine gland keeps the body's metabolism in balance?

a. thyroid

b. adrenal

c. pancreas

d. pituitary

Answer: a
Correct: *As the producer of thyroxin, the hormone that regulates the functioning of the metabolism, the thyroid keeps the metabolism in balance.*

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Diff: 3

Type: MC
Page Reference: 53-54

Topic: Factual

Objective: 2.19 Understand the role of glands and hormones within the endocrine system.

186) Releasing hormones that prepare the body for emergencies is the task of the

a. pancreas.

b. adrenal glands.

c. pituitary gland.

d. thyroid gland.

Answer: b
Correct: *The two hormones that engage the sympathetic nervous system are epinephrine and norepinephrine, both of which are produced by the adrenal glands.*

Diff: 2

Type: MC
Page Reference: 54

Topic: Conceptual

Objective: 2.19 Understand the role of glands and hormones within the endocrine system.

187) Which endocrine gland regulates blood sugar?

a. pituitary

b. pancreas

c. adrenals

d. thyroid

Answer: b
Correct: *Two hormones that regulate blood sugar levels are insulin and glucagon, both of which are produced by the pancreas.*

Diff: 3

Type: MC
Page Reference: 54

Topic: Factual

Objective: 2.19 Understand the role of glands and hormones within the endocrine system.

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188) The ovaries in females and the testes in males are the sex glands, also known as

a. pituitary glands.

b. parathyroids.

c. adrenal glands.

d. gonads.

Answer: d
Correct: *"Gonads" is the term applied to both the male and female sex glands.*

Diff: 1

Type: MC
Page Reference: 54

Topic: Conceptual

Objective: 2.19 Understand the role of glands and hormones within the endocrine system.

189) Which glands release sex hormones that make reproduction possible and are responsible for the secondary sex characteristics?

a. pancreas

b. adrenal glands

c. gonads

d. parathyroids

Answer: c
Correct: *"Gonads" is the term applied to both the male and female sex glands.*

Diff: 2

Type: MC
Page Reference: 54

Topic: Factual

Objective: 2.19 Understand the role of glands and hormones within the endocrine system.

190) According to the text, what percentage of the world's population is right-handed?

a. 90

b. 80

c. 97

d. 87

Answer: a

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Correct: *About 90 percent of the world is right-handed.*

Diff: 2

Type: MC
Page Reference: 55

Topic: Factual

Objective: Apply It

191) Handedness is believed to be influenced by all of the following, ***except***

a. influences in the school environment.

b. sex.

c. genetics.

d. a general "right-ward bias."

Answer: a
Correct: *No research has attributed the school setting as a cause for handedness, though genetics, culture and a "right-ward bias" have all been shown to have some impact on this phenomenon.*

Diff: 2

Type: MC
Page Reference: 55

Topic: Factual

Objective: Apply It

192) One of the activities of glial cells is the release of neurotransmitters.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 3

Type: TF
Page Reference: 30

Topic: Conceptual

Objective: 2.1 Define the function of the three types of neurons.

193) A typical neuron has three major parts, the cell body, the soma, and dendrites.

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a. True
Incorrect: *Incorrect. Cell body and soma refer to the same structure.*

b. False
Correct: *Correct*

Answer: b
Diff: 2

Type: TF
Page Reference: 30

Topic: Conceptual

Objective: 2.2 Identify the three key structures of a neuron.

194) A given neuron is influence by either excitatory neurotransmitters or inhibitory neurotransmitters, but not both.

a. True
Incorrect: *Incorrect. Almost all neurons are connected to thousands of other neurons, some inhibitory and some excitatory.*

b. False
Correct: *Correct*

Answer: b
Diff: 2

Type: TF
Page Reference: 32

Topic: Conceptual

Objective: 2.2 Identify the three key structures of a neuron.

195) The resting potential is the firing of a neuron that results when the charge within the neuron becomes more positive than the charge outside the cell membrane.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 1

Type: TF
Page Reference: 31

Topic: Factual

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Objective: 2.3 Explain how neural impulses work.

196) The receptor sites of receiving neurons will receive only one kind of neurotransmitter.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 2

Type: TF
Page Reference: 32

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

197) The myelin sheath acts as insulation for the axon.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 2

Type: TF
Page Reference: 31

Topic: Factual

Objective: 2.3 Explain how neural impulses work.

198) Once a neurotransmitter is released and used by a receiving neuron it cannot be used again, and must be destroyed and removed from the body.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct. Often neurotransmitters are reused.*

Answer: b
Diff: 2

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Type: TF
Page Reference: 32

Topic: Factual

Objective: 2.4 Contrast excitatory and inhibitory effects of neurotransmitters and how they affect behaviour.

199) Serotonin forms excitatory effects at most of the receptor sites where it is active.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct.*

Answer: b
Diff: 2

Type: TF
Page Reference: 34

Topic: Factual

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

200) The cerebellum plays a role in motor learning and in retaining memories of motor activities.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 2

Type: TF
Page Reference: 36-37

Topic: Conceptual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

201) The hypothalamus is responsible for the physiological sensations that accompany strong emotions.

a. True
Correct: *Correct*

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b. False
Incorrect: *Incorrect*

Answer: a
Diff: 2

Type: TF
Page Reference: 37

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

202) The amygdala plays a critical role in balance and movement.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 1

Type: TF
Page Reference: 37-38

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

203) Some recent research has suggested that the cerebellum is involved in cognitive and social functions.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 1

Type: TF
Page Reference: 37

Topic: Factual

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

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204) Once the organization of the somatosensory cortex is fully developed, it does not undergo any changes.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 2

Type: TF
Page Reference: 42

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemispheres.

205) Plasticity is the term given to the brain's ability to adapt to change, even brain damage.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 2

Type: TF
Page Reference: 41

Topic: Factual

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemispheres.

206) People with Broca's aphasia know what they want to say, but have trouble producing speech.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a

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Diff: 2

Type: TF
Page Reference: 41

Topic: Conceptual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

207) Rodney has had severe damage to his right, primary visual cortex. As a result, he is probably almost blind in his right eye.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 2

Type: TF
Page Reference: 42-43

Topic: Conceptual

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

208) The right hemisphere is more specialized than the left hemisphere for analyzing complex perceptual tasks.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 1

Type: TF
Page Reference: 44-45

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

209) The right hemisphere controls singing and musical ability in most untrained musicians.

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a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 3

Type: TF
Page Reference: 45

Topic: Factual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

210) People who have damage to their right hemispheres have trouble with spatial orientation, and even have difficulty finding their way around familiar surroundings.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 1

Type: TF
Page Reference: 45

Topic: Conceptual

Objective: 2.10 Contrast the functions of the left and right hemispheres.

211) Evidence for the specialization of brain functions to the left or right side supports the notion that people may be “left-brained” or “right-brained.”

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 2

Type: TF
Page Reference: 46

Topic: Conceptual

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Objective: 2.10 Contrast the functions of the left and right hemispheres.

212) Plasticity is a term used to describe the fragility of the brain.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 2

Type: TF
Page Reference: 48

Topic: Conceptual

Objective: 2.11 Map out the major developmental changes of the brain across the lifespan.

213) Some individuals who have had an entire hemisphere removed early in life because of uncontrollable epilepsy have been able to lead near-normal intellectual lives.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 1

Type: TF
Page Reference: 48

Topic: Conceptual

Objective: 2.12 Understand the impact of synaptic losses across the lifespan.

214) Plasticity of the brain increases with age.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 1

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Type: TF
Page Reference: 48

Topic: Conceptual

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

215) The PET scan can map the patterns of blood flow, oxygen use, and consumption of glucose (the food of the brain).

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 1

Type: TF
Page Reference: 50

Topic: Conceptual

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

216) None of the imaging techniques discussed in the chapter can show brain activity. They only show structure in varying degrees of detail.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 1

Type: TF
Page Reference: 49-50

Topic: Conceptual

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

217) The *fight or flight* response is the result of activity in the parasympathetic nervous system.

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a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 1

Type: TF
Page Reference: 52

Topic: Conceptual

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

218) The sympathetic nervous system helps bring body functions back to normal after an emergency situation has occurred.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 1

Type: TF
Page Reference: 52

Topic: Factual

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

219) The parasympathetic nervous system helps bring body functions back to normal after an emergency situation has occurred.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 1

Type: TF
Page Reference: 52

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Topic: Conceptual

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

220) The pancreas is known as the "master gland" of the endocrine system.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b
Diff: 1

Type: TF
Page Reference: 53

Topic: Factual

Objective: 2.18 Identify the components of the endocrine system.

221) The endocrine system is a series of ductless glands, found in various parts of the body; it secretes chemicals known as hormones.

a. True
Correct: *Correct*

b. False
Incorrect: *Incorrect*

Answer: a
Diff: 1

Type: TF
Page Reference: 53

Topic: Factual

Objective: 2.18 Identify the components of the endocrine system.

222) The hypothalamus is controlled by the pituitary.

a. True
Incorrect: *Incorrect*

b. False
Correct: *Correct*

Answer: b

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Diff: 2

Type: TF
Page Reference: 53

Topic: Factual

Objective: 2.19 Understand the role of glands and hormones within the endocrine system

223) Describe the relationship between axons and dendrites.

Answer:
GUIDELINES: Dendrites are specialized parts of a neuron that receive input from the terminals of other neurons. Axons transmit action potentials generated in the cell body to the terminals, which can then stimulate connected cells via synapses.

Diff: 1

Type: ES
Page Reference: 30

Objective: 2.2 Identify the key structures of a neuron.

224) What is a synapse?

Answer:
GUIDELINES: The synapse is the junction where the axon of a sending neuron communicates with a receiving neuron across the synaptic cleft. The sending neuron releases neurotransmitters into the synapse as part of the process of communicating with the receiving neuron.

Diff: 1

Type: ES
Page Reference: 30-31

Objective: 2.2 Identify the three key structures of a neuron.

225) What is a neuron, and what are the functions of its three parts?

Answer:
GUIDELINES: A neuron is a specialized cell that conducts impulses, called action potentials, through the nervous system and contains three major parts. The three parts are a cell body, dendrites, and an axon. The dendrites receive signals from sending neurons, the cell body relays this information to the axon which sends a signal to the next set of neurons.

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Diff: 1

Type: ES
Page Reference: 31

Objective: 2.2 Identify the three key structures of a neuron.

226) What is an action potential and how is it generated?

Answer:
GUIDELINES: An action potential is the sudden reversal of the resting potential that initiates the firing of a neuron. It is caused by signals received from a sending neuron in the form of neurotransmitters, which cause ion channels to open which allows ions to enter the receiving neuron and alter its overall charge.

Diff: 2

Type: ES
Page Reference: 31

Objective: 2.3 Explain how neural impulses work.

227) How are neurotransmitters involved in communication between neurons?

Answer:
GUIDELINES: A chemical released into the synaptic cleft from the axon terminal of the sending neuron crosses the synapse and binds to appropriate receptors on the dendrites or cell body of the receiving neuron, influencing the cell either to fire or not to fire.

Diff: 1

Type: ES
Page Reference: 32

Objective: 2.3 Explain how neural impulses work.

228) How can the brain tell the difference between a very strong stimulus and a very weak stimulus?

Answer:
GUIDELINES: The answer lies in the number of neurons firing at the same time and their rate of firing—the number of times per second. A weak stimulus may cause relatively few neurons to fire; a strong stimulus may cause thousands of neurons to fire at the same time. A weak stimulus may cause neurons to fire very slowly; a strong stimulus may cause neurons to fire hundreds of times per second.

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Diff: 1

Type: ES
Page Reference: 31

Objective: 2.3 Explain how neural impulses work.

229) Explain how neural impulses travel through neurons and between neurons.

Answer:
GUIDELINES: An explanation of how neural impulses travel through neurons should indicate that communication is in one direction (dendrites, cell body, axon) and should include a brief explanation of the action potential. Explanation of communication between neurons should mention the synapse, the role of neurotransmitters, the specificity of receptor sites, and information about how many neurons can communicate with each other.

Diff: 3

Type: ES
Page Reference: 30-33

Objective: 2.3 Explain how neural impulses work.

230) What are neurotransmitters and how do they work?

Answer:
GUIDELINES: Neurotransmitters are chemicals that are released into the synaptic cleft from the axon terminal of the sending neuron. They cross the synapse and bind to appropriate receptors on the dendrites or cell body of the receiving neuron, influencing the cell either to fire or not to fire.

Diff: 2

Type: ES
Page Reference: 32

Objective: 2.3 Explain how neural impulses work.

231) What are some of the ways in which neurotransmitters affect our behaviour, and what are some of the major neurotransmitters?

Answer:
GUIDELINES: Neurotransmitters are manufactured in the brain, the spinal cord, the glands, and a few other parts of the body. Each kind of neurotransmitter affects the activity of the brain in a different way. Some neurotransmitters regulate the actions of

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glands and muscles; others affect learning and memory; still others promote sleep or stimulate mental and physical alertness. Some orchestrate our feelings and emotions, from depression to euphoria. Others provide relief from pain.

Diff: 2

Type: ES
Page Reference: 32

Objective: 2.4 Contrast excitatory and inhibitory effects of neurotransmitters and how they affect behaviour.

232) What is acetylcholine and what functions does it typically play in the brain and nervous system?

Answer:
GUIDELINES: A neurotransmitter that plays a role in learning, memory, and rapid eye movement sleep, and causes the skeletal muscle fibres to contract.

Diff: 2

Type: ES
Page Reference: 33-34

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

233) How were endorphins discovered and what are their major functions in the brain?

Answer:
GUIDELINES: Researchers demonstrated that some receptor sites were activated by opiates, such as morphine and heroin, and then discovered chemicals in the brain that activated these same receptor sites. They named these chemicals endorphins.

Diff: 2

Type: ES
Page Reference: 34

Objective: 2.5 Understand the role of the following neurotransmitters: acetylcholine, dopamine, norepinephrine, epinephrine, serotonin, amino acids, and endorphins.

234) What is the spinal cord and what is its main function?

Answer:

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GUIDELINES: The spinal cord is an extension of the brain, reaching from the base of the brain through the neck and spinal column, which transmits messages between the brain and the peripheral nervous system.

Diff: 1

Type: ES
Page Reference: 35

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus.

235) What are the crucial functions handled by the brainstem?

Answer:
GUIDELINES: The brainstem handles functions that are vital to our physical survival. It controls arousal, sleep, heartbeat, breathing, blood pressure, coughing, and swallowing.

Diff: 1

Type: ES
Page Reference: 35-36

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus.

236) What is the primary role of the thalamus?

Answer:
GUIDELINES: The thalamus serves as the relay station for virtually all the information that flows into and out of the higher brain centres. It also affects our ability to learn new information and regulates sleep cycles.

Diff: 1

Type: ES
Page Reference: 37

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

237) What are the roles of the amygdala and the hippocampus?

Answer:
GUIDELINES: The amygdala plays an important role in emotion, particularly in response to aversive stimuli. It is also involved in the kind of learning that uses emotion

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to protect us. The hippocampus plays a central role in the formation of long-term memories.

Diff: 1

Type: ES
Page Reference: 38

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

238) List the main functions of (1) the hypothalamus, (2) the limbic system, (3) the thalamus and (4) the cerebellum.

Answer:
GUIDELINES: (1) controls the pituitary gland; regulates hunger, thirst, sexual behaviour, body temperature, and some emotional behaviours; (2) involved in emotion, memory, and motivation; (3) a relay station for information from all the senses except smell, sending the information into and out of the higher brain centres; (4) executes smooth, skilled body movements and regulates body tone and posture.

Diff: 1

Type: ES
Page Reference: 36-38

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

239) Carl has suffered a brain disease that has left both the left and right hippocampus destroyed. What type of difficulties is he likely to encounter?

Answer:
GUIDELINES: Discussion of the role of the hippocampus in the formation of new memories and what life would be like without that ability.

Diff: 1

Type: ES
Page Reference: 38

Objective: 2.6 Identify the major structures of the central nervous system: brainstem, cerebellum, thalamus, hypothalamus, and limbic system.

240) What are the primary functions of the cerebellum?

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Answer:
GUIDELINES: Its main functions are to execute smooth, skilled movements and to regulate muscle tone and posture.

Diff: 1

Type: ES
Page Reference: 36-37

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

241) What are two problems that an individual could experience if the hypothalamus were to malfunction?

Answer:
GUIDELINES: The hypothalamus controls the pituitary gland and regulates hunger, thirst, sexual behaviour, body temperature, our biological clock, and a wide variety of emotional behaviours. The student could discuss any two of these processes and could present a problem that could result in either over or under activity of this gland.

Diff: 3

Type: ES
Page Reference: 37

Objective: 2.7 Explain the function of each of the major structures of the central nervous system.

242) What are the cerebral hemispheres, the corpus callosum, and the cerebral cortex?

Answer:
GUIDELINES: The cerebral hemisphere comprises the right and left halves of cerebrum, covered by the cerebral cortex, and connected by the corpus callosum. The corpus callosum is a thick band of nerve fibres that connects the two cerebral hemispheres and makes possible the transfer of information and the synchronization of activity between them. The cerebral cortex is the grey, convoluted covering of the cerebral hemispheres that is responsible for higher mental processes such as language, memory and thinking.

Diff: 2

Type: ES
Page Reference: 39-40

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemispheres.

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243) Compare the functions of Broca's and Wernicke's areas?

Answer:
GUIDELINES: Broca's area is the area in the frontal lobe, usually in the left hemisphere, that controls production of the speech sounds. Wernicke's area is the language area in the temporal lobe involved in comprehension of the spoken word and in formulation of coherent speech and written language.

Diff: 2

Type: ES
Page Reference: 41, 43

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

244) What are the primary functions of the parietal lobes in general and the somatosensory cortex in particular?

Answer:
GUIDELINES: The parietal lobes contain the somatosensory cortex where touch, pressure, temperature, and pain register. The somatosensory cortex is the strip of tissue at the front of the parietal lobes where touch, pressure, temperature, and pain register in the cerebral cortex. Other parts of the parietal lobes are responsible for spatial orientation and sense of direction. There are association areas in the parietal lobes that house our memory of how objects feel so that we can identify objects by touch.

Diff: 2

Type: ES
Page Reference: 42

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

245) List the four lobes of the brain and give their primary functions.

Answer:
GUIDELINES: (1) frontal: thinking, voluntary motor activity, speech production, motivation, planning for the future, impulse control, emotional responses; (2) parietal: reception and processing of touch, pressure, temperature, and pain sensations; (3) occipital: reception and interpretation of visual information; (4) temporal: hearing, comprehending the spoken word, formulating coherent speech and written language, storage of memories. Excellent answers would include names of areas in lobes which control certain functions (e.g., Broca's area, motor cortex, etc.).

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Diff: 2

Type: ES
Page Reference: 40-43

Objective: 2.8 Identify and explain the function of each of the lobes of the cerebral hemisphere.

246) What is Wernicke's aphasia?

Answer:
GUIDELINES: Wernicke's aphasia is a type of aphasia resulting from damage to Wernicke's area. Although speech is fluent and words are clearly articulated, the actual message does not make sense to others. They have the ability to make the movements necessary to produce the sounds of language, they don't have the ability to coordinate the movements into sensible language.

Diff: 3

Type: ES
Page Reference: 43

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

247) What is aphasia?

Answer:
GUIDELINES: Aphasia is the loss or impairment of the ability to understand or communicate through the written or spoken word, which results from damage to the brain.

Diff: 1

Type: ES
Page Reference: 41

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

248) How would your life change if you experienced brain injury or stroke in your left hemisphere? In your right hemisphere?

Answer:

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GUIDELINES: The answer should address the specialization in the left hemisphere so that damage in the left hemisphere would greatly affect language and math abilities; in the right hemisphere, it would affect visual-spatial abilities and emotional expression. In both cases you would experience difficulty in making movements and experiencing sensation in the opposite side of the body from the damage.

Diff: 2

Type: ES
Page Reference: 42-43

Objective: 2.9 Explain how damage within a lobe might affect performance and functioning in everyday life.

249) What are the main functions of the left hemisphere?

Answer:
GUIDELINES: In 95 percent of right-handers and in about 62 percent of left-handers, the left hemisphere handles most of the language functions, including speaking, writing, reading, and understanding the spoken word. The left hemisphere is specialized for mathematical abilities, and processes information in an analytical and sequential manner.

Diff: 2

Type: ES
Page Reference: 44

Objective: 2.10 Contrast the functions of the left and right hemispheres.

250) What are the primary functions of the right hemisphere?

Answer:
GUIDELINES: The right hemisphere is better at visual-spatial relations. It is better able to process music than is the left hemisphere. It processes information holistically rather than part by part. It is more specialized for complex perceptual tasks.

Diff: 2

Type: ES
Page Reference: 44-45

Objective: 2.10 Contrast the functions of the left and right hemispheres.

251) What do the tests given to split-brain persons reveal about the brain?

Answer:

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GUIDELINES: Unless the hemispheres have been surgically separated, they do not operate in isolation and cannot be educated separately. Although each has important specialized functions, the cerebral hemispheres are always in intimate and immediate contact. These tests make clear that information from the left visual field is processed primarily by the right visual field and vice versa, and that in most people language is located in the left hemisphere. Each hemisphere processes information in unique ways, but in a person who has a functioning corpus callosum their ways of perceiving and thinking are combined.

Diff: 2

Type: ES
Page Reference: 46

Objective: 2.10 Contrast the functions of the left and right hemispheres.

252) How would split-brain surgery affect psychological function? How would the person's perceptual abilities change? What would not be affected by this operation?

Answer:
GUIDELINES: A split-brain procedure is used in cases of severe epilepsy, to control the severity of seizures. Patients with split brains would not be able to transmit information from one hemisphere to another. This could lead to perceptual confusion in specific conditions, such as not being able to verbally identify an object seen only in the left field of vision. Personality and cognitive functioning would not normally be affected by this procedure.

Diff: 3

Type: ES
Page Reference: 46-47

Objective: 2.10 Contrast the functions of the left and right hemispheres.

253) Briefly describe recent understanding about the brain's ability to recover from brain damage.

Answer:
GUIDELINES: Until recently it was thought that the brain could not repair or replace damaged neurons. However, recent research has shown that at least some regions of the brain, the hippocampus for example, continue to add new neurons well into old age and that neurons can sprout new dendrites in response to events in the brain. In addition there is evidence that neurons can sprout new axons. All of these activities may aid in the recovery from brain damage.

Diff: 2

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Type: ES
Page Reference: 47-48

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

254) What is the fate of grey matter as we age?

Answer:
GUIDELINES: The student should mention that the brain gains and loses synapses from birth on, but that the losses begin to outnumber the gains at some point in adulthood. As we begin to lose brain size and weight, certain functions begin to be effected. Recent research has correlated balance problems with the loss of grey matter, but not white matter in the cerebellum.

Diff: 2

Type: ES
Page Reference: 47

Objective: 2.12 Understand the impact of synaptic losses across the lifespan.

255) Define the term plasticity and describe its role in recovery from brain damage.

Answer:
GUIDELINES: Plasticity is the ability of the brain to reorganize and compensate for brain damage. The brain can grow new neurons, damaged neurons can grow new axons, and neurons can expand their dendrites to make new synaptic connections with other neurons.

Diff: 2

Type: ES
Page Reference: 48

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

256) What is plasticity and why is it important for brain-damaged patients?

Answer:
GUIDELINES: Plasticity refers to the brain's ability to reorganize and to compensate for brain damage. To recover from brain damage, damaged neurons may sprout new dendrites and re-establish connections with other neurons; areas adjacent to the damaged area may take over lost functions; the other hemisphere sometimes assumes the lost language function. Plasticity decreases with age.

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Diff: 2

Type: ES
Page Reference: 48

Objective: 2.13 Understand the implications that plasticity has for recovery from brain damage.

257) What is the electroencephalogram (EEG), and what are three of the brainwave patterns it reveals?

Answer:
GUIDELINES: An EEG is the record made by an electroencephalograph of an individuals' brainwave activity. The brainwave patterns an EEG reveals are alpha, beta, gamma, delta, and theta waves.

Diff: 1

Type: ES
Page Reference: 49

Objective: 2.14 Identify tools used to study the brain, including the electroencephalograph, computerized axial tomography, magnetic resonance imaging, and positron emission tomography.

258) Describe the nature of fMRI, what it can tell us about the brain, and how it works.

Answer:
GUIDELINES: fMRI or functional magnetic resonance imaging can tell us about both function and structure of the CNS. fMRI can image the flow of oxygen to brain regions. As neurons work they require more oxygen.

Diff: 2

Type: ES
Page Reference: 50

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

259) Briefly explain the usefulness of four of the following: the EEG, the microelectrode, the CT scan, the MRI, and the PET scan.

Answer:

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GUIDELINES: The EEG reveals normal and abnormal electrical activity in the brain; the microelectrode can stimulate or monitor the electrical activity in a single neuron; the CT scan produces cross-sectional X-ray images of the brain revealing damage or disease; the MRI produces high resolution images of the brain; the PET scan reveals the amount of activity in various parts of the brain based on oxygen or glucose consumption.

Diff: 2

Type: ES
Page Reference: 49-50

Objective: 2.15 Understand the kind of information that can be gained from each tool used to study the brain.

260) Describe the two portions of the peripheral nervous system and their respective functions.

Answer:
GUIDELINES: The nerves connecting the central nervous system to the rest of the body have two subdivisions—the autonomic and somatic nervous system. The autonomic system transmits messages between the central nervous system and the glands, the cardiac (heart) muscle, and the smooth muscles (such as those in the large arteries, the gastrointestinal system, and the small blood vessels), which are not normally under voluntary control. The somatic nervous system consists of all the sensory nerves, which transmit information from the sense receptors—eyes, ears, nose, tongue, and skin—to the central nervous system; and all the motor nerves, which relay messages from the central nervous system to all the skeletal muscles of the body.

Diff: 2

Type: ES
Page Reference: 51

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

261) What are the roles of the sympathetic and parasympathetic nervous systems?

Answer:
GUIDELINES: The sympathetic nervous system mobilizes the body's resources during stress, emergencies or heavy exertion, preparing the body for action. The parasympathetic nervous system is associated with relaxation and the conservation of energy, and that brings the heightened bodily responses back to normal after an emergency.

Diff: 2

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Type: ES
Page Reference: 51-52

Objective: 2.16 Identify and explain the function of the two components of the peripheral nervous system.

262) You are at home alone and you think you hear someone trying to break into your house. Describe those aspects of the autonomic nervous system that go into action as you begin to experience fear, and those aspects that will allow you to recover when you realize that there is no intruder.

Answer:
GUIDELINES: The focus of the answer should be on contrasting the sympathetic and parasympathetic nervous systems. The student may describe any of the various symptoms/actions of the sympathetic nervous system while experiencing fear (for example, increased breathing, heart rate, and blood flow to skeletal muscles) and various aspects of the parasympathetic nervous system that occur after the event (for example, relaxing of muscle tension, slowing of breathing, and pulse rate).

Diff: 3

Type: ES
Page Reference: 51-52

Objective: 2.17 Explain the function of the sympathetic and parasympathetic nervous systems.

263) What is the pituitary gland?

Answer:
GUIDELINES: The pituitary gland is the endocrine gland located in the brain, and often called the “master gland,” which releases hormones that control other endocrine glands and also releases a growth hormone.

Diff: 1

Type: ES
Page Reference: 53

Objective: 2.18 Identify the components of the endocrine system.

264) What is the endocrine system?

Answer:

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GUIDELINES: A system of ductless glands in various parts of the body that manufacture and secrete hormones into the bloodstream or lymph fluids, thus affecting cells in other parts of the body.

Diff: 1

Type: ES
Page Reference: 53

Objective: 2.18 Identify the components of the endocrine system.

265) What are the adrenal glands?

Answer:
GUIDELINES: A pair of endocrine glands that release hormones that prepare the body for emergencies and stressful situations, and also release small amounts of the sex hormones.

Diff: 1

Type: ES
Page Reference: 54

Objective: 2.18 Identify the components of the endocrine system.

266) Compare and contrast the activity of neurotransmitters with that of hormones.

Answer:
GUIDELINES: The endocrine system is a system of glands in various parts of the body that manufacture hormones and secrete them into the bloodstream. The hormones affect cells in other parts of the body. Neurotransmitters are manufactured in neurons and released into the liquid gap between neurons. The activity of neurotransmitters is fast and limited to specific target neurons. Hormones act much more slowly and their activity is diffuse, sometimes throughout the whole body. In both cases these chemicals only have an effect if they come into contact with cells that have specific receptors for the chemical in question. Some neurotransmitters actually also act as hormones; vasopressin for example.

Diff: 3

Type: ES
Page Reference: 53

Objective: 2.18 Identify the components of the endocrine system.

267) Describe the major roles of the pituitary gland

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Answer:
GUIDELINES: The pituitary gland rests in the brain just below the hypothalamus and is controlled by it. The pituitary is considered to be the "master gland" of the body because it releases the hormones that "turn on," or activate, the other glands in the endocrine system. The pituitary also produces the hormone that is responsible for body growth. Too little of this will make a person a dwarf, whereas too much will produce a giant.

Diff: 3

Type: ES
Page Reference: 53

Objective: 2.19 Understand the role of glands and hormones within the endocrine system

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