Test Bank for Psychology Canadian 5th Edition Wade Tavris Garry Saucier Elias 0205960359 9780205960354

TOTAL ASSESSMENT GUIDE

Chapter 2

The Biological Perspective

Learning Objectives	Remember the Facts	Understand the Concepts	Apply What You Know	Analyze It
LO 2.1 Identify the parts of a neuron and the function of each.	1-10, 12-13, 17-18, 20-26, 199-202, 228-229, 242	15, 19	16	11, 14
LO 2.2 Explain the action potential.	27-29, 31, 203-205, 228, 242	30, 32, 34		33
LO 2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body.	35-39, 41, 45, 47, 49, 51, 53-54, 56, 206-207, 230-232	42-43, 58-59	46, 48, 50, 57	40, 44, 52, 55
LO 2.4 Describe how the brain and spinal cord interact and respond to external experiences.	60-67, 69, 208-212, 243	70, 74	68, 71, 73	72, 233
LO 2.5 Differentiate the roles of the somatic and autonomic nervous systems.	75-76, 78-81, 85-86, 88-90, 92, 213-214, 244	77, 83	82, 84, 87, 91, 93-94	233-234
LO 2.6 Explain why the pituitary gland is known as the "master gland."	96-97, 245	95		
LO 2.7 Recall the role of various endocrine glands.	98-100, 103-104, 215-219, 235, 246		101-102, 105	
LO 2.8 Describe how lesioning studies and brain stimulation are used to study the brain.	106	107		
LO 2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain.	108, 112, 115-116, 118, 220, 236	111, 121	109-110, 113-114, 117, 119-120, 122	
LO 2.10 Identify the different structures of the hindbrain and the function of each.	123-124, 126-127, 129, 131, 134-135, 221		125, 128, 130, 132-133, 136-139	
LO 2.11 Identify the structures of the brain that are involved in emotion, learning, memory, and motivation.	140-143, 146-147, 149, 151-153	148	145, 150, 154-155, 222	144
LO 2.12 Identify the parts of the cortex that process the different senses and those that control movement of the body.	156-159, 161-163, 166-167, 170-171, 174, 181, 223-224, 237, 247	164, 179	160, 165, 168-169, 172-173, 175-178, 180	

Learning Objectives	Remember the Facts	Understand the Concepts	Apply What You Know	Analyze It
LO 2.13 Name the parts of the cortex that are responsible for higher forms of thought, such as language.	182-183, 185, 225, 238-239, 247		184, 186-187	
LO 2.14 Explain how some brain functions differ between the left and right hemispheres.	188, 191, 195-196, 198, 226-227, 240	192, 194	189-190, 193, 197	241
LO 2.15 Identify some potential causes of attention-deficit/hyperactivity disorder.				

Name _____

Chapter 2 - Quick Quiz 1

1. The two main divisions of the nervous system are the _____ and _____.
   a) brain; spinal cord
   b) autonomic; somatic nervous systems
   c) peripheral nervous system; central nervous system
   d) glands; muscles

2. Which part of the neuron is responsible for maintaining the life of the cell?
   a) axon
   b) soma
   c) dendrite
   d) cell membrane

3. _____ plays a critical role as a neurotransmitter that stimulates skeletal muscles to contract.
   a) acetylcholine
   b) GABA
   c) Dopamine
   d) Endorphin

4. Which part of the nervous system takes the information received from the senses, makes sense out of it, makes decisions, and sends commands out to the muscles and the rest of the body?
   a) spinal cord
   b) brain
   c) reflexes
   d) interneurons

5. The part of the autonomic nervous system that is responsible for reacting to stressful events and bodily arousal is called the _____ nervous system.
   a) central
   b) somatic
   c) sympathetic
   d) parasympathetic

6. The hormone released by the pineal gland that reduces body temperature and prepares you for sleep is _____.
   a) melatonin
   b) DHEA
   c) parathormone
   d) thyroxin

7. A brain-imaging method using radio waves and magnetic fields of the body to produce detailed images of the brain is called _____.
   a) magnetic resonance imaging (MRI)
   b) electroencephalography (EEG)
   c) positron-emission tomography (PET)
   d) computerized axial tomography (CT)

8. What part of the brain acts as a relay station for incoming sensory information?
   a) hypothalamus
   b) thalamus
   c) cerebellum
   d) pituitary gland

9. Which of the following regions contains the primary visual cortex?
   a) frontal lobe
   c) temporal lobe

b) parietal lobe d) occipital lobe

10. Which of the following is a function of the right hemisphere?
    a) perception, expression of emotion, and recognition of patterns
    b) sense of time and rhythm
    c) speech, handwriting, and calculation
    d) language processing in most individuals

Chapter 2 - Quick Quiz 1
Answer Key

1. c Explanation: These are the two main divisions of the nervous system. (Topic: An Overview of the Nervous System, Remember the Facts, 1 - Easy, LO 2.4 - Describe how the brain and spinal cord interact and respond to external experiences, APA 1.1)

2. b Explanation: The soma is responsible for maintaining the life of the cell. (Topic: Neurons and Nerves: Building the Network, Remember the Facts, 2 - Moderate, LO 2.1 - Identify the parts of a neuron and the function of each, APA 1.1)

3. a Explanation: *Acetylcholine is an excitatory neurotransmitter that stimulates muscles to contract.* (Topic: Neurons and Nerves: Building the Network, Remember the Facts, 1 - Easy, LO 2.3 - Describe how neurons use neurotransmitters to communicate with each other and with the body, APA 1.1)

4. b Explanation: That is the responsibility of the brain. (Topic: An Overview of the Nervous System, Remember the Facts, 1 - Easy, LO 2.4 - Describe how the brain and spinal cord interact and respond to external experiences, APA 1.1)

5. c Explanation: The sympathetic nervous system is responsible for reacting to stressful events and bodily arousal. (Topic: An Overview of the Nervous System, Remember the Facts, 2 - Moderate, LO 2.5 - Differentiate the roles of the somatic and autonomic nervous systems, APA 1.1)

6. a Explanation: *The pineal gland secretes melatonin.* (Topic: Distant Connections: The Endocrine Glands, Remember the Facts, 1 - Easy, LO 2.7 - Recall the role of various endocrine glands, APA 1.1)

7. a Explanation: MRI is a brain-imaging method using ratio waves and magnetic fields of the body. (Topic: Looking Inside the Living Brain, Remember the Facts, 3 - Difficult, LO 2.9 - Compare and contrast neuroimaging techniques for mapping the structure and function of the brain, APA 1.1)

8. b Explanation: The thalamus acts as a relay station. (Topic: From the Bottom Up: The Structures of the Brain, Remember the Facts, 3 - Difficult, LO 2.11 - Identify the structures of the brain that are involved in emotion, learning, memory, and motivation, APA 1.1)

9. d Explanation: The occipital lobes contain the primary visual cortex. (Topic: From the Bottom Up: The Structures of the Brain, Remember the Facts, 1 - Easy, LO 2.12 - Identify the parts of the cortex that process the different senses and those that control movement of the body, APA 1.1)

10. a Explanation: These are functions of the right hemisphere. (Topic: From the Bottom Up:

The Structures of the Brain, Understand the Concepts, 2 - Moderate, LO 2.14 – Explain how some brain functions differ between the left and right hemispheres, APA 1.1)

Name _____

Chapter 2 - Quick Quiz 2

1. The branchlike structures that receive messages from other neurons are called _____.
   a) axons
   b) nerve bundles
   c) dendrites
   d) synapses

2. Which of the following are tiny sacs in a synaptic knob that release chemicals into the synapse?
   a) synaptic vesicles
   b) synaptic nodes
   c) terminal buttons
   d) synaptic gaps

3. Which of the following are responsible for acting as a facilitator of communication between neurons?
   a) motor neurons
   b) interneurons
   c) sensory neurons
   d) reflexes

4. Every deliberate action you make, such as pedaling a bike, walking, scratching, or smelling a flower, involves neurons in the _____ nervous system.
   a) sympathetic
   b) somatic
   c) parasympathetic
   d) autonomic

5. Which endocrine gland controls all of the other endocrine glands? a) thyroid
   adrenal
   c) thymus b)
   d) pituitary

6. The point at which the nerves from the left side of the body cross over into the right side of the brain, and vice versa, is the _____.
   a) reticular activating system
   b) pons
   c) medulla
   d) cerebellum

7. Signals from the neurons of which sense are NOT sent to the cortex by the thalamus?
   a) hearing
   b) smell
   c) taste
   d) vision

8. Which of the following is the section of the brain located at the rear and bottom of each cerebral hemisphere and contains the visual centers of the brain?
   a) occipital lobe
   b) parietal lobe
   c) temporal lobe
   d) frontal lobe

9. The area of the frontal lobe that is devoted to the production of fluent speech is _____ area.
   a) Broca's
   b) Gall's
   c) Wernicke's
   d) Korsakoff's

10. Which of the following is the upper part of the brain consisting of two cerebral hemispheres and the structures that connect them?
    a) occipital lobe
    b) cerebrum
    c) corpus callosum
    d) cerebellum

Chapter 2 - Quick Quiz 2
Answer Key

1. c Explanation: Dendrites receive messages from other neurons. (Topic: Neurons and Nerves: Building the Network, Remember the Facts, 1 - Easy, LO 2.1 - Identify the parts of a neuron and describe the function of each, APA 1.1)

2. a Explanation: Synaptic vesicles are structures within the synaptic knobs. (Topic: Neurons and Nerves: Building the Network, Remember the Facts, 2 - Moderate, LO 2.3 - Describe how neurons use neurotransmitters to communicate with each other and with the body, APA 1.1)

3. b Explanation: Interneurons connect the sensory neurons to the motor neurons. (Topic: An Overview of the Nervous System, Remember the Facts, 1 - Easy, LO 2.4 - Describe how the brain and spinal cord interact and respond to external experiences, APA 1.1)

4. b Explanation: The somatic nervous system controls voluntary muscle movement. (Topic: An Overview of the Nervous System, Understand the Concepts, 3 - Difficult, LO 2.5 - Differentiate the roles of the somatic and autonomic nervous systems, APA 1.1)

5. d Explanation: The pituitary gland controls all other endocrine glands. (Topic: Distant Connections: The Endocrine Glands, Remember the Facts, 1 - Easy, LO 2.7 - Recall the role of various endocrine glands, APA 1.1)

6. c Explanation: This is the point where nerves cross over. (Topic: From the Bottom Up: The Structures of the Brain, Remember the Facts, 2 - Moderate, LO 2.10 - Identify the different structures of the hindbrain and the function of each, APA 1.1)

7. b Explanation: Signals from the neurons of the sense of smell go directly into special parts of the brain called olfactory bulbs that are the structures responsible for smell. (Topic: From the Bottom Up: The Structures of the Brain, Remember the Facts, 2 - Moderate, LO 2.11 - Identify the structures of the brain that are involved in emotion, learning, memory, and motivation, APA 1.1)

8. a Explanation: The occipital lobes contain the visual centers of the brain. (Topic: From the Bottom Up: The Structures of the Brain, Remember the Facts, 1 - Easy, LO 2.12 - Identify the parts of the cortex that process the different senses and those that control movement of the body, APA 1.1)

9. a Explanation: Broca's area is devoted to the production of fluent speech. (Topic: From the Bottom Up: The Structures of the Brain, Remember the Facts, 2 - Moderate, LO 2.13 - Name the parts of the cortex that are responsible for higher forms of thought, such as language, APA 1.1)

10. b Explanation: The cerebrum consists of the two cerebral hemispheres and the structures that connect them. (Topic: From the Bottom Up: The Structures of the Brain, Remember the Facts, 3 -

Difficult, LO 2.14 - Explain how some brain functions differ between the left and right hemispheres, APA 1.1)

2 The Biological Perspective

Key: Topic, Answer, Type, Learning Objective, Level, Learning Outcomes

Bloom Types ***Remember the Facts Understand the Concepts Apply What You Know Analyze It***

Level
(1)=Easy; (2)=Moderate; (3)=Difficult

LO=Learning Objective
APA=Learning Outcomes

MULTIPLE CHOICE

Neurons and Nerves: Building the Network

Structure of the Neurons: The Nervous System's Building Block

Learning Objective 2.1 - Identify the parts of a neuron and the function of each.

TB_02_01_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
The function of the _____ is to carry information to and from all parts of the body.
a) soma
Incorrect. The primary responsibility of the soma is to maintain the life of the neuron.
b) synapse
c) nervous system
Correct. Sending information to and from all parts of the body is the primary function of the nervous system.
d) endorphins
TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (1)
% correct 91 a= 2 b= 4 c= 91 d=33 *r* = .32
% correct 100 a= 0 b= 0 c= 100 d= 0 *r* = .00
APA=1.1

TB_02_02_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
The nervous system is defined as_____.

a) a complex network of cells that carries information to and from all parts of the body

Correct. The nervous system is a complex network of cells that carry information to and from all parts of the body.

b) a specialized cell that makes up the brain and nervous system

c) all nerves and neurons that are not contained in the brain and spinal cord but that run throughout the body itself

Incorrect. The nervous system includes networks of neurons that are in the brain and spinal cord.

d) a gland located in the brain that secretes human growth hormone

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (1)
% correct 92 a= 92 b= 1 c= 6 d= 1 *r* = .27
% correct 94 a= 94 b= 1 c=4 d= 0 *r* = .26
APA=1.1

TB_02_03_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.2
The branch of life sciences which involves the structure and function of the brain and nervous system is called _____.

a) neuroscience

Correct. This is the branch of life sciences that covers these topics.

b) bioscience

Incorrect. The correct answer is neuroscience.

c) brain scientology

d) neurostemology

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (1)
APA=1.2

TB_02_04_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.2
The branch of neuroscience that focuses on the biological bases of psychological processes, behavior, and learning is called _____.

a) biological psychology

Correct. This is the branch of neuroscience that covers these topics.

b) bioscience

Incorrect. The correct answer is biological psychology, which is also called behavioral neuroscience.

c) brain scientology

d) neurostemology

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
APA=1.2

TB_02_05_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
A specialized cell that makes up the nervous system that receives and sends messages within that system is called a _____.

a) glial cell

Incorrect. Glial cells serve as a structure for neurons.

b) neuron

Correct. A neuron is a specialized cell that makes up the nervous system that receives and sends messages within that system.

c) cell body
d) myelin sheath

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (1)
% correct 96 a= 4 b= 96 c= 0 d= 0 *r* = .19
% correct 97 a= 2 b= 97 c= 1 d= 0 *r* = .39
APA=1.1

TB_02_06_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
The part of the neuron whose name literally means "branch" is _____.
a) axon
Incorrect. Dendrite is the correct answer.
b) dendrite
Correct. Dendrite comes from the word tree.
c) myelin
d) soma

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
% correct 77 a= 20 b= 77 c= 1 d= 1 *r* = .32
APA=1.1

TB_02_07_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
The branchlike structures that *receive* messages from other neurons are called _____.
a) axons
Incorrect. Axons send but do not receive messages.
b) nerve bundles
c) dendrites
Correct. Dendrites receive messages from other neurons.
d) synapses

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (1)
% correct 84 a= 10 b= 2 c= 84 d= 4 *r* = .39
% correct 83 a=11 b= 0 c= 83 d= 5 *r* = .31
APA=1.1

TB_02_08_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
Which part of the neuron is responsible for maintaining the life of the cell?
a) axon
b) soma
Correct. The soma is responsible for maintaining the life of the cell.
c) dendrite
d) cell membrane
Incorrect. The soma is responsible for maintaining the life of the cell.

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)

% correct 70 a= 5 b= 70 c= 2 d= 23 *r* = .37
% correct 74 a= 0 b= 74 c= 26 d= 1 *r* = .32
APA=1.1

TB_02_09_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
The part of a neuron that contains the nucleus and keeps the entire cell alive and functioning is the _____.

a) axon
b) cell membrane

Incorrect. The soma is responsible for maintaining the life of the cell.

c) dendrite
d) soma

Correct. The soma is responsible for maintaining the life of the cell.
TOPIC: Neurons and Nerves: Building the Network
ANS: d, Remember the Facts, LO= 2.1 Identify the parts of a neuron and the function of each., (2)
% correct 67 a= 7 b= 23 c= 2 d= 67 *r* = .56
APA=1.1

TB_02_10_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
By what other name is a soma called?

a) axon
b) cell body

Correct. The soma is also called the cell body.

c) dendrite
d) cell membrane

Incorrect. The soma is also called the cell body.
TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (1)
APA=1.1

TB_02_11_Neurons and Nerves: Building the Network_Analyze_LO 2.1, APA 1.1
Dendrite is to axon as:

a) send is to receive.

Incorrect. This is the opposite of the correct answer.

b) send is to regulate.
c) receive is to send.

Correct. Dendrites are treelike parts of the neuron that are designed to receive messages. The axon sends messages to other neurons.

d) receive is to release.
TOPIC: Neurons and Nerves: Building the Network
ANS: c, Analyze It, LO=2.1 Identify the parts of a neuron and the function of each., (2)
APA=1.1

TB_02_12_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
Which part of a neuron is attached to the soma and carries messages out to other cells?

a) soma
b) axon

Correct. The axon carries messages to other cells.

c) dendrite

Incorrect. Dendrites receive messages.

d) cell membrane

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO= 2.1 Identify the parts of a neuron and the function of each., (1)
% correct 81 a= 2 b= 81 c= 14 d= 4 *r* = .31
APA=1.1

TB_02_13_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
The function of the neuron's axon is to _____.

a) carry messages to other cells

Correct. The function of the axon is to carry messages to other cells.

b) regulate the neuron's life processes

c) receive messages from neighboring neurons

Incorrect. Dendrites, not axons, receive messages.

d) insulate against leakage of electrical impulses

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
% correct 67 a= 67 b= 2 c= 10 d= 21 *r* = .41
% correct 80 a= 80 b= 6 c= 13 d= 2 *r* = .30
APA=1.1

TB_02_14_Neurons and Nerves: Building the Network_Analyze_LO 2.1, APA 1.1
_____ receive messages from other neurons and _____ send messages to other neurons.

a) Axons; dendrites

Incorrect. Axons send messages, and dendrites receive messages.

b) Axon; soma

c) Soma; glial cells

d) Dendrites; axons

Correct. Dendrites receive messages, and axons carry messages to other cells.

TOPIC: Neurons and Nerves: Building the Network
ANS: d, Analyze It, LO=2.1 Identify the parts of a neuron and the function of each., (2)
% correct 71 a= 23 b= 3 c= 4 d= 71 *r* = .39
% correct 78 a= 17 b= 3 c= 1 d= 78 *r* = .46
APA=1.1

TB_02_15_Neurons and Nerves: Building the Network_Understand_LO 2.1, APA 1.1
Which of the following BEST represents the order in which a neuron receives and transmits information?

a) dendrites, cell body, axon, axon terminals

Correct. The dendrite receives a message, the cell body processes it, the axon takes a message to the axon terminals, and the terminal buttons release neurotransmitters.

b) axon terminals, dendrites, cell body, axon

c) cell body, dendrites, axon terminals, axon

Incorrect. Every part of this answer is out of the correct order.

d) axon, cell body, dendrites, axon terminals

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Understand the Concepts, LO=2.1 Identify the parts of a neuron and the function of each., (2)

APA=1.1

TB_02_16_Neurons and Nerves: Building the Network_Apply_LO 2.1, APA 1.1
Your teacher asks you to describe the sequence of parts of a neuron that the impulse travels during neural conduction. Which of the following sequences will you offer?

a) dendrites, axon, soma, synaptic knob
b) terminal buttons, axon, soma, dendrites
c) axon, soma, dendrites, synaptic knob

Incorrect. The neural impulse begins with the receipt of messages from the dendrites.

d) dendrites, soma, axon, synaptic knob *Correct.*

This answer describes the correct sequence. **TOPIC:**
Neurons and Nerves: Building the Network
ANS: d, Apply What You Know, LO=2.1 Identify the parts of a neuron and the function of each., (2)
APA=1.1

TB_02_17_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
What is the term used to describe the bulbs located at the end of the axon?

a) axon terminals

Correct. The axon terminals are located at the end of the axon.

b) synaptic vesicles

Incorrect. Synaptic vesicles are structures within the synaptic knobs.

c) synapses
d) receptor sites

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
% correct 59 a= 59 b= 15 c= 3 d= 22 *r* = .48
% correct 52 a= 52 b= 20 c= 13 d= 15 *r* = .38
APA=1.1

TB_02_18_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
What is the term used to describe the rounded areas on the ends of the axon terminals?

a) synaptic vesicles

Incorrect. Synaptic vesicles are structures within the synaptic knobs.

b) axons
c) dendrites
d) synaptic knobs

Correct. Synaptic knobs are located at the tip of each axon terminal.

TOPIC: Neurons and Nerves: Building the Network
ANS: d, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
% correct 73 a= 24 b= 1 c= 2 d= 73 *r* = .33
% correct 75 a= 19 b= 1 c= 5 d= 75 *r* = .20
APA=1.1

TB_02_19_Neurons and Nerves: Building the Network_Understand_LO 2.1, APA 1.1
What are two roles of glial cells?

a) acting as insulation and providing structure to surrounding neurons

Correct. This answer defines two roles of glial cells.

b) shaping cells and moving new neurons into place

Incorrect. Glial cells provide structure and insulation to neurons.

c) regulating metabolic activity and serving as pain detectors

d) monitoring neural transmission and releasing hormones in the brain

TOPIC: Neurons and Nerves: Building the Network

ANS: a, Understand the Concepts, LO=2.1 Identify the parts of a neuron and the function of each., (3)

% correct 59 a= 59 b= 4 c= 11 d= 22 *r* = .32

% correct 61 a= 61 b= 8 c= 7 d= 24 *r* = .32

APA=1.1

TB_02_20_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1

A cell in the human nervous system whose primary function is to provide insulation and structure for neurons on which they may develop and work is called a(n) _____.

a) epidermal cell

b) adipose cell

c) glial cell

Correct. Glial cells serve as a structure on which neurons develop and work.

d) myelin sheath

Incorrect. The myelin sheath does not serve as a structure on which neurons develop and work.

TOPIC: Neurons and Nerves: Building the Network

ANS: c, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (3)

% correct 46 a= 3 b= 1 c= 46 d= 51 *r* = .34

APA=1.1

TB_02_21_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1

Two specialized types of glial cells are called _____ and _____.

a) occipital; lobitical

b) oligodendrocytes; Schwann cells

Correct. These are the two types according to the text.

c) occipital; Schwann

Incorrect. B is the correct answer.

d) oligodendrocytes; lobitical

TOPIC: Neurons and Nerves: Building the Network

ANS: b, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (3)

APA=1.1

TB_02_22_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1

What is the function of myelin?

a) to serve as a structure for neurons

Incorrect. This is the function of glial cells, not myelin.

b) to monitor neural activity

c) to speed up the neural impulse

Correct. Myelin speeds up the neural impulse.

d) to produce neurotransmitters

TOPIC: Neurons and Nerves: Building the Network

ANS: c, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)

% correct 71 a= 14 b= 7 c= 71 d= 9 *r* = .33

% correct 62 a= 28 b= 3 c= 62 d= 8 *r* = .44
APA=1.1

TB_02_23_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
Which of the following is TRUE about myelin?
a) It's made of a fatty substance.
Correct. Myelin is made up of a fatty type of tissue called glial cells.
b) It is covered by axons.
Incorrect. Myelin covers axons. It is not covered by axons.
c) It inhibits neural communication.
d) It slows down neuronal operations.
TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
APA=1.1

TB_02_24_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
One purpose of the _____ is to speed up the neural message traveling down the axon.
a) receptor site
b) axon terminal
Incorrect. The axon terminal does not speed up the neural impulse.
c) myelin
Correct. Myelin speeds up the neural impulse.
d) synaptic vesicle
TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
% correct 78 a= 2 b= 8 c= 78 d= 13 *r* = .31
APA=1.1

TB_02_25_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
A group of axons bundled together coated in myelin that travels together through the body is called a _____.
a) synaptic vesicle
b) nerve
Correct. Bundles of myelin-coated axons travel together in cables called nerves.
c) neurilemma
Incorrect. Neurilemma enable damaged neurons to repair themselves.
d) myelinated pathway
TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (2)
% correct 60 a= 20 b= 60 c= 6 d= 14 *r* = .49
APA=1.1

TB_02_26_Neurons and Nerves: Building the Network_Remember_LO 2.1, APA 1.1
A nerve is a group of _____ bundled together.
a) axons
Correct. Nerves are bundles of myelin-coated axons.
b) interneurons
c) dendrites

Incorrect. Dendrites are part of the neuron.

d) glial cells

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.1 Identify the parts of a neuron and the function of each., (3)
% correct 37 a= 37 b= 37 c= 8 d= 18 *r* = .31
APA=1.1

Generating the Message Within the Neuron: The Neural Impulse

Learning Objective 2.2 - Explain the action potential.

TB_02_27_Neurons and Nerves: Building the Network_Remember_LO 2.2, APA 1.1
When a cell is "at rest," it is in a state called the _____.

a) stopping point
b) obcipitation junction

Incorrect. This is a fictitious word.

c) resting potential

Correct. A cell at rest is in a state called the resting potential.

d) action potential

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.2 Explain the action potential., (1)
% correct 85 a= 1 b= 0 c= 85 d= 13 *r* = .41
APA=1.1

TB_02_28_Neurons and Nerves: Building the Network_Remember_LO 2.2, APA 1.1
What do we call the state of a neuron when it is NOT firing a neural impulse?

a) action potential

Incorrect. Action potential is the state a neuron is in when firing a neural impulse.

b) resting potential

Correct. Resting potential is the state a neuron is in when not firing a neural impulse.

c) myelination signal
d) transmission impulse

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.2 Explain the action potential., (1)
% correct 84 a= 11 b= 84 c= 1 d=4 *r* = .18
APA=1.1

TB_02_29_Neurons and Nerves: Building the Network_Remember_LO 2.2, APA 1.1
The state during which a neuron contains more negatively charged ions inside the cell than outside the cell and is NOT firing is referred to as the _____.

a) action potential

Incorrect. Action potential is the state a neuron is in when firing.

b) quiet potential
c) synaptic potential
d) resting potential

Correct. Resting potential is the state a neuron is in when a cell is not firing a neural impulse.

TOPIC: Neurons and Nerves: Building the Network
ANS: d, Remember the Facts, LO=2.2 Explain the action potential., (1)
% correct 85 a= 4 b= 4 c= 7 d= 85 *r* = .19
APA=1.1

TB_02_30_Neurons and Nerves: Building the Network_Understand_LO 2.2, APA 1.1
The charge that a neuron at rest maintains is due to the presence of a high number of _____ charged ions inside the neuron's membrane.

a) actively
b) passively
c) negatively

Correct. Negatively charged ions inside the neuron's membrane are what give rise to a negative resting potential.

d) positively

Incorrect. It is during the action potential that the positively charged ions flow into the neuron and outnumber the negatively charged ions.

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Understand the Concepts, LO=2.2 Explain the action potential., (2)
APA=1.1

TB_02_31_Neurons and Nerves: Building the Network_Remember_LO 2.2, APA 1.1
When the electrical potential in a cell is in action versus a resting state, this electrical charge reversal is known as the _____.

a) resting potential

Incorrect. This would be when a cell continued to be at rest.

b) excitation reaction
c) action potential

Correct. This is the state where the electrical charge is reversed.

d) permeable reaction

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.2 Explain the action potential., (2)
% correct 75 a= 14 b= 10 c= 75 d= 1 *r* = .31
APA=1.1

TB_02_32_Neurons and Nerves: Building the Network_Understand_LO 2.2, APA 1.1
The term "fire" when referring to neural transmission indicates that a neuron:

a) has become less positive in charge.
b) has received, in its dendrites, appropriate inputs from other neurons.

Correct. A neuron fires after the dendrites receive enough stimulation to trigger the cell body to generate an action potential.

c) is unable to transmit information to another neuron.
d) has become more negative in charge.

Incorrect. In fact, the firing state of the neuron occurs when it generates a positive charge rather than a negative charge.

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Understand the Concepts, LO=2.2 Explain the action potential., (3)
APA=1.1

TB_02_33_Neurons and Nerves: Building the Network_Analyze_LO 2.2, APA 1.1
During action potential, the electrical charge inside the neuron is _____ the electrical charge outside the neuron.
a) positive compared to
Correct. There are more positively charged ions inside the cell than outside.
b) larger than
c) negative compared to
Incorrect. During resting potential, the inside is more negatively charged.
d) smaller than
TOPIC: Neurons and Nerves: Building the Network
ANS: a, Analyze It, LO=2.2 Explain the action potential., (3)
APA=1.1

TB_02_34_Neurons and Nerves: Building the Network_Understand_LO 2.2, APA 1.1
When a neuron fires, it fires in a(n) _____ fashion, as there is no such thing as "partial" firing.
a) all-or-none
Correct. This is the term used to describe how neurons fire according to the book.
b) rapid fire
c) accidental patterned
d) quick successioned
Incorrect. This is not the term referred to in the book.
TOPIC: Neurons and Nerves: Building the Network
ANS: a, Understand the Concepts, LO=2.2 Explain the action potential., (2)
APA=1.1

Neurotransmission

Learning Objective 2.3 - Describe how neurons use neurotransmitters to communicate with each other and with the body.

TB_02_35_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
The saclike structures found inside the synaptic knob containing chemicals are called _____.
a) axon terminals
Incorrect. The axon terminals are limb-like structures.
b) synapses
c) synaptic vesicles
Correct. Synaptic vesicles are structures within the synaptic knobs.
d) receptor sites
TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
% correct 69 a= 5 b= 8 c= 69 d= 17 *r* = .53
% correct 64 a= 20 b= 12 c= 64 d= 14 *r* = .45
APA=1.1

TB_02_36_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
Which of the following are tiny sacs in an axon terminal that release chemicals into the synapse?

a) synaptic vesicles

Correct. Synaptic vesicles are structures within the synaptic knobs.

b) synaptic nodes

c) terminal buttons

Incorrect. Terminal buttons are the same as synaptic knobs.

d) synaptic gaps

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1

TB_02_37_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
A chemical found in the synaptic vesicles which, when released, has an effect on the next cell is called a _____.

a) glial cell

b) neurotransmitter

Correct. Neurotransmitters are stored in the synaptic vesicles.

c) precursor cell

d) synapse

Incorrect. The synapse is the space between the synaptic knob of one cell and the dendrites of the next cell.

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
% correct 74 a= 4 b= 74 c= 4 d= 18 *r* = .34
APA=1.1

TB_02_38_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
The term *neurotransmitter* refers to _____.

a) a chemical found in the synaptic vesicles that is released into the synapse

Correct. Neurotransmitters are chemicals.

b) any one of a number of chemical compounds that increase the activity of the endocrine system

c) the chemical substance found in the cell membrane

Incorrect. The neurotransmitter is found in the synaptic vesicle.

d) the DNA contained in the nucleus of every neuron

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
APA=1.1

TB_02_39_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
The fluid-filled space between the synaptic knob of one cell and the dendrites of the next cell is called the _____.

a) receptor site

Incorrect. Molecules that float across the synapse fit themselves into receptor sites, thus activating the next cell.

b) synapse

Correct. The synapse is the space between the axon of a sending neuron and the dendrites of a receiving neuron.

c) synaptic knob

d) axon terminal

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (1)
APA=1.1

TB_02_40_Neurons and Nerves: Building the Network_Analyze_LO 2.3, APA 1.1

The action potential causes neurotransmitters to be released into the **_____**.

a) myelin sheath
b) axon
c) synapse

Correct. Neurotransmitters are released into the synapse.

d) synaptic vesicle

Incorrect. Neurotransmitters are stored in the synaptic vesicle.

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Analyze It, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
% correct 59 a= 8 b= 11 c= 59 d= 22 *r* = .32
% correct 56 a= 5 b= 16 c= 56 d= 27 *r* = .35
APA=1.1

TB_02_41_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1

_____ are three-dimensional proteins on the surface of the dendrites or certain cells of the muscles and glands that are shaped to fit only certain neurotransmitters.

a) Neurotransmitters
b) Axons
c) Synaptic vesicles

Incorrect. Neurotransmitters are stored in the synaptic vesicle.

d) Receptor sites

Correct. Molecules that float across the synapse fit themselves into receptor sites like keys fitting into a lock, thus activating the next cell.

TOPIC: Neurons and Nerves: Building the Network
ANS: d, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (1)
APA=1.1

TB_02_42_Neurons and Nerves: Building the Network_Understand_LO 2.3, APA 1.1

Which structure is like a locked door that only certain neurotransmitter keys can unlock?

a) synapses

Incorrect. Synapses are microscopic fluid-filled spaces between neurons.

b) receptor sites

Correct. Only certain neurotransmitters can fit into receptor sites.

c) neural chiasms
d) response terminals

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Understand the Concepts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)

APA=1.1

TB_02_43_Neurons and Nerves: Building the Network_Understand_LO 2.3, APA 1.1
_____ synapses make it more likely that a neuron will send its message to other neurons, whereas _____ synapses make it less likely that a neuron will send its message.

a) Excitatory; inhibitory

Correct. Excitatory synapses turn cells on and inhibitory ones turn cells off.

b) Inhibitory; excitatory

Incorrect. Inhibitory synapses turn cells off and excitatory ones turn cells on.

c) Augmentation; depletion

d) Depletion; augmentation

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Understand the Concepts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (1)
% correct 89 a= 89 b= 8 c= 3 d= 0 *r* = .48
APA=1.1

TB_02_44_Neurons and Nerves: Building the Network_Analyze_LO 2.3, APA 1.1
Agonist is to antagonist as:

a) neuromodulator is to neurotransmitter.

b) reuptake is to receptor.

c) mimic is to block.

Correct. Agonists mimic neurotransmitters by stimulating specific receptor sites, and antagonists block receptor sites.

d) block is to mimic.

Incorrect. This is the opposite of the correct answer.

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Analyze It, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
APA=1.1

TB_02_45_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
Curare, a poison, works by _____.

a) blocking receptor sites and acting as an antagonist for acetylcholine

Correct. This drug acts as an antagonist for acetylcholine.

b) stimulating the release of excessive amounts of acetylcholine

Incorrect. This drug inhibits the release of acetylcholine.

c) stimulating the release of neurotransmitters

d) inhibiting the production of inhibitory neurotransmitters

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
% correct 30 a= 30 b= 26 c= 20 d= 24 *r* = .23
% correct 41 a= 41 b= 24 c= 22 d= 13 *r* = .22
APA=1.1

TB_02_46_Neurons and Nerves: Building the Network_Apply_LO 2.3, APA 1.1, 1.3

After being bitten by a black widow spider, Jean starts to convulse. This is a result of _____.

a) a lack of GABA being released into her bloodstream

Incorrect. The correct answer is d.

b) a resurgence of neurotransmitters overstimulating her brain stem

c) a surge of chemicals blocking the transmission of fluids to the spinal cord

d) a flood of acetylcholine releasing into the body's muscle system

Correct. This is the result of the bite. The result can also include death.

TOPIC: Neurons and Nerves: Building the Network
ANS: d, Apply What You Know, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1; 1.3

TB_02_47_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1

_____ plays a critical role as a neurotransmitter that stimulates skeletal muscles to contract.

a) Acetylcholine

Correct. Acetylcholine is an excitatory neurotransmitter that stimulates muscles to contract.

b) GABA

Incorrect. GABA is an inhibitory neurotransmitter.

c) Dopamine

d) Endorphin

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1

TB_02_48_Neurons and Nerves: Building the Network_Apply_LO 2.3, APA 1.1, 1.3

Sara has been experiencing a serious memory problem. An interdisciplinary team has ruled out a range of causes and believes that a neurotransmitter is involved. Which neurotransmitter is most likely involved in this problem?

a) GABA

Incorrect. GABA has a tranquilizing effect.

b) dopamine

c) serotonin

d) acetylcholine

Correct. Acetylcholine is found in a part of the brain responsible for forming new memories.

TOPIC: Neurons and Nerves: Building the Network
ANS: d, Apply What You Know, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
% correct 33 a= 0 b= 26 c=41 d= 33 *r* = .19
APA=1.1; 1.3

TB_02_49_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1

Which neurotransmitter is associated with sleep, mood, and appetite?

a) GABA

Incorrect. GABA is associated with helping calm anxiety.

b) serotonin

Correct. Serotonin is associated with mood, sleep, and appetite.

c) dopamine

d) acetylcholine

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
% correct 60 a= 6 b= 60 c= 25 d= 8 *r* = .26
APA=1.1

TB_02_50_Neurons and Nerves: Building the Network_Apply_LO 2.3, APA 1.1, 1.3
Andy has decided to seek medical help for mood disturbances and appetite problems. Which neurotransmitter is most likely involved in the problems Andy is experiencing?

a) GABA

Incorrect. GABA is involved in sleep and inhibits movement but is not associated with mood or appetite.

b) dopamine
c) serotonin

Correct. Serotonin is associated with mood and appetite.

d) acetylcholine

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Apply What You Know, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
APA=1.1; 1.3

TB_02_51_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
GABA functions as _____.

a) the major neurotransmitter involved in voluntary movements
b) an inhibitory neurotransmitter in the brain

Correct. GABA is an inhibitory neurotransmitter.

c) the neurotransmitter responsible for slowing intestinal activity during stress
d) the major excitatory neurotransmitter in the brain

Incorrect. GABA is an inhibitory neurotransmitter.

TOPIC: Neurons and Nerves: Building the Network
ANS: b, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1

TB_02_52_Neurons and Nerves: Building the Network_Analyze_LO 2.3, APA 1.1
The effect of alcohol is to enhance the effect of _____, which causes the general inhibition of the nervous system associated with getting drunk.

a) GABA

Correct. GABA is an inhibitory neurotransmitter.

b) serotonin
c) dopamine
d) acetylcholine

Incorrect. Acetylcholine is not associated with the effects of alcohol.

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Analyze It, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1

TB_02_53_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
Endorphins are _____.
a) found where neurons meet skeletal muscles
b) less powerful than enkaphalins
c) pain-controlling chemicals
Correct. Endorphins are pain-controlling chemicals.
d) radically different in function from neurotransmitters
Incorrect. Endorphins are *neurotransmitters.*
TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
% correct 74 a= 4 b= 7 c= 74 d= 15 *r* = .41
APA=1.1

TB_02_54_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
Pain-controlling chemicals in the body are called _____.
a) neural regulators
Incorrect. Not all neural regulators are endorphins.
b) histamines
c) androgens
d) endorphins
Correct. Endorphins are pain-controlling chemicals.
TOPIC: Neurons and Nerves: Building the Network
ANS: d, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (1)
% correct 81 a= 3 b= 7 c= 8 d= 81 *r* = .42
APA=1.1

TB_02_55_Neurons and Nerves: Building the Network_Analyze_LO 2.3, APA 1.1
Because they have similar chemical structures, morphine and heroin are able to lock into receptor sites for _____.
a) GABA
Incorrect. Opiates are not able to lock into GABA receptor sites.
b) serotonin c) dopamine d) endorphins
Correct. Endorphins are a natural substance that has the same effect as opiates.
TOPIC: Neurons and Nerves: Building the Network
ANS: d, Analyze It, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1

TB_02_56_Neurons and Nerves: Building the Network_Remember_LO 2.3, APA 1.1
Reuptake is _____.
a) a chemical that is released into the synaptic gap
Incorrect. Reuptake is a process.

b) a protein molecule on the dendrite or cell body of a neuron that will interact only with specific neurotransmitters
c) a process by which neurotransmitters are taken back into the synaptic vesicles

Correct. This is the definition of reuptake.

d) a chemical that plays a role in learning and attention

TOPIC: Neurons and Nerves: Building the Network
ANS: c, Remember the Facts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (2)
% correct 77 a= 7 b= 13 c= 77 d= 3 *r* = .41
APA=1.1

TB_02_57_Neurons and Nerves: Building the Network_Apply_LO 2.3, APA 1.1, 1.3
Isabella is putting mustard on her hot dog. She realizes she has put too much and sucks up some of it back into the squeeze bottle. This process is similar to:

a) the action potential.
b) receptor site bindings.
c) binding specificity.

Incorrect. Binding specificity refers to the fact that receptor sites are designed to receive only one specific neurotransmitter.

d) reuptake.

Correct. Recall take occurs when excess neurotransmitters are reabsorbed into the sending neuron.

TOPIC: Neurons and Nerves: Building the Network
ANS: d, Apply What You Know, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1; 1.3

TB_02_58_Neurons and Nerves: Building the Network_Understand_LO 2.3, APA 1.1
How is acetylcholine removed from the synapse?

a) It is broken down by an enzyme.

Correct. It is broken down by an enzyme.

b) It is taken back up in the synapse.

Incorrect. It is broken down by an enzyme.

c) It dissipates in the surrounding body fluids.
d) Acetylcholine is one of the few neurotransmitters that is continually present in the synapse.

TOPIC: Neurons and Nerves: Building the Network
ANS: a, Understand the Concepts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1

TB_02_59_Neurons and Nerves: Building the Network_Understand_LO 2.3, APA 1.1
Enzymatic degradation is the process by which an excess of a neurotransmitter called _____ is removed from synapses .Other neurotransmitters can be removed via the process of reuptake.

a) dopamine
b) GABA
c) norepinephrine

Incorrect. NE can be removed via either process.

d) acetylcholine

Correct. ACh cannot be removed via reuptake, and so it requires enzymatic degradation.
TOPIC: Neurons and Nerves: Building the Network
ANS: d, Understand the Concepts, LO=2.3 Describe how neurons use neurotransmitters to communicate with each other and with the body., (3)
APA=1.1

An Overview of the Nervous System

The Central Nervous System: The "Central Processing Unit"

Learning Objective 2.4 - Describe how the brain and spinal cord interact and respond to external experiences.

TB_02_60_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1
The two main divisions of the nervous system are the _____ and _____.
a) brain; spinal cord
b) autonomic; somatic nervous systems
Incorrect. The autonomic and somatic nervous systems are divisions of the peripheral nervous system.
c) peripheral nervous system; central nervous system
Correct. These are the two main divisions of the nervous system.
d) glands; muscles
TOPIC: An Overview of the Nervous System
ANS: c, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (1)
% correct 73 a=8 b= 18 c= 73 d= 0 *r* = .42
% correct 68 a= 18 b= 13 c= 68 d= 0 *r* = .47
APA=1.1

TB_02_61_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1
The brain and spinal cord are two components of the _____.
a) central nervous system
Correct. The brain and spinal cord are two components of the central nervous system.
b) somatic nervous system
c) peripheral nervous system
Incorrect. The two components of the peripheral nervous system are the autonomic and somatic nervous systems.
d) autonomic nervous system
TOPIC: An Overview of the Nervous System
ANS: a, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (1)
% correct 100 a= 100 b= 0 c= 0 d= 0 *r* = .00
% correct 94 a= 94 b= 2 c= 1 d= 2 *r* = .39
APA=1.1

TB_02_62_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1
The central nervous system consists of _____.
a) the parasympathetic and sympathetic divisions
Incorrect. These are divisions of the autonomic nervous system.

b) the brain and spinal cord

Correct. The brain and spinal cord are the two most basic components of the central nervous system.

c) muscles and glands

d) sense organs and sensory neurons

TOPIC: An Overview of the Nervous System

ANS: b, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (2)

% correct 77 a= 17 b= 77 c= 0 d= 6 *r* = .24

% correct 82 a= 16 b= 82 c= 1 d= 2 *r* = .32

APA=1.1

TB_02_63_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1

Which part of the nervous system takes the information received from the senses, makes sense out of it, makes decisions, and sends commands out to the muscles and the rest of the body?

a) spinal cord

Incorrect. The spinal cord carries messages to and from the body to the brain.

b) brain

Correct. That is the responsibility of the brain.

c) reflexes

d) interneurons

TOPIC: An Overview of the Nervous System

ANS: b, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (1)

% correct 85 a= 7 b= 85 c= 1 d= 7 *r* = .21

APA=1.1

TB_02_64_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1

The long bundle of neurons that carries messages to and from the body to the brain and is responsible for very fast, lifesaving reflexes is called the _____.

a) spinal cord

Correct. The spinal cord carries messages to and from the body to the brain.

b) brain

Incorrect. The brain receives messages from the spinal cord.

c) reflexes

d) interneurons

TOPIC: An Overview of the Nervous System

ANS: a, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (1)

% correct 89 a= 89 b= 0 c= 2 d= 9 *r* = .31

APA=1.1

TB_02_65_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1

Which of the following is a long bundle of neurons that functions as a carrier of messages to and from the brain to the body and is responsible for certain reflexes?

a) spinal cord

Correct. The spinal cord carries messages to and from the body to the brain.

b) cerebellum

c) somatic nervous system

Incorrect. The somatic nervous system carries information from the senses to the central nervous system (CNS) and from the CNS to voluntary muscles of the body.

d) amygdala

TOPIC: An Overview of the Nervous System
ANS: a, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (2)
% correct 77 a= 77 b= 2 c= 19 d= 2 *r* = .29
APA=1.1

TB_02_66_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1
Which of the following are the three basic types of neurons?

a) reflexes, sensory neurons, motor neurons

Incorrect. Reflexes are not a type of neuron.

b) sensory neurons, motor neurons, stem cells
c) motor neurons, stem cells, reflexes
d) interneurons, sensory neurons, motor neurons

Correct. All of these are neurons.

TOPIC: An Overview of the Nervous System
ANS: d, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (1)
% correct 89 a= 3 b= 7 c= 0 d= 89 *r* = .36
% correct 79 a= 13 b= 8 c= 0 d= 79 *r* = .31
APA=1.1

TB_02_67_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1
Neurons that carry information from the senses to the spinal cord are called _____.

a) motor neurons
b) interneurons

Incorrect. Interneurons connect sensory neurons to the motor neurons.

c) sensory neurons

Correct. Sensory neurons carry information from the senses to the spinal cord.

d) reflexes

TOPIC: An Overview of the Nervous System
ANS: c, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (2)
% correct 75 a= 19 b= 5 c= 75 d= 0 *r* = .32
% correct 80 a= 11 b= 9 c= 80 d= 1 *r* = .28
APA=1.1

TB_02_68_An Overview of the Nervous System_Apply_LO 2.4, APA 1.1, 1.3
LaKeisha stepped on a piece of glass and quickly pulled her foot away from that sharp object. Which of the following are responsible for sending a message to the muscles in LaKeisha's foot, resulting in her pulling her foot away from the piece of glass?

a) motor neurons

Correct. Motor neurons carry messages from the central nervous system to the muscles of the body.

b) interneurons

Incorrect. Interneurons connect the sensory neurons to the motor neurons.

c) sensory neurons

d) reflexes

TOPIC: An Overview of the Nervous System

ANS: a, Apply What You Know, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (3)

% correct 58 a= 58 b= 2 c= 18 d= 521 *r* = .27

APA=1.1; 1.3

TB_02_69_An Overview of the Nervous System_Remember_LO 2.4, APA 1.1

Neurons found in the center of the spinal cord that receive information from the sensory neurons and send commands to the muscles through the motor neurons are called _____.

a) motor neurons

Incorrect. Motor neurons carry messages from the central nervous system to the muscles of the body.

b) interneurons

Correct. Interneurons connect the sensory neurons to the motor neurons.

c) sensory neurons

d) reflexes

TOPIC: An Overview of the Nervous System

ANS: b, Remember the Facts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (2)

APA=1.1

TB_02_70_An Overview of the Nervous System_Understand_LO 2.4, APA 1.1

Which of the following are responsible for acting as a facilitator of communication between neurons?

a) motor neurons

Incorrect. Motor neurons carry messages from the central nervous system to the muscles of the body.

b) interneurons

Correct. Interneurons connect the sensory neurons to the motor neurons.

c) sensory neurons

d) reflexes

TOPIC: An Overview of the Nervous System

ANS: b, Understand the Concepts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (1)

% correct 80 a= 8 b= 80 c= 8 d= 3 *r* = .37

APA=1.1

TB_02_71_An Overview of the Nervous System_Apply_LO 2.4, APA 1.1, 1.3

Mary put her hand on a hot stove. Which neuron is responsible for sending a pain message up her spinal column, where it would then enter into the main area of the cord?

a) motor neuron

b) interneuron

Incorrect. Sensory neurons carry information from the senses to the spinal cord.

c) sensory neuron

Correct. Sensory neurons carry information from the senses to the spinal cord.

d) reflex

TOPIC: An Overview of the Nervous System

ANS: c, Apply What You Know, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (1)
% correct 90 a= 5 b= 3 c= 90 d= 1 *r* = .27
APA=1.1; 1.3

TB_02_72_An Overview of the Nervous System_Analyze_LO 2.4, APA 1.1, 1.3
Why do many reflexes, such as pulling your hand away from a hot iron, happen so quickly?

a) They involve the neurotransmitter GABA rather than dopamine.
b) The message involved does not have to go all the way to the brain.

Correct. The message goes to the central area of the spinal cord and not up to the brain.

c) The speed of processing is faster in the frontal lobes than in the occipital lobes.
d) The path that reflexes follow to the brain is direct and does not involve any neurotransmitters.

Incorrect. The message involved does not have to go all the way to the brain.
TOPIC: An Overview of the Nervous System
ANS: b, Analyze It, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (3)
% correct 49 a= 17 b= 49 c= 14 d= 21 *r* = .51
APA=1.1; 1.3

TB_02_73_An Overview of the Nervous System_Apply_LO 2.4, APA 1.1, 1.3
Jack suffered a brain injury as a result of hitting his head while waterskiing. One of the problems that developed was that Jack could not pronounce certain words correctly for a long period of time until he had extensive speech therapy; he can now speak as he did before his accident. This is an example of the brain's _____, which allowed the structure and function of his brain cells to change to adjust to the trauma.

a) adaptology
b) stagnation
c) neuroplasticity

Correct. This allowed Jack's brain to adapt after the trauma.

d) reflex arc

Incorrect. Neuroplasticity accounts for Jack's brain to allow him to speak correctly despite damage.
TOPIC: An Overview of the Nervous System
ANS: c, Apply What You Know, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (2)
APA=1.1; 1.3

TB_02_74_An Overview of the Nervous System_Understand_LO 2.4, APA 1.1
Neuroplasticity is most evident in which of the following circumstances?

a) during the elderly years

Incorrect. As your authors point out, plasticity is higher during childhood than in later years.

b) when we learn something new or store new information

Correct. Learning or storing new information would cause the brain to change its structure slightly, which demonstrates plasticity.

c) when we are trying to undo previous pruning
d) when reuptake of excess neurotransmitters is taking place

TOPIC: An Overview of the Nervous System Neurons and Nerves: Building the Network
ANS: b, Understand the Concepts, LO=2.4 Describe how the brain and spinal cord interact and respond to external experiences., (3)

APA=1.1

The Peripheral Nervous System: Nerves on the Edge

Learning Objective 2.5 - Differentiate the roles of the somatic and autonomic nervous systems.

TB_02_75_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
Which statement is NOT true about the peripheral nervous system (PNS)?

a) The PNS consists of the brain and spinal cord.

Correct. These are parts of the central nervous system (CNS).

b) The PNS consists of the nerves and neurons not in the central nervous system (CNS).

Incorrect. This is an accurate definition of the PNS.

c) The PNS allows the brain and spinal cord to coordinate with sensory systems.

d) The PNS allows the brain and spinal cord to coordinate with muscles and glands in the body.

TOPIC: An Overview of the Nervous System
ANS: a, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
APA=1.1

TB_02_76_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
The peripheral nervous system consists of _____.

a) all of the nerve cells that are not in the brain and spinal cord

Correct. The peripheral nervous system consists of all the nerve cells that are not in the brain and spinal cord.

b) all of the nerves in the brain and the spinal cord

Incorrect. The central nervous system consists of the brain and spinal cord.

c) the spinal cord and autonomic system

d) the brain and the autonomic system

TOPIC: An Overview of the Nervous System
ANS: a, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
% correct 69 a= 69 b= 6 c= 15 d= 10 *r* = .45
APA=1.1

TB_02_77_An Overview of the Nervous System_Understand_LO 2.5, APA 1.1
The division of the nervous system that allows the brain and the spinal cord to communicate with the sensory systems of the eyes, ears, skin, and mouth, and allows the brain and spinal cord to control the muscles and glands of the body is called the _____.

a) peripheral nervous system

Correct. The peripheral nervous system allows the brain and spinal cord to communicate with the sensory systems and control the muscles and glands.

b) central nervous system

Incorrect. The peripheral nervous system enables the central nervous system, which consists of the brain and spinal cord, to communicate with the sensory systems and control the muscles and glands.

c) endocrine system

d) secondary nervous system

TOPIC: An Overview of the Nervous System
ANS: a, Understand the Concepts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)

% correct 69 a= 69 b= 22 c= 7 d= 1 *r* = .43
APA=1.1

TB_02_78_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
The peripheral nervous system consists of the _____ and _____ nervous systems.
a) autonomic; somatic
Correct. The peripheral nervous system consists of the autonomic and somatic nervous systems.
b) autonomic; sympathetic
c) parasympathetic; somatic
d) parasympathetic; sympathetic
Incorrect. These are the two divisions of the autonomic nervous system.
TOPIC: An Overview of the Nervous System
ANS: a, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (3)
% correct 53 a= 53 b= 7 c= 5 d= 35 *r* = .33
% correct 57 a= 57 b= 11 c= 7 d= 25 *r* = .40
APA=1.1

TB_02_79_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
Voluntary muscles are controlled by the _____ nervous system.
a) somatic
Correct. The somatic nervous system controls voluntary muscles.
b) autonomic
Incorrect. The autonomic nervous system controls involuntary muscles.
c) sympathetic
d) parasympathetic
TOPIC: An Overview of the Nervous System
ANS: a, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
% correct 69 a= 69 b= 17 c=11 d= 3 *r* = .46
APA=1.1

TB_02_80_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
The subdivision of the peripheral nervous system that is made up of all nerves carrying messages from the senses to the central nervous system and all nerves carrying messages from the central nervous system to skeletal muscles is called the _____.
a) autonomic nervous system
Incorrect. The autonomic nervous system consists of nerves that control all of the involuntary muscles, organs, and glands.
b) parasympathetic nervous system
c) somatic nervous system
Correct. This describes the somatic nervous system.
d) central nervous system
TOPIC: An Overview of the Nervous System
ANS: c, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (3)
% correct 59 a= 25 b= 13 c= 59 d= 3 *r* = .46

APA=1.1

TB_02_81_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
In the peripheral nervous system, _____ carry messages from special sense receptors in the skin, muscles, and other internal and external sense organs to the spinal cord.
a) autonomic nerves
b) sensory pathway neurons
Correct. Sensory pathway neurons carry messages from sense receptors.
c) motor pathway neurons
Incorrect. Motor pathway neurons travel from the central nervous system to the voluntary muscles.
d) autonomic neurons
TOPIC: An Overview of the Nervous System
ANS: b, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (1)
APA=1.1

TB_02_82_An Overview of the Nervous System_Apply_LO 2.5, APA 1.1, 1.3
Vladimir is typing on the computer keyboard. The motion of his fingers on the keys is probably being controlled by the _____.
a) autonomic nervous system
b) sensory pathway neurons
Incorrect. These neurons make up the nerves that come from the sensory organs.
c) motor pathway neurons
Correct. Movements of fingers are associated with motor pathway neurons, which control voluntary muscles.
d) autonomic neurons
TOPIC: An Overview of the Nervous System
ANS: c, Apply What You Know, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (3)
APA=1.1; 1.3

TB_02_83_An Overview of the Nervous System_Understand_LO 2.5, APA 1.1
Every deliberate action you make, such as pedaling a bike, walking, scratching, or smelling a flower, involves neurons in the _____ nervous system.
a) sympathetic
b) somatic
Correct. The somatic nervous system controls voluntary muscle movement.
c) parasympathetic
d) autonomic
Incorrect. The autonomic nervous system consists of nerves that control all of the involuntary muscles, organs, and glands.
TOPIC: An Overview of the Nervous System
ANS: b, Understand the Concepts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (3)
% correct 50 a= 12 b= 50 c= 12 d= 25 *r* = .23
% correct 60 a= 14 b= 60 c= 11 d= 14 *r* = .21
APA=1.1

TB_02_84_An Overview of the Nervous System_Apply_LO 2.5, APA 1.1, 1.3
As she walks out of the living room, Gloriann turns out the light. In this example, Gloriann's _____ is active.
a) sympathetic nervous system
b) parasympathetic nervous system
c) autonomic nervous system
Incorrect. Turning out the light requires voluntary muscle movement.
d) somatic nervous system
Correct. Turning out the light requires voluntary muscle movement.
TOPIC: An Overview of the Nervous System
ANS: d, Apply What You Know, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (3)
% correct 48 a= 8 b= 14 c= 30 d= 48 *r* = .42
APA=1.1; 1.3

TB_02_85_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
Involuntary muscles are controlled by the _____ nervous system.
a) somatic
Incorrect. The somatic nervous system controls voluntary muscles.
b) autonomic
Correct. The autonomic nervous system controls involuntary muscles like the heart, stomach, and intestines.
c) sympathetic
d) parasympathetic
TOPIC: An Overview of the Nervous System
ANS: b, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2),
% correct 64 a= 14 b= 64 c= 14 d= 9 *r* = .27
APA=1.1

TB_02_86_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
The subdivision of the peripheral nervous system that consists of nerves that control all of the involuntary muscles, organs, and glands is called the _____ nervous system.
a) somatic
Incorrect. The somatic nervous system controls voluntary muscles.
b) autonomic
Correct. The autonomic nervous system controls involuntary muscles and glands.
c) sympathetic
d) parasympathetic
TOPIC: An Overview of the Nervous System
ANS: b, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
% correct 71 a= 10 b= 71 c= 10 d= 7 *r* = .26
APA=1.1

TB_02_87_An Overview of the Nervous System_Apply_LO 2.5, APA 1.1, 1.3
When you see someone you have a crush on and your heart pounds, your hands get sweaty, and your cheeks feel hot, your _____ nervous system is active.
a) skeletal

b) spinal
c) autonomic

Correct. The autonomic nervous system controls involuntary muscles and glands.

d) somatic

Incorrect. The somatic nervous system controls voluntary muscles.

TOPIC: An Overview of the Nervous System
ANS: c, Apply What You Know, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
APA=1.1; 1.3

TB_02_88_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
The autonomic nervous system has two divisions: the _____ and the _____.

a) central; peripheral

Incorrect. The two divisions of the autonomic nervous system are the sympathetic and parasympathetic nervous systems.

b) sympathetic; parasympathetic

Correct. These are the divisions of the autonomic nervous system.

c) receptors; effectors
d) limbic; endocrine

TOPIC: An Overview of the Nervous System
ANS: b, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (1)
% correct 96 a= 4 b= 96 c= 0 d= 0 *r* = .19
% correct 91 a= 6 b= 91 c= 1 d= 3 *r* = .22
APA=1.1

TB_02_89_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
Which component of the nervous system mobilizes the body in times of stress?

a) central
b) somatic
c) sympathetic

Correct. The sympathetic nervous system mobilizes the body in times of stress.

d) parasympathetic

Incorrect. The parasympathetic nervous system restores the body to normal functioning after arousal.

TOPIC: An Overview of the Nervous System
ANS: c, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
% correct 60 a= 8 b= 12 c= 60 d= 20 *r* = .37
% correct 69 a= 3 b= 10 c= 69 d= 17 *r* = .47
APA=1.1

TB_02_90_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1
The part of the autonomic nervous system that is responsible for reacting to stressful events and bodily arousal is called the _____ nervous system.

a) central
b) somatic
c) sympathetic

Correct. The sympathetic nervous system is responsible for reacting to stressful events and bodily arousal.

d) parasympathetic

Incorrect. The parasympathetic nervous system restores the body to normal functioning after arousal.

TOPIC: An Overview of the Nervous System

ANS: c, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)

% correct 66 a= 5 b= 9 c= 66 d= 19 *r* = .40

% correct 79 a= 1 b= 5 c= 79 d= 14 *r* = .40

APA=1.1

TB_02_91_An Overview of the Nervous System_Apply_LO 2.5, APA 1.1, 1.3

As Molly is walking across campus, a car swerves toward her. Her heart races and sweat breaks out as she jumps out of harm's way. This mobilization of energy is due to the action of Molly's _____.

a) somatic nervous system
b) skeletal nervous system
c) parasympathetic nervous system

Incorrect. The parasympathetic nervous system restores the body to normal functioning after arousal.

d) sympathetic nervous system

Correct. The sympathetic nervous system is responsible for reacting to stressful events and bodily arousal.

TOPIC: An Overview of the Nervous System

ANS: d, Apply What You Know, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)

% correct 73 a= 11 b= 0 c= 16 d= 73 *r* = .48

% correct 81 a= 11 b= 0 c= 9 d= 81 *r* = .51

APA=1.1; 1.3

TB_02_92_An Overview of the Nervous System_Remember_LO 2.5, APA 1.1

The branch of the autonomic nervous system that restores the body to normal functioning after arousal and is responsible for day-to-day functioning of the organs and glands is called the _____.

a) spinal cord
b) somatic nervous system
c) sympathetic nervous system

Incorrect. The sympathetic nervous system is responsible for reacting to stressful events and bodily arousal.

d) parasympathetic nervous system

Correct. The parasympathetic nervous system restores the body to normal functioning after arousal.

TOPIC: An Overview of the Nervous System

ANS: d, Remember the Facts, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)

% correct 66 a= 2 b= 9 c= 23 d= 66 *r* = .37

APA=1.1

TB_02_93_An Overview of the Nervous System_Apply_LO 2.5, APA 1.1, 1.3

Malcolm is studying alone in his room late at night when he hears a loud noise downstairs. His heartbeat increases significantly and his breathing becomes shallow. He wonders if a burglar has entered the house and decides to investigate. When he gets downstairs, he discovers his cat has knocked over a plant stand. His body begins to relax and return to normal. Which part of his nervous system was responsible for putting Malcolm's body on "high alert" when he did not know the source of the sound?

a) spinal cord
b) somatic nervous system
c) sympathetic nervous system

Correct. The sympathetic nervous system mobilizes the body in times of stress.

d) parasympathetic nervous system

Incorrect. The parasympathetic nervous system restores the body to normal functioning after arousal.

TOPIC: An Overview of the Nervous System
ANS: c, Apply What You Know, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
APA=1.1; 1.3

TB_02_94_An Overview of the Nervous System_Apply_LO 2.5, APA 1.1, 1.3
Malcolm is studying alone in his room late at night when he hears a loud noise downstairs. His heartbeat increases significantly and his breathing becomes shallow. He wonders if a burglar has entered the house and decides to investigate. When he gets downstairs, he discovers his cat has knocked over a plant stand. His body begins to relax and return to normal. Which part of his nervous system is responsible for returning Malcolm to a normal state?

a) spinal cord
b) somatic nervous system
c) sympathetic nervous system

Incorrect. The sympathetic nervous system mobilizes the body in times of stress.

d) parasympathetic nervous system

Correct. The parasympathetic nervous system restores the body to normal functioning after arousal.

TOPIC: An Overview of the Nervous System
ANS: d, Apply What You Know, LO=2.5 Differentiate the roles of the somatic and autonomic nervous systems., (2)
APA=1.1; 1.3

Distant Connections: The Endocrine Glands

The Pituitary: Master of the Hormonal Universe

Learning Objective 2.6 - Explain why the pituitary gland is known as the "master gland."

TB_02_95_Distant Connections: The Endocrine Glands_Understand_LO 2.6, APA 1.1
The idea that the pituitary gland is the "master gland":

a) is completely accurate and appropriate.

Incorrect. The pituitary gland is controlled by the hypothalamus, so to suggest that calling it the master gland is completely accurate is something of a misnomer.

b) is completely inaccurate since it doesn't control any other glands or related structures.
c) is true; yet, it is still controlled by the brain.

Correct. The pituitary gland can be thought of as the master of the endocrine system, but it is still controlled by the hypothalamus in the brain.

d) is a matter of debate, since many other researchers refer to the adrenal gland as the "master gland."

TOPIC: Distant Connections: The Endocrine Glands
ANS: c, Understand the Concepts, LO=2.6 Explain why the pituitary gland is known as the "master gland.", (2)

APA=1.1

TB_02_96_Distant Connections: The Endocrine Glands_Remember_LO 2.6, APA 1.1
Which endocrine gland controls all of the other endocrine glands?
a) thyroid
Incorrect. The thyroid gland does not control other endocrine glands.
b) adrenal
c) thymus
d) pituitary
Correct. The pituitary gland controls all other endocrine glands.
TOPIC: Distant Connections: The Endocrine Glands
ANS: d, Remember the Facts, LO=2.6 Explain why the pituitary gland is known as the "master gland.", (1)
APA=1.1

TB_02_97_Distant Connections: The Endocrine Glands_Remember_LO 2.6, APA 1.1
Which hormone has been dubbed the "love hormone" because if it's role in bonding and affection between people?
a) oxytocin
Correct. The role of oxytocin in bonding has been a very popular topic in research.
b) progesterone
c) thyroxin
d) estrogen
Incorrect. This is a primary female hormone, but not the best answer.
TOPIC: Distant Connections: The Endocrine Glands
ANS: a, Remember the Facts, LO=2.6 Explain why the pituitary gland is known as the "master gland.", (2)
APA=1.1

Other Endocrine Glands

Learning Objective 2.7 - Recall the role of various endocrine glands.

TB_02_98_Distant Connections: The Endocrine Glands_Remember_LO 2.7, APA 1.1
Hormones are chemicals that are secreted and go directly into _____.
a) the bloodstream
Correct. Hormones are secreted by endocrine glands and go into the bloodstream.
b) specific organs
c) nerve endings
d) the brain
Incorrect. Hormones go directly into the bloodstream.
TOPIC: Distant Connections: The Endocrine Glands
ANS: a, Remember the Facts, LO=2.7 Recall the role of various endocrine glands., (3)
% correct 59 a= 59 b= 12 c= 8 d= 21 *r* = .42
APA=1.1

TB_02_99_Distant Connections: The Endocrine Glands_Remember_LO 2.7, APA 1.1
Endocrine glands _____.
a) secrete hormones directly into the bloodstream

Correct. Endocrine glands do secrete hormones.

b) are chemicals released into the bloodstream

Incorrect. Glands are not chemicals; they are organs that secrete chemicals.

c) are an extensive network of specialized cells

d) are a thin layer of cells coating the axons

TOPIC: Distant Connections: The Endocrine Glands
ANS: a, Remember the Facts, LO=2.7 Recall the role of various endocrine glands., (1)
% correct 91 a= 91 b= 5 c= 2 d= 2 *r* = .56
APA=1.1

TB_02_100_Distant Connections: The Endocrine Glands_Remember_LO 2.7, APA 1.1
The hormone released by the pineal gland that reduces body temperature and prepares you for sleep is _____.

a) melatonin

Correct. The pineal gland secretes melatonin.

b) DHEA

c) parathormone

d) thyroxin

Incorrect. The thyroid secretes thyroxin, which regulates metabolism.

TOPIC: Distant Connections: The Endocrine Glands
ANS: a, Remember the Facts, LO=2.7 Recall the role of various endocrine glands., (1)
APA=1.1

TB_02_101_Distant Connections: The Endocrine Glands_Apply_LO 2.7, APA 1.1, 1.3
Tim is overweight. His physician has decided to test him to see if there is a problem with the regulation of his _____. Which endocrine gland will be the focus of diagnostic testing?

a) adrenal glands

Incorrect. The adrenal glands have nothing to do with metabolism. They secrete sex hormones and hormones that regulate salt intake.

b) thymus

c) thyroid

Correct. The thyroid gland regulates metabolism.

d) pancreas

TOPIC: Distant Connections: The Endocrine Glands
ANS: c, Apply What You Know, LO=2.7 Recall the role of various endocrine glands., (3)
APA=1.1; 1.3

TB_02_102_Distant Connections: The Endocrine Glands_Apply_LO 2.7, APA 1.1, 1.3
Denise just received the results of a complete physical that found her body is not producing enough insulin. Which of the following endocrine glands is affecting her body's ability to produce insulin?

a) adrenal

Incorrect. The adrenal glands have nothing to do with insulin. They secrete sex hormones and hormones that regulate salt intake.

b) thymus

c) thyroid

d) pancreas

Correct. The pancreas controls the level of blood sugar in the body.

TOPIC: Distant Connections: The Endocrine Glands

ANS: d, Apply What You Know, LO=2.7 Recall the role of various endocrine glands., (3)
APA=1.1; 1.3

TB_02_103_Distant Connections: The Endocrine Glands_Remember_LO 2.7, APA 1.1
The sex glands, which secrete hormones that regulate sexual development and behavior as well as reproduction, are called _____.

a) the pancreas
b) the gonads

Correct. Gonads are sex glands.

c) cortisol

Incorrect. Cortisol is a hormone that is released when the body experiences stress.

d) the hypothalamus

TOPIC: Distant Connections: The Endocrine Glands
ANS: b, Remember the Facts, LO=2.7 Recall the role of various endocrine glands., (1)
% correct 87 a= 1 b= 87 c= 3 d= 9 *r* = .50
APA=1.1

TB_02_104_Distant Connections: The Endocrine Glands_Remember_LO 2.7, APA 1.1
The _____, located on the top of the kidneys, secrete(s) hormones that regulate salt intake, control stress reactions, and provide a secondary source of sex hormones affecting the sexual changes that occur during adolescence.

a) adrenal glands

Correct. The adrenal glands secrete sex hormones and hormones that regulate salt intake.

b) thymus
c) thyroid gland
d) pancreas

Incorrect. The pancreas is primarily responsible for regulation of glucose in the blood.

TOPIC: Distant Connections: The Endocrine Glands
ANS: a, Remember the Facts, LO=2.7 Recall the role of various endocrine glands., (1)
APA=1.1

TB_02_105_Distant Connections: The Endocrine Glands_Apply_LO 2.7, APA 1.1, 1.3
Joe is very anxious over an upcoming exam. Consequently, his adrenal glands will probably produce _____.

a) more testosterone
b) less estrogen

Incorrect. Nothing about Joe's circumstance would result in a change in production of estrogen.

c) more cortisol

Correct. Stressful or tense situations cause the adrenal glands to produce more cortisol in the adrenal glands.

d) less cortisol

TOPIC: Distant Connections: The Endocrine Glands
ANS: c, Apply What You Know, LO=2.7 Recall the role of various endocrine glands., (3)
APA=1.1; 1.3

Looking Inside the Living Brain

Methods for Studying Specific Regions of the Brain

Learning Objective 2.8 - Describe how lesioning studies and brain stimulation are used to study the brain.

TB_02_106_Looking Inside the Living Brain_Remember_LO 2.8, APA 1.1
Insertion into the brain of a thin insulated wire through which an electrical current is sent that destroys the brain cells at the tip of the wire is called _____.

a) lesioning

Correct. Lesioning destroys brain cells.

b) ESB

Incorrect. ESB stimulates brain cells.

c) EEG

d) CT scanning

TOPIC: Looking Inside the Living Brain
ANS: a, Remember the Facts, LO=2.8 Describe how lesioning studies and brain stimulation are used to study the brain., (1)
APA=1.1

TB_02_107_Looking Inside the Living Brain_Understand_LO 2.8, APA 2.4
In order to study parts of an animal's brain, researchers may sometimes deliberately damage a part of the brain. They accomplish this by placing into the brain a thin insulated wire through which they send an electrical current that destroys the brain cells at the tip of the wire. This technique is called _____.

a) lesioning

Correct. Lesioning destroys brain cells.

b) ESB

Incorrect. ESB stimulates brain cells.

c) EEG

d) CT scan

TOPIC: Looking Inside the Living Brain
ANS: a, Understand the Concepts, LO=2.8 Describe how lesioning studies and brain stimulation are used to study the brain., (2)
APA=2.4

Neuroimaging Techniques

Learning Objective 2.9 - Compare and contrast neuroimaging techniques for mapping the structure and function of the brain.

TB_02_108_Looking Inside the Living Brain_Remember_LO 2.9, APA 2.4
A brain-imaging method that takes computer-controlled X-rays of the brain is called _____.

a) electroencephalography (EEG)

b) magnetic resonance imaging (MRI)

Incorrect. MRI is a brain-imaging method using radio waves and magnetic fields of the body.

c) positron emission tomography (PET)

d) computed tomography (CT)

Correct. CT scans take computer-controlled X-rays of the brain.

TOPIC: Looking Inside the Living Brain

ANS: d, Remember the Facts, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (3)
% correct 30 a= 16 b= 42 c= 11 d= 30 *r* = .30
APA=2.4

TB_02_109_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
Ali is in the hospital about to undergo a brain-imaging process that involves taking many X-rays from different angles aided by the use of a computer. What type of imaging technique is being used?

a) electroencephalography (EEG)
b) magnetic resonance imaging (MRI)

Incorrect. MRI is a brain-imaging method using radio waves and magnetic fields of the body.

c) positron-emission tomography (PET)
d) computed tomography (CT)

Correct. CT scans take computer-controlled X-rays of the brain.

TOPIC: Looking Inside the Living Brain
ANS: d, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (3)
% correct 37 a= 18 b= 42 c= 4 d= 37 *r* = .30
APA=2.4

TB_02_110_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
If Mindy's doctor has taken a series of images of her brain using X-rays, then she has likely had a(n) _____.

a) EEG

Incorrect. An electroencephalogram is a graphical representation of the electrical activity in the brain.

b) MRI
c) CT

Correct. CT scans use x-rays to create such images.

d) PET

TOPIC: Looking Inside the Living Brain
ANS: c, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (3)
APA=2.4

TB_02_111_Looking Inside the Living Brain_Understand_LO 2.9, APA 2.4
A brain-imaging method called _____ takes advantage of the magnetic properties of different atoms to take sharp, three-dimensional images of the brain.

a) electroencephalography (EEG)
b) magnetic resonance imaging (MRI)

Correct. MRI is a brain-imaging method using radio waves and magnetic fields of the body.

c) positron emission magnetography (PEM)
d) computed tomography (CT)

Incorrect. CT scans use X-rays.

TOPIC: Looking Inside the Living Brain
ANS: b, Understand the Concepts, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (2)
APA=2.4

TB_02_112_Looking Inside the Living Brain_Remember_LO 2.9, APA 2.4
A brain-imaging method using radio waves and magnetic fields of the body to produce detailed images of the brain is called _____.

a) electroencephalography (EEG)
b) magnetic resonance imaging (MRI)

Correct. MRI is a brain-imaging method using radio waves and magnetic fields of the body.

c) positron emission tomography (PET)
d) computed tomography (CT)

Incorrect. CT scans use X-rays.

TOPIC: Looking Inside the Living Brain
ANS: b, Remember the Facts, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (2)
% correct 64 a= 19 b= 64 c= 7 d= 10 *r* = .20
% correct 81 a= 17 b= 81 c= 0 d= 2 *r* = .29
APA=2.4

TB_02_113_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
Rashad is in the hospital and is about to undergo a brain-imaging process that involves placing him inside a magnetic field so that a computer can create three-dimensional images of his brain. What procedure is he about to undergo?

a) electroencephalography (EEG)
b) magnetic resonance imaging (MRI)

Correct. MRI is a brain-imaging method using radio waves and magnetic fields of the body.

c) computed tomography (CT)

Incorrect. CT scans use X-rays.

d) positron emission tomography (PET)

TOPIC: Looking Inside the Living Brain
ANS: b, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (1)
% correct 93 a= 4 b= 93 c= 0 d= 4 *r* = .29
APA=2.4

TB_02_114_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
Small metal disks are pasted onto Miranda's scalp and they are connected by wire to a machine that translates the electrical energy from her brain into wavy lines on a moving piece of paper. From this description, it is evident that Miranda's brain is being studied through the use of _____.

a) a CT scan

Incorrect. CT scans take computer-controlled X-rays of the brain.

b) functional magnetic resonance imaging
c) a microelectrode
d) an electroencephalogram

Correct. Electroencephalograms record brain wave patterns.

TOPIC: Looking Inside the Living Brain
ANS: d, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (1)
% correct 81 a= 10 b= 5 c= 4 d= 81 *r* = .35
APA=2.4

TB_02_115_Looking Inside the Living Brain_Remember_LO 2.9, APA 2.4
Which of the following is a machine designed to record the brain wave patterns produced by electrical activity of the brain's cortex, just below the scalp?

a) deep lesioning
b) ESB

Incorrect. ESB is insertion of a thin insulated wire into the brain.

c) EEG

Correct. EEG records brain wave patterns.

d) CT scan

TOPIC: Looking Inside the Living Brain
ANS: c, Remember the Facts, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (2)
APA=2.4

TB_02_116_Looking Inside the Living Brain_Remember_LO 2.9, APA 2.4
Which equipment is used to monitor brain waves?

a) CT scans

Incorrect. A CT scan is a brain-imaging method.

b) functional magnetic resonance imaging
c) microelectrode
d) electroencephalograph

Correct. Electroencephalographs monitor brain waves.

TOPIC: Looking Inside the Living Brain
ANS: d, Remember the Facts, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (3)
% correct 31 a= 27 b= 19 c= 22 d= 31 *r* = .37
APA=2.4

TB_02_117_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
Which of the following statements would BEST describe a person who was experiencing a brain analysis technique called magnetoencephalography (MEG)?

a) The patient wears a helmet-like device during the procedure.

Correct. MEG involves a helmet that contains devices that are highly sensitive to magnetic fields.

b) The patient would be injected with a radioactive tracer that is relatively easily to obtain.

Incorrect. This would be a description of SPECT.

c) The patient would have several small electrodes attached to their scalp.
d) The patient would be slid into a tube where a large magnet would circle around them for an extended period of time.

TOPIC: Looking Inside the Living Brain
ANS: a, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (3)
APA=2.4

TB_02_118_Looking Inside the Living Brain_Remember_LO 2.9, APA 2.4
Which of the following is a brain-imaging method in which radioactive sugar is injected into the subject and a computer compiles a color-coded image of the activity of the brain?

a) electroencephalography (EEG)
b) computed tomography (CT)
c) positron emission tomography (PET)

Correct. PET scan provides a color-coded image of the activity of the brain.

d) functional magnetic resonance imaging (fMRI)

Incorrect. FMRI does not involve radioactive sugar.

TOPIC: Looking Inside the Living Brain
ANS: c, Remember the Facts, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (3)
% correct 48 a= 25 b= 12 c= 48 d= 13 *r* = .37
APA=2.4

TB_02_119_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
Libby's physician refers her to a medical center in order to have the biochemical activity in her brain analyzed. She is given an injection of a radioactive glucose-like substance and then is told to lie down with her head in a scanner. The technique being used is _____.

a) positron emission tomography

Correct. PET involves injecting a radioactive glucose into the patient.

b) functional magnetic resonance imaging

Incorrect. FMRI does not involve injecting the patient with glucose.

c) microelectrode recording
d) an electroencephalogram

TOPIC: Looking Inside the Living Brain
ANS: a, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (2)
APA=2.4

TB_02_120_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
Marika needs to have a neuroimaging test that will track the activity of her brain, but wants to use a radioactive tracer that is more easily obtained than those used for PET. Which of the following offers the BEST alternative based on Marika's needs?

a) electroencephalography (EEG)
b) computed tomography (CT)
c) functional positron emission tomography (fPET)

Incorrect. There is no neuroimaging technique called fPET.

d) single photo emission computed tomography (SPECT)

Correct. SPECT offers this stated benefit over PET scans.

TOPIC: Looking Inside the Living Brain
ANS: d, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (2)
APA=2.4

TB_02_121_Looking Inside the Living Brain_Understand_LO 2.9, APA 2.4
Which of the following is the primary benefit of SPECT over PET?

a) SPECT is a non-invasive neuroimaging technique, while PET is invasive.
b) SPECT offers the benefit of using radioactive tracers that are easier to obtain than PET.

Correct. SPECT allows the use of tracers that can be more easily obtained than those used in PET scans.

c) SPECT allows the monitoring of actual brain activity, while PET does not.
d) SPECT offers the monitoring of brain oxygen changes, while PET does not.

Incorrect. Both PET and SPECT can track changes in brain oxygenation levels.

TOPIC: Looking Inside the Living Brain
ANS: b, Understand the Concepts, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., (2)
APA=2.4

TB_02_122_Looking Inside the Living Brain_Apply_LO 2.9, APA 2.4
A researcher wants to obtain a "movie" of changes in the activity of the brain using images from different time periods. Which of these would be the BEST choice for this researcher?

a) electroencephalography (EEG)
b) computed tomography (CT)
c) positron emission tomography (PET)

Incorrect. PET provides a color-coded image of the activity of the brain, not moving images of the brain.

d) functional magnetic resonance imaging (fMRI)

Correct. An fMRI takes MRI images and combines them into a moving image of the brain.

TOPIC: Looking Inside the Living Brain
ANS: d, Apply What You Know, LO=2.9 Compare and contrast neuroimaging techniques for mapping the structure and function of the brain., , (3)
% correct 40 a= 25 b= 18 c= 15 d= 40 *r* = .20
APA=2.4

From the Bottom Up: The Structures of the Brain

The Hindbrain

Learning Objective 2.10 - Identify the different structures of the hindbrain and the function of each.

TB_02_123_From the Bottom Up: The Structures of the Brain_Remember_LO 2.10, APA 1.1
The brain is divided into several different structures on the bottom part of the brain referred to as the "hindbrain." Which of the parts of the brain listed below is NOT located in the hindbrain?

a) medulla
b) pons
c) cerebellum

Incorrect. This part of the brain is in the hindbrain.

d) thalamus

Correct. This part of the brain is in the forebrain.

TOPIC: From the Bottom Up: The Structures of the Brain
ANS: d, Remember the Facts, LO=2.10 Identify the different structures of the hindbrain and the function of each., (3)
APA=1.1

TB_02_124_From the Bottom Up: The Structures of the Brain_Remember_LO 2.10, APA 1.1
The _____ is a structure in the brain stem responsible for life-sustaining functions, such as breathing and heart rate.

a) reticular activating system
b) pons

Incorrect. The pons plays a role in sleep, dreaming, left-right body coordination, and arousal.

c) medulla

Correct. The medulla is responsible for life-sustaining functions.

d) cerebellum

TOPIC: From the Bottom Up: The Structures of the Brain
ANS: c, Remember the Facts, LO=2.10 Identify the different structures of the hindbrain and the function of each., (3)
% correct 59 a= 3 b= 19 c= 59 d= 18 *r* = .27
% correct 60 a= 3 b= 14 c= 60 d= 22 *r* = .22
APA=1.1

TB_02_125_From the Bottom Up: The Structures of the Brain_Apply_LO 2.10, APA 1.1, 1.3
An auto accident rendered Chris's nervous system unable to send messages for him to breathe, so he is on a respirator. Which brain structure was damaged in the accident?

a) pons

Incorrect. The pons plays a role in sleep, dreaming, left-right body coordination, and arousal.

b) medulla

Correct. The medulla is responsible for breathing.

c) cerebellum
d) reticular formation

TOPIC: From the Bottom Up: The Structures of the Brain
ANS: b, Apply What You Know, LO=2.10 Identify the different structures of the hindbrain and the function of each., (3)
% correct 48 a= 10 b= 48 c= 37 d= 5 *r* = .22
APA=1.1; 1.3

TB_02_126_From the Bottom Up: The Structures of the Brain_Remember_LO 2.10, APA 1.1
The point at which the nerves from the left side of the body cross over into the right side of the brain and vice versa is called the _____.

a) reticular activating system
b) pons

Incorrect. The pons connects the top of the brain to the bottom.

c) medulla

Correct. This is the point where nerves cross over.

d) cerebellum

TOPIC: From the Bottom Up: The Structures of the Brain
ANS: c, Remember the Facts, LO=2.10 Identify the different structures of the hindbrain and the function of each., (2)
APA=1.1

TB_02_127_From the Bottom Up: The Structures of the Brain_Remember_LO 2.10, APA 1.1
The _____ is a structure in the brain stem that plays a role in sleep, dreaming, left-right body coordination, and arousal.

a) reticular activating system
b) pons