Chapter 1: Introduction

Topic	Question Type	Factual	Conceptual	Application
Introduction	Multiple Choice	1,3,6	4,8	2,5,7
	Fill-In	1,2		
	Essay	1		
Understanding Human Consciousness: A Physiological Approach	Multiple Choice	14,15,17,19,22,25, 26,30,33,34	9-13,16,21,23,32	18,20,24,27-29,31
	Fill-In	5	3,4	
	Essay		2,3,4	
The Nature of Behavioral Neuroscience	Multiple Choice	35,36,39,42-46, 51-53,56,58,65, 67-69	47,41,44,47,48-50, 54-57,59,60-64	38,40
	Fill-In	6,8,9,10	7,11	
	Essay		5,6,7	
Natural Selection and Evolution	Multiple Choice	76,77,79,80,84-88	70-76,78,83	81,82
	Fill-In	12-16		
	Essay		8-10	
Ethical Issues in Research with Animals	Multiple Choice	89,90,92,93	94	91
	Fill-In			
	Essay			
Careers in Neuroscience	Multiple Choice	95-97		
	Fill-In	20	19	
	Essay		11	

Multiple-Choice Questions

1.1-1. The key deficit suffered by Miss S. in the chapter vignette was _____ brought on by a stroke involving her _____.
a. partial blindness; optic nerve
b. unilateral neglect; right hemisphere
c. bilateral neglect; cerebellum
d. unilateral neglect; left hemisphere
e. blindness; parietal cortex
Difficulty: 3
Question ID: 1.1-1
Page Ref: 2
Topic: Opening Vignette
Skill: Factual
Answer: b. unilateral neglect; right hemisphere
Rationale: Damage to the right hemisphere can result in unilateral neglect in which a person ignores the left side of their body or the left visual field.

1.1-2. Which of the following would be an example of unilateral neglect?
a. a person who cannot sense stimuli on the left side of their body
b. a man who only shaves the left side of his face
c. a person who cannot sense stimuli on the right side of their body
d. a man who ignores the food on the right of his lunch plate
e. a woman who only applies makeup to the right side of her face
Difficulty: 3
Question ID: 1.1-2
Page Ref: 2
Topic: Opening Vignette
Skill: Applied
Answer: b. a man who only shaves the left side of his face
Rationale: Damage to the right hemisphere can result in unilateral neglect in which a person ignores the left side of their body or the left visual field.

1.1-3. _____ is the belief that movement of natural phenomena such as winds and tides are caused by spirits.
a. Animism
b. Dualism
c. Monism
d. Spiritualism
e. Interactionism
Difficulty: 1
Question ID: 1.1-3

Page Ref: 2
Topic: Introduction
Skill: Factual
Answer: a. Animism
Rationale: Animism is the belief that spirits within objects cause them to move.

1.1-4. The notion that animal movement can be explained by spirits is termed
a. anarchy.
b. dualism.
c. animism.
d. theological evolution.
e. symbolic representation.
Difficulty: 1
Question ID: 1.1-4
Page Ref: 2
Topic: Introduction
Skill: Conceptual
Answer: c. animism.
Rationale: Animism is the belief that spirits within objects cause them to move.

1.1-5. A scientist who holds a monistic philosophy would be comfortable with which of the following statements?
a. The universe is a mental construction.
b. The left hemisphere of the brain is the location of the mind.
c. The mind is not composed of matter.
d. Everything is made of matter and energy.
e. The body is physical whereas the mind is spiritual.
Difficulty: 3
Question ID: 1.1-5
Page Ref: 3
Topic: Introduction
Skill: Applied
Answer: d. Everything is made of matter and energy.
Rationale: The monist view of the mind-body question holds that the mind is a property of the operations of the nervous system.

1.1-6. _____ is the belief that the mind and body are separate entities.
a. Contralateral neglect
b. Monism
c. Blindsight
d. Dualism
e. Animism

Difficulty: 1
Question ID: 1.1-6
Page Ref: 3
Topic: Introduction
Skill: Factual
Answer: d. Dualism
Rationale: The dualist view of the mind-body question holds that the body, but not the mind, is physical.

1.1-7. Which of the following statements is consistent with the monistic view of the mind-body question?
a. Mind and body are separate.
b. The body can influence the mind through the actions of the pineal gland.
c. The mind is spiritual, while the body is made from matter.
d. The mind can exist apart from the body.
e. The mind is generated through the physical actions of the brain.
Difficulty: 3
Question ID: 1.1-7
Page Ref: 3
Topic: Introduction
Skill: Applied
Answer: e. The mind is generated through the physical actions of the brain.
Rationale: The monist view of the mind-body question holds that the world consists only of matter and energy and that the mind is a property of the operations of the nervous system.

1.1-8. The mind-body question
a. asks about the nature of the mind and the body.
b. was originally posed by neuroscientists.
c. has been solved.
d. usually involves choosing a dualistic view.
e. is no longer relevant to behavioral neuroscience.
Difficulty: 2
Question ID: 1.1-8
Page Ref: 3
Topic: Introduction
Skill: Conceptual
Answer: a. asks about the nature of the mind and the body.
Rationale: The mind-body question seeks to determine the nature of mind -- is it mental and hidden or is it a physical property of the body?

1.1-9. Which of the following is consistent with the meaning of "consciousness"?
a. being dead drunk

b. the inability to detect stimuli from the outside world
c. the ability to sense the thoughts of others
d. the ability to communicate our thoughts and feelings to others
e. the inability to learn new information
Difficulty: 2
Question ID: 1.1-9
Page Ref: 3
Topic: Understanding Human Consciousness: A Physiological Approach
Skill: Conceptual
Answer: the ability to communicate our thoughts and feelings to others
Rationale: Consciousness can refer to being awake, to self-awareness, and to the ability to communicate via language with other persons.

1.1-10. Which of the following is consistent with the proposition that consciousness is a physiological function?
a. Consumption of food changes our ability to communicate.
b. Damage to the brain can alter our self-awareness.
c. Inhalation of oxygen renders us unaware of the environment.
d. Our awareness levels change when we meditate.
e. Increased mental effort results in reduced demand for oxygen by the brain.
Difficulty: 3
Question ID: 1.1-10
Page Ref: 3
Topic: Understanding Human Consciousness: A Physiological Approach
Skill: Conceptual
Answer: b. Damage to the brain can alter our self-awareness.
Rationale: The fact that brain damage can alter our self-awareness suggests that consciousness is a physiological function.

1.1-11. The text author suggests that a key aspect of human self-awareness is related to
a. our ability to communicate with others using language.
b. our ability to sleep at night.
c. our ability to use tools.
d. our ability to sense color.
e. the fact that humans have a sense of humor.
Difficulty: 2
Question ID: 1.1-11
Page Ref: 3
Topic: Understanding Human Consciousness: A Physiological Approach
Skill: Conceptual
Answer: a. our ability to communicate with others using language.

Rationale: A key aspect of consciousness involves the ability to communicate via language with other persons.

1.1-12. The phenomenon of "blindsight" suggests that
a. only one visual system exists in the human brain.
b. our behavior can be guided by unconscious stimuli.
c. dualism is the correct solution to the mind-body problem.
d. brain damage can alter somatic awareness.
e. the presence of one visual system in primate brain.
Difficulty: 2
Question ID: 1.1-12
Page Ref: 4
Topic: Blindsight
Skill: Conceptual
Answer: b. our behavior can be guided by unconscious stimuli.
Rationale: Humans possess a primitive visual system (which does not have access to language) and a complex visual system, which can communicate via language. Damage to the primary visual cortex spares the primitive visual system, which can guide movements of the hands in spite of the visual stimulation remaining unconscious.

1.1-13. Natalie J.'s grandfather became blind after a stroke. His ability to touch the end of a cane held by his doctor
a. was made possible because his color visual system was intact.
b. was possible because his corpus callosum was intact.
c. was made possible because his primitive visual system was intact.
d. was due to chance.
e. occurred because the stroke did not involve the right hemisphere.
Difficulty: 3
Question ID: 1.1- 13
Page Ref: 4
Topic: Blindsight
Skill: Conceptual
Answer: c. was made possible because his primitive visual system was intact.
Rationale: Humans possess a primitive visual system (which does not have access to language) and a complex visual system, which can communicate via language. Damage to the primary visual cortex spares the primitive visual system, which can guide movements of the hands in spite of the lack of visual stimulation.

1.1.14. The _____ visual system allows for the ability to perceive the world around us.
a. primitive
b. fish/frog
c. mammalian

d.unconscious
e. reptilian
Difficulty: 2
Question ID: 1.1-14
Page Ref: 4
Topic: Blindsight
Skill: Conceptual
Answer: c. mammalian
Rationale: Humans have several visual systems. Damage to the primary visual cortex spares the primitive visual system, which can guide movements of the hands in spite of the visual stimulation remaining unconscious.

1.1-15. Blindsight suggests that some parts of the brain may play a special role in
a. tactile sensation.
b. eye movements.
c. sleep-wake cycles.
d. reproductive behavior.
e. consciousness.
Difficulty: 1
Question ID: 1.1-15
Page Ref: 4
Topic: Blindsight
Skill: Factual
Answer: e. consciousness.
Rationale: Humans possess several visual systems – the primitive system does not have access to language while the complex visual system can communicate via language. Damage to the primary visual cortex spares the primitive visual system, which can guide movements of the hands in spite of the visual stimulation remaining unconscious.

1.1-16. Which of the following is true of blindsight?
a. The primitive visual system is key for consciousness.
b. Reaching is only guided by the conscious visual system.
c. People are acutely aware of their blind spots.
d. Humans appear to have dual visual systems.
e. The right hemisphere is important for language function.
Difficulty: 2
Question ID: 1.1-16
Page Ref: 4
Topic: Blindsight
Skill: Conceptual
Answer: d. Humans appear to have dual visual systems.

Rationale: Humans possess a primitive visual system (which does not have access to language) and a complex visual system, which can communicate via language. Damage to the primary visual cortex spares the primitive visual system, which can guide movements of the hands in spite of the visual stimulation remaining unconscious.

1.1-17. Transection of the _____ may be useful for reducing the symptoms of _____.
a. corpus callosum; epilepsy
b. visual cortex; blindsight
c. stria terminalis; amnesia
d. left parietal cortex; unilateral neglect
e. corpus callosum; anxiety
Difficulty: 3
Question ID: 1.1-17
Page Ref: 5 Topic: Split Brains
Skill: Factual
Answer: a. corpus callosum; epilepsy
Rationale: Seizures can spread to the opposite hemisphere via the corpus callosum, which interconnects the dual brain hemispheres.

1.1-18. Epilepsy can be controlled by
a. damaging portions of the parietal cortex.
b. damaging portions of the pineal gland.
c. drugs that stimulate the firing of neurons.
d. electrical stimulation of certain brain regions.
e. cutting the corpus callosum.
Difficulty: 3
Question ID: 1.1-18
Page Ref: 5
Topic: Split Brains
Skill: Applied
Answer: e. cutting the corpus callosum.
Rationale: Transection of the corpus callosum can diminish the intensity of severe epileptic seizures by minimizing the spread of seizure activity from one side to the other.

1.1-19. The excessive overactivity of nerve cells in the brain is known as
a. hemorrhagic stroke.
b. hydrocephalus.
c. hematoma.
d. epilepsy.
e. myasthenia gravis.
Difficulty: 1
Question ID: 1.1-19

Page Ref: 5
Topic: Split Brains
Skill: Factual
Answer: d. epilepsy
Rationale: Epilepsy involves excessive uncontrollable activity of brain neurons.

1.1-20. A person whose corpus callosum has been sectioned would most likely show which of the following?
a. increased frequency of epileptic seizures
b. coordinated control of his right and left hands
c. reading an interesting book held in his right hand
d. making obscene gestures with his left hand
e. improved neural communication between the left and right hemispheres
Difficulty: 3
Question ID: 1.1-20
Page Ref: 6
Topic: Split Brains
Skill: Applied
Answer: d. making obscene gestures with his left hand
Rationale: The right hemisphere controls the left side of the body and visa-versa. Because only the left hemisphere (which controls the right hand) can speak about its conscious experience, cutting the corpus callosum can result in mismatches in the motor behavior of the two hands – the left hand does the bidding of the right hemisphere (which cannot speak).

1.1-21. An important function of the corpus callosum is to
a. channel sensory information to the thalamic relay centers.
b. control the movement of the hands and feet.
c. interconnect the cerebral hemispheres.
d. modulate the release of neurohormones from the pituitary.
e. dampen neural firing in the cortex.
Difficulty: 2
Question ID: 1.1-21
Page Ref: 6
Topic: Split Brains
Skill: Conceptual
Answer: c. interconnect the cerebral hemispheres.
Rationale: The right hemisphere controls the left side of the body and visa-versa. The corpus callosum allows the two hemispheres to communicate with each other resulting in a unified consciousness.

1.1-22. Surgical sectioning of the corpus callosum is intended to
a. reduce swelling of the brain in hydroencephalus patients.

b. minimize long-term memories of traumatic events.
c. promote the development of the memory systems
d. reduce the severity of epileptic seizures.
e. reduce the amount of drugs required to control epilepsy.
Difficulty: 1
Question ID: 1.1-22
Page Ref: 5
Topic: Split Brains
Skill: Factual
Answer: d. reduce the severity of epileptic seizures.
Rationale: The corpus callosum interconnects the dual brain hemispheres. Transection of the corpus callosum can prevent seizure spread from one side to the other, thus reducing the intensity of severe epileptic seizures.

1.1-23. In most persons, a key function of the left hemisphere
a. is to control the left side of the body.
b. is the control of language.
c. relates to spatial perception.
d. is to integrate the tactile information from the left side of the body.
e. is to receive olfactory information from the right nostril.
Difficulty: 3
Question ID: 1.1-23
Page Ref: 6
Topic: Split Brains
Skill: Conceptual
Answer: b. is the control of language.
Rationale: A key function of the left hemisphere is the control of language. Broca reported that a man with damage to the left front cortex was unable to speak.

1.1-24. Imagine that your corpus callosum has been sectioned to minimize your epileptic seizures. Suppose that your left nostril is plugged with cotton and that a fresh rose has been placed near your right nostril. Under these conditions, the rose would
a. generate a sensory message in your left hemisphere.
b. generate a sensory message in both hemispheres.
c. lead you to report the smell of a flower.
d. not generate a verbal report of this experience.
e. be identified as a flower.
Difficulty: 3
Question ID: 1.1-24
Page Ref: 6
Topic: Split Brains
Skill: Applied

Answer: d. not generate a verbal report of this experience.
Rationale: In this situation, the olfactory information travels to the right hemisphere, which cannot speak.

1.1-25. A key function of the right hemisphere relates to the
a. motor control of the left side of the body.
b. processing of olfactory signals from the left nostril.
c. processing of tactile signals from the right side of the body.
d. motor control of the right side of the body.
e. capacity to control feeding, fighting, fleeing, and mating.
Difficulty: 2
Question ID: 1.1-25
Page Ref: 6
Topic: Split Brains
Skill: Factual
Answer: a. motor control of the left side of the body.
Rationale: The right hemisphere controls the left side of the body and visa-versa.

1.1-26. Which of the following is true of the cerebral hemispheres?
a. The left hemisphere is 40% larger than the right hemisphere.
b. The cerebral hemispheres act in isolation in the normal brain.
c. The cerebral hemispheres consist of two symmetrical parts.
d. The corpus callosum interconnects structures within one hemisphere but not between hemispheres.
e. Language is a function of the right hemisphere.
Difficulty: 1
Question ID: 1.1-26
Page Ref: 6
Topic: Split Brains
Skill: Factual
Answer: c. The cerebral hemispheres consist of two symmetrical parts.
Rationale: The two hemispheres appear to form symmetrical parts.

1.1.27. Imagine that a person who has undergone a split-brain surgery is seated at a computer terminal that can display images as well as play sounds from the left and right side of the display. If the image of a key was displayed for a brief time period on the left side of the computer monitor, which of the following statements would be true of this person?
a. The person would reach for the key with his left hand.
b. The person would be able to reach for the key with his right hand.
c. The person could describe the key in great detail.
d. The person would be unable to carry out this task.
e. The neural representation of the key would reach the left occipital cortex.

Difficulty: 3
Question ID: 1.1-27
Page Ref: 6
Topic: Split Brains
Skill: Applied
Answer: a. The person would reach for the key with his left hand.
Rationale: this sensory information would reach the right hemisphere, which controls the function of the left hand.

1.1-28. Imagine that your corpus callosum has been sectioned to minimize your epileptic seizures. Suppose that your left nostril is plugged with cotton and that a fresh rose has been placed near your right nostril. Under these conditions, you would be most likely to
a. experience a sensory message in your left hemisphere.
b. use your right hand to choose a hidden plastic flower.
c. report that you smell a flower.
d. use your left hand to select a hidden plastic flower.
e. use your right hand to select a pine tree.
Difficulty: 3
Question ID: 1.1-28
Page Ref: 6
Topic: Split Brains
Skill: Applied
Answer: d. use your left hand to select a hidden plastic flower.
Rationale: The olfactory signal would reach the right hemisphere, which controls the left hand.

1.1-29. Which sensory system below transmits information from the left side of the body to the left hemisphere?
a. olfaction
b. vision
c. touch
d. pain
e. audition
Difficulty: 3
Question ID: 1.1-29
Page Ref: 6
Topic: Split Brains
Skill: Applied
Answer: a: olfaction
Rationale: Olfactory information does not cross the sides of the brain; information from the right nostril is transmitted to the right hemisphere.

1.1-30. Unilateral neglect involves

a. the inability to notice objects placed to the right side of a person.
b. damage to the left hemisphere of the brain.
c. the inability to notice objects placed to the left side of a person.
d. damage to the amygdala and hippocampus.
e. impaired speech production.
Difficulty: 2
Question ID: 1.1-30
Page Ref: 6-7
Topic: Unilateral Neglect
Skill: Factual
Answer: c. the inability to notice objects placed to the left side of a person.
Rationale: Damage to the right hemisphere can result in unilateral neglect in which a person ignores the left side of their body or the left visual field.

1.1-31. A person who sustains damage within her right parietal cortex would be expected to
a. show impaired perception of tactile stimuli on the left side of the body.
b. experience altered emotional expression.
c. be better at planning motor actions involving her hands.
d. experience unilateral neglect.
e. experience impaired speech production.
Difficulty: 3
Question ID: 1.1-31
Page Ref: 6
Topic: Unilateral Neglect
Skill: Applied
Answer: d. experience unilateral neglect.
Rationale: Unilateral neglect occurs via damage to the right hemisphere and results in a situation in which a person ignores the left side of their body or the left visual field.

1.1-32. A person suffering from unilateral neglect would be unable to
a. attend to the right half of a stimulus.
b. state whether the right half of a stimulus is the same as the left middle of the stimulus.
c. accurately label the hours on a clock drawing.
d. recognize both hands as their own.
e. describe parts of a well-known landmark.
Difficulty: 2
Question ID: 1.1-32
Page Ref: 7
Topic: Unilateral Neglect
Skill: Conceptual
Answer: c. accurately label the hours on a clock drawing.

Rationale: Damage to the right hemisphere can result in unilateral neglect in which a person ignores the left side of their body or the left visual field.

1.1-33. The "rubber hand" illusion occurs only when sensory stimulation of a person's hand leads to
a. inhibition of the corpus callosum.
b. activation of the premotor cortex.
c. activation of the parietal lobe.
d. inhibition of the primary motor cortex.
e. inhibition of the premotor cortex.
Difficulty: 2
Question ID: 1.1-33
Page Ref: 8
Topic: Perception of Self
Skill: Factual
Answer: b. activation of the premotor cortex.
Rationale: Imaging studies report that the experience of the "rubber hand" illusion (i.e., the belief that a rubber hand belongs to the person under study) is accompanied by activation of the premotor cortex.

1.1-34. The urge to move your arm in response to a threatening stimulus depends on activation of the
a. parietal cortex.
b. corpus callosum.
c. supplemental motor area.
d. posterior cingulated cortex.
e. the primary visual cortex
Difficulty: 3
Question ID: 1.1-34
Page Ref: 8
Topic: Perception of Self
Skill: Factual
Answer: c: supplemental motor area
Rationale: Imaging studies report that the urge to move your arm in response to a threatening stimulus depends on activation of the supplemental motor area.

1.1-35. The author of the first psychology text was _____ and the text was entitled _____.
a. Rene Descartes; *A Primer of Psychology*
b. Sigmund Freud; *Dream Interpretation After Cocaine Ingestion*
c. Neil Carlson; *Foundations of Physiological Psychology*
d. Luigi Galvani; *Frog Legs and Psychologic Function*

e. Wilhelm Wundt; *Principles of Physiological Psychology*
Difficulty: 2
Question ID: 1.1-35
Page Ref: 9
Topic: The Nature of Behavioral Neuroscience
Skill: Factual
Answer: e. Wilhelm Wundt; *Principles of Physiological Psychology*
Rationale: Wilhelm Wundt wrote the first text, entitled *Principles of Physiological Psychology*.

1.1-36. Your textbook author asserts that the primary function of the brain is to
a. allow us to appreciate art and music.
b. allow for the experience of emotions.
c. control movement.
d. create memories of our experiences.
e. interpret our sensory experiences.
Difficulty: 2
Question ID: 1.1-36
Page Ref: 9
Topic: The Nature of Behavioral Neuroscience
Skill: Factual
Answer: c. control movement.
Rationale: The key function of the brain is to control movement – which is the basis for our behaviors.

1.1-37. _____ represent explanations used by all scientists.
a. Generalizations
b. Falsifications
c. Hallucinations
d. Syllogisms
e. Rationalizations
Difficulty: 1
Question ID: 1.1-37
Page Ref: 10
Topic: The Goals of Research
Skill: Conceptual
Answer: a. Generalizations
Rationale: Generalization is a type of scientific explanation involving a general conclusion based on observation of many similar phenomena.

1.1-38. Imagine that you now experience such an overly strong fear of dogs that you refuse to leave your house for fear of encountering a dog. A learning theorist would suggest that the roots of your fear can be attributed to past classical conditioning, in which you associated the sight and

sound of a dog with some aversive experience. This type of explanation would involve the process of
a. rationalization.
b. pseudoscience.
c. reductionism.
d. generalization.
e. dualism.
Difficulty: 2
Question ID: 1.1-38
Page Ref: 10
Topic: The Goals of Research
Skill: Applied
Answer: d. generalization.
Rationale: Generalization is a type of scientific explanation involving a general conclusion based on observation of many similar phenomena. Prior studies have suggested that pairing a neutral stimulus with an aversive stimulus can produce fear.

1.1-39. A scientific explanation of a complex phenomenon that is cast in terms of a simpler one involves the process of
a. rationalization.
b. falsification.
c. generalization.
d. deduction.
e. reduction.
Difficulty: 2
Question ID: 1.1-39
Page Ref: 10
Topic: The Goals of Research Skill: Factual
Answer: e. reduction.
Rationale: Reduction is a type of scientific explanation involving breaking a complex situation into simpler processes.

1.1-40. You notice that your roommate has difficulty sleeping after consuming heavily caffeinated drinks. You know from your courses that caffeine can stimulate brain neurons that produce arousal (and that such arousal disturbs sleep function). If you suggest to your roommate that his/her insomnia reflects the action of caffeine on brain function, your explanation would involve the process of
a. reduction.
b. superordinate causality.
c. generalization.
d. induction.
e. falsification.

Difficulty: 3
Question ID: 1.1-40
Page Ref: 10
Topic: The Goals of Research Skill: Applied
Answer: a. reduction.
Rationale: Reduction is a type of scientific explanation involving breaking a complex situation into simpler processes. Prior studies have determined that caffeine can activate the brain.

1.1-41. Which of the following statements is correct?
a. Reduction uses complicated processes to explain simple ones.
b. The goal of religion is to predict a phenomenon under study.
c. Generalization and reduction are important tools in science.
d. Scientists only use reductionistic explanations.
e. Most scientific studies use on-human experimental subjects.
Difficulty: 3
Question ID: 1.1-41
Page Ref: 10
Topic: The Goals of Research
Skill: Conceptual
Answer: c. Generalization and reduction are important tools in science.
Rationale: Scientists attempt to explain phenomena both in terms of reduction as well as generalization.

1.1-42. Ancient Greek culture before Hippocrates considered the _____ to be the seat of thought and emotion.
a. gut
b. heart
c. brain
d. pineal gland
e. stomach
Difficulty: 1
Question ID: 1.1-42
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: b. heart
Rationale: Many ancient cultures viewed the heart as the seat of thought and emotion, in part because of the prominent role of the heart for life and the observation that strong emotional states increase the heartbeat.

1.1-43. The philosopher _____ attributed thought and emotion to the brain, whereas _____ considered the function of the brain as important for cooling the heart.

a. Aristotle; Hippocrates
b. Galen; Aristotle
c. Hippocrates; Aristotle
d. Plato; Galen
e. Hippocrates; Plato
Difficulty: 2
Question ID: 1.1-43
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: c. Hippocrates; Aristotle
Many ancient cultures viewed the heart as the seat of thought and emotion, in part because of the prominent role of the heart for life and the observation that strong emotional states increase the heartbeat. Hippocrates rejected this view, believing that the brain is the seat of thought.

1.1-44. Which of the following comments on brain function would be most likely to be made by Aristotle?
a. The mind acts through the pineal body to control the body.
b. The brain serves to cool the passions of the heart.
c. The brain is the seat of emotion, but not thought.
d. The brain routes sensory information to the heart
e. Injury to the brain alters emotion and thought.
Difficulty: 2
Question ID: 1.1-44
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: b. The brain serves to cool the passions of the heart.
Rationale: Many ancient cultures viewed the heart as the seat of thought and emotion, in part because of the prominent role of the heart for life and the observation that strong emotional states increase the heartbeat. Hippocrates rejected this view, believing that the brain is the seat of thought. Aristotle believed that the brain functioned to cool the passions of the heart.

1.1-45. René Descartes asserted that
a. humans cannot understand the nature of the real world.
b. the heart is the seat of thought and emotion.
c. the brain acts to cool the passions of the heart.
d. animals are mechanical creatures controlled by environmental stimuli.
e. the mind is an emergent property of the brain.
Difficulty: 2
Question ID: 1.1-45
Page Ref: 11

Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: d. animals are mechanical creatures controlled by environmental stimuli.
Rationale: Descartes believed that the world – including animals and humans – was based on machinery set in motion by a divine God. Descartes viewed the brain as an important component of the human machine.

1.1-46. _____ is considered the father of modern philosophy.
a. Sigmund Freud
b. Hippocrates
c. Aristotle
d. René Descartes
e. Wilhelm Wundt
Difficulty: 1
Question ID: 1.1-46
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: d. René Descartes
Rationale: Rene Descartes is considered to be the father of modern philosophy.

1.1-47. René Descartes would be considered to hold a _____ view of the mind-body problem.
a. monist
b. reductionist
c. pluralist
d. dualist
e. animist
Difficulty: 2
Question ID: 1.1-47
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: d. dualist
Rationale: The mind-body problem seeks to determine the nature of mind -- is it mental and hidden or is it a physical property of the body?

1.1-48. A reflex is considered to be a(n) _____ movement elicited by a(n) _____ .
a. involuntary; external stimulus
b. voluntary; internal stimulus
c. conscious; external stimulus
d. unconscious; internal stimulus

e. mental; psychological stimulus
Difficulty: 2
Question ID: 1.1-48
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: a. involuntary; external stimulus
Rationale: Descartes viewed the human body as a machine. Machines are capable of automatic and involuntary reaction. Humans showed reflexive withdrawal responses to pain stimuli, which appear to automatic and involuntary reactions.

1.1-49. Descartes's view of the mind-body was unique in that he argued that
a. the heart is the organ that controls emotions.
b. the muscles are activated by electrical nerve signals.
c. unlike animals, human bodies do not show reflexes.
d. a reflex is a process controlled by the mind.
e. the mind controls the movements of the body.
Difficulty: 3
Question ID: 1.1-49
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: e. the mind controls the movements of the body.
Rationale: The mind-body question seeks to determine the nature of mind -- is it mental and hidden or is it a physical property of the body? For Descartes, the mind controlled the human body through the pineal body.

1.1-50. Descartes argued that
a. the heart is the organ that controls emotions.
b. the muscles are activated by electrical nerve signals.
c. unlike animals, human bodies do not show reflexes.
d. nerves produce bodily movements by inflating muscles with fluid.
e. the mind is not linked to the brain.
Difficulty: 3
Question ID: 1.1-50
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: d. nerves produce bodily movements by inflating muscles with fluid.
Rationale: Descartes viewed the human body as a machine. The brain contains fluid-filled chambers (ventricles) under pressure that are connected to the muscles via nerves. Direction of the fluid to the muscles would cause body motion.

1.1-51. According to Descartes, the _____ was the point of interaction in the brain where the mind controlled the physical body.
a. hypothalamus
b. corpus callosum
c. amygdala
d. hippocampus
e. pineal body
Difficulty: 3
Question ID: 1.1-51
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: e. pineal body
Rationale: For Descartes, the pineal body was the site of the brain through which the mind could control the body machinery.

1.1-52. A(n) _____ is a simple system that works on known principles that can be used to explain a complex system.
a. model
b. assumption
c. hypothesis
d. prototype
e. syllogism
Difficulty: 2
Question ID: 1.1-52
Page Ref: 12
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: a. model
Rationale: A model is a simple system that works on known principles that can be used to explain a complex system. Descartes used hydraulics as a model to explain muscle movement.

1.1-53. In a simple experiment, Galvani disproved the hydraulic nerve-muscle model proposed by Descartes. Galvani removed a nerve and its attached muscle fibers from a frog and showed that _____ of the nerve caused _____ of the muscle.
a. electrical stimulation; relaxation
b. electrical stimulation; contraction
c. chemical stimulation; contraction
d. pressurization; relaxation
e. chemical stimulation; relaxation
Difficulty: 2

Question ID: 1.1-53
Page Ref: 12
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: b. electrical stimulation; contraction
Rationale: Descartes viewed the human body as a machine. The brain contains fluid-filled chambers (ventricles) under pressure that are connected to the muscles via nerves. Direction of the fluid to the muscles would cause body motion. Galvani showed that a dissected frog muscle (not connected to any nerves) could contract upon electrical stimulation – thus disproving Descartes's theory.

1.1-54. Galvani's experiment involving a frog leg proved that
a. the heart is the organ that controls emotions.
b. the muscles are activated by electrical nerve signals.
c. unlike animals, human bodies do not possess reflexes.
d. a reflex is a process controlled by the mind.
e. the pinal gland pushes fluid through nerves into the muscles.
Difficulty: 2
Question ID: 1.1-54
Page Ref: 12
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: b. the muscles are activated by electrical nerve signals.
Rationale: According to Descartes, the brain contains fluid-filled chambers (ventricles) under pressure that are connected to the muscles via nerves. Direction of the fluid to the muscles would cause body motion. Galvani showed that a dissected frog muscle (not connected to any nerves) could contract upon electrical stimulation – thus disproving Descartes's theory.

1.1-55. Which of the following statements is consistent with Descartes's explanation of the mind-body question?
a. The brain contains air-filled chambers.
b. Nerves are filled with air and are under minimal pressure.
c. Muscle activation requires no input from the brain.
d. Electrical stimulation of a nerve evokes contraction of a detached muscle.
e. The pineal body controls the body muscles.
Difficulty: 3
Question ID: 1.1-55
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: e. The pineal body controls the body muscles.

Rationale: The mind-body question seeks to determine the nature of mind -- is it mental and hidden or is it a physical property of the body? Descartes believed that the mind controlled the body through its interaction with the pineal body of the brain.

1.1-56. _____ was a physiologist who proposed the doctrine of specific nerve energies.
a. Johannes Müller
b. Paul Broca
c. Rene Descartes
d. Ivan Pavlov
e. Wilhelm Wundt
Difficulty: 1
Question ID: 1.1-56
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: a. Johannes Müller
Rationale: Johannes Müller was a physiologist who proposed the doctrine of specific nerve energies.

1.1-57. Which of the following is consistent with the doctrine of specific nerve energies?
a. Electrical stimulation of a sensory nerve can evoke a specific sensation.
b. All nerves carry dissimilar electrical messages.
c. Exerting pressure on the eyeball can evoke the sensation of sound.
d. Nerves can be activated by psychological stimuli.
e. The height of the action potential depends on which sensory system has been activated.
Difficulty: 3
Question ID: 1.1-57
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: a. Electrical stimulation of a sensory nerve can evoke a specific sensation.
Rationale: The doctrine of specific nerve energies proposes that all nerves carry the same signal but that different nerves serve different sensory modalities -- activation of the optic nerve evokes a visual reaction while activation of other nerves do not evoke a visual reaction.

1.1-58. Which scientist was among the first to advocate the use of experimental techniques in the study of physiology?
a. John Watson
b. Rene Descartes
c. Aristotle
d. Johannes Müller
e. Charles Darwin

Difficulty: 2
Question ID: 1.1-58
Page Ref: 12
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: d. Johannes Müller
Rationale: Johannes Müller was among the first scientists to advocate the use of experimental techniques in the study of physiology.

1.1-59. Johannes Müller proposed
a. an important role for natural selection in the evolution of behavior.
b. that language is a function of the right hemisphere.
c. that the brain is divided into different functional areas with each receiving signals from a different set of nerves.
d. that the pineal body allows the brain to control the mind.
e. that the heart is the seat of thought and emotion.
Difficulty: 2
Question ID: 1.1-59
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: c. that the brain is divided into different functional areas with each receiving signals from a different set of nerves.
Rationale: Johannes Müller proposed that the brain is divided into different functional areas with each receiving signals from a different set of nerves. This idea was consistent with the proposed doctrine of specific nerve energies.

1.1-60. Pierre Flourens is known
a. for his use of the experimental ablation technique to examine brain function.
b. as the father of modern philosophy.
c. for proposing the theory of evolution.
d. for his study of language abilities in stroke victims.
e. as a dualist philosopher.
Difficulty: 2
Question ID: 1.1-60
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: a. for his use of the experimental ablation technique to examine brain function.
Rationale: Pierre Flourens was a 19th-century physiologist who removed portions of animal's brains to observe the resulting effects. This method came to be known as ablation.

1.1-61. The technique of experimental ablation involves
a. comparing the relative size of brains across different species.
b. measurements of conduction velocity rates in damaged and intact nerves.
c. chronic chemical stimulation of the brain.
d. low-level electrical stimulation of the brain.
e. assessment of behavioral changes after the intentional damage to a portion of the brain.
Difficulty: 3
Question ID: 1.1-61
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: e. assessment of behavioral changes after the intentional damage to a portion of the brain,
Rationale: Ablation involves removal of brain tissue and the observation of the resulting effects.

1.1-62. The doctrine of specific nerve energies was proposed by
a. Rene Descartes
b. Sigmund Freud
c. Pierre Flourens
d. Johannes Müller
e. Paul Broca
Difficulty: 3
Question ID: 1.1-62
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: d. Johannes Müller
Rationale: The doctrine of specific nerve energies proposed by Johannes Müller asserts that all nerves carry the same signal but that different nerves serve different sensory modalities -- activation of the optic nerve evokes visual reaction while activation of other nerves do not evoke a visual reaction.

1.1-63. Paul Broca performed an autopsy of the brain of a patient who had been unable to speak after suffering a stroke. Broca concluded that
a. the control of speech is a function of the left hemisphere.
b. the pineal body controls speech production.
c. damage to the right hemisphere impairs speech.
d. muscle atrophy after a stroke is the result of a fluid pressure drop in the ventricles.
e. the corpus callosum is critical for speech production.
Difficulty: 2
Question ID: 1.1-63
Page Ref: 13

Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: a. the control of speech is a function of the left hemisphere.
Rationale: Paul Broca cared for a patient who was unable to speak. An autopsy done by Broca of the man's brain showed damage to the left frontal lobe. Broca concluded that this region is key for language.

1.1-64. In 1870, Fritsch and Hitzig reported that electrical stimulation of the _____ in dogs resulted in muscle contractions of _____.
a. pineal gland; the facial muscles
b. parietal cortex; the opposite side of the body
c. corpus callosum; both hind legs.
d. primary motor cortex; the opposite side of the body
e. globus pallidus; the same side of the body
Difficulty: 2
Question ID: 1.1-64
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: d. primary motor cortex; the opposite side of the body
Rationale: Fritsch and Hitzig reported that electrical stimulation of the primary motor cortex in dogs resulted in muscle contractions of the opposite side of their body.

1.1-65. Hermann von Helmholtz is known for
a. his contributions to the study of philosophy.
b. his contributions to the study of learning and memory.
c. his invention of the electroencephalograph. .
d. measuring the speed of light.
e. his measurements of nerve cell conduction velocity.
Difficulty: 2
Question ID: 1.1-65
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: e. his measurements of nerve cell conduction velocity.
Rationale: Hermann von Helmholtz invented the opthalmoscope, devised a theory of color vision, studied audition, and measured the speed of conduction of nerves.

1.1-66. In his studies of nerve conduction velocity, Hermann von Helmholtz noted that
a. electrical signal speeds differ from nerve to nerve.
b. nerve conduction velocity is at the speed of light.
c. nerves conduct signals faster than do electrical wires.

d. the velocity of nerve conduction is slower in nerves than in wires.
e. different sensory systems use different conduction speeds.
Difficulty: 3
Question ID: 1.1-66
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: d. the velocity of nerve conduction is slower in nerves than in wires.
Rationale: Hermann von Helmholtz was the first scientist to devise a way to measure the speed of the action potential along a nerve. His results of 90 m/sec were far slower than others had imagined using electricity as their model of nerve conduction.

1.1-67. Which is the correct match between scientist and idea?
a. Paul Broca; doctrine of specific nerve energies
b. Pierre Flourens; use of ablation to study brain-behavior relations
c, Fritsch and Hitzig; language is localized within the left hemisphere
d. Rene Descartes; doctrine of specific nerve energies
e. Sigmund Freud; use of ablation to study brain-behavior relations
Difficulty: 3
Question ID: 1.1-67
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: b. Pierre Flourens; use of ablation to study brain-behavior relations
Rationale: Pierre Flourens used ablation to study brain-behavior relationships; Broca linked the left frontal cortex to language; Fritsch and Hitzig used electrical stimulation of cortex to evoke motor reactions on the opposite body side; Descartes proposed a dualistic mind-body view.

1.1-68. Hermann von Helmholtz estimated that nerve conduction velocity is about
a. 9 feet/second.
b. 90 feet/second.
c. 900 feet/second.
d. 9000 feet/second.
e. 90,000 feet/second.
Difficulty: 2
Question ID: 1.1-68
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: b. 90 feet/second.

Rationale: Hermann von Helmholtz estimated that the speed of the action potential along a nerve was 90 m/sec – a value that was far slower than others had imagined using electricity as their model of nerve conduction.

1.1-69. Charles Darwin proposed the principle of
a. specific nerve energy.
b. primary motor cortex.
c. experimental ablation.
d. natural selection.
e. functionalism.
Difficulty: 1
Question ID: 1.1-69
Page Ref: 14
Topic: Natural Selection and Evolution
Skill: Factual
Answer: d. natural selection.
Rationale: Charles Darwin proposed the principle of natural selection – the view that inherited traits that confer a selective advantage are more likely to increase in a population.

1.1-70. The belief that the natural characteristics of an organism exert useful effects is termed
a. reductionism.
b. positivism.
c. functionalism.
d. consolidation.
e. adaptation.
Difficulty: 2
Question ID: 1.1-70
Page Ref: 15
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: c. functionalism.
Rationale: Functionalism is the belief that the natural characteristics of an organism exert useful effects.

1.1-71. The physiological mechanisms of an organism that give rise to certain behaviors
a. can be said to have purpose.
b. can be understood in terms of whether the behaviors produce useful functions.
c. are thought to be different from species to species.
d. are not subject to evolutionary principles.
e. are present at birth and do not require environmental stimulation for complete expression.
Difficulty: 3
Question ID: 1.1-71

Page Ref: 15
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: b. can be understood in terms of whether the behaviors produce useful functions.
Rationale: The physiological mechanisms of an organism that give rise to certain behaviors can be understood in terms of whether the behaviors produce useful functions.

1.1-72. The principle of natural selection proposes that certain characteristics that _____ will become more prevalent in a species.
a. are associated with multiple genetic mutations
b. inhibit reproductive behaviors
c. increase reproductive success
d. impair adaption to the local environment
e. reduce reproductive success
Difficulty: 3
Question ID: 1.1-72
Page Ref: 15
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: c. increase reproductive success
Rationale: Charles Darwin proposed the principle of natural selection – the view that inherited traits that confer a selective advantage are more likely to increase in a population.

1.1-73. Which of the following is consistent with Blest's study of the impact of background pattern on consumption of worms by birds?
a. Background pattern made no difference in this study.
b. Birds avoided backgrounds that resembled the bark of a tree.
c. Worms were most likely to be eaten when placed on a background that contained an eyespot pattern.
d. Birds rapidly approached backgrounds that contained eyespot patterns.
e. Backgrounds that contained eyespot patterns were avoided by the birds.
Difficulty: 3
Question ID: 1.1-73
Page Ref: 15
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: e. Backgrounds that contained eyespot patterns were avoided by the birds.
Rationale: Certain moths and butterflies have large spots on their wings that resemble the eyes of the owl, which is a predator that feeds on birds that feed on moths and butterflies. Blest tested the idea that these wing spots are a deterrent to birds by placing mealworms onto backgrounds that contained spots or not – the birds tended to avoid backgrounds that contained these eye spots.

1.1-74. Mutations involve
a. adverse neural development caused by drug ingestion in adulthood.
b. accidental changes in the genetic information of the chromosomes.
c. poor adaptation to the environment.
d. improved reproductive success.
e. only beneficial changes in the characteristics of an organism.
Difficulty: 3
Question ID: 1.1-74
Page Ref: 16
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: b. accidental changes in the genetic information of the chromosomes.
Rationale: Mutations involve accidental changes in the genetic information of the chromosomes that can be passed on to offspring. Mutations can be harmful or confer a benefit.

1.1-75. Genetic mutations
a. have mostly beneficial effects.
b. usually increase the survivability of offspring.
c. rarely result in problems for the offspring.
d. are usually deleterious.
e. always confer selective advantages to the offspring.
Difficulty: 3
Question ID: 1.1-75
Page Ref: 16
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: d. are usually deleterious.
Rationale: Mutations are accidental changes in the genetic information of the chromosomes that can be passed onto offspring and are usually harmful.

1.1-76. The key benefit of genetic diversity for a species is that
a. diversity allows the species to adapt to different environments.
b. mutations are kept to a minimum.
c. diversity promotes neural development.
d. diversity reduces reproductive success.
e. harmful mutations are increased in the species.
Difficulty: 3
Question ID: 1.1-76
Page Ref: 16
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual

Answer: a. diversity allows the species to adapt to different environments.
Rationale: Greater genetic diversity of a species increases the likelihood that members will be able to adapt to new environments.

1.1-77. Traits that can be altered via genetic mutations
a. are beneficial.
b. are unobservable.
c. are physical.
d. exert direct actions on behavior.
e. mostly involve psychological function.
Difficulty: 2
Question ID: 1.1-77
Page Ref: 16
Topic: Functionalism and the Inheritance of Traits
Skill: Factual
Answer: c. are physical.
Rationale: Physical traits are altered by genetic mutations.

1.1-78. The process of evolution
a. does not involve genetic mutations.
b. can occur in the absence of natural selection.
c. rests on the doctrine of specific nerve energies.
d. refers to a gradual change in the structure and function of a species.
e. was proven correct by experimental ablation experiments.
Difficulty: 3
Question ID: 1.1-78
Page Ref: 17
Topic: Evolution of the Human Species
Skill: Conceptual
Answer: d. refers to a gradual change in the structure and function of a species.
Rationale: Charles Darwin proposed the notion that traits change over time due to a gradual change in the structure and function of a species.

1.1-79. Which of the following is true of reptiles?
a. Reptiles lay their eggs in water.
b. Reptiles lack vertebrae.
c. Reptiles must inhabit environments close to the sea.
d. Reptiles bury their eggs to protect them from predators.
e. Frogs are an early example of a reptile.
Difficulty: 2
Question ID: 1.1-79
Page Ref: 17

Topic: Evolution of the Human Species
Skill: Factual
Answer: d. Reptiles bury their eggs to protect them from predators.
Rationale: Reptiles bury their eggs on land to protect them from predators.

1.1-80. The earliest mammals
a. were active during the day.
b. were large organisms.
c. dined on insects.
d. had a poor sense of hearing.
e. has superb visual systems.
Difficulty: 2
Question ID: 1.1-80
Page Ref: 17
Topic: Evolution of the Human Species
Skill: Factual
Answer: c. dined on insects.
Rationale: The earliest mammals were small, nocturnal organisms with a keen sense of hearing and who dined on insects.

1.1-81. Most scientists believe that the _____ allowed certain mammals to survive the mass extinction produced by dust clouds some 65 million years ago.
a. ability to see well during the day
b. capacity to maintain their body temperature
c. ability to eat plants as well as meat
d. capacity to breed during the night
e. ability of their tear ducts to clear dust from their eyes
Difficulty: 2
Question ID: 1.1-81
Page Ref: 17
Topic: Evolution of the Human Species
Skill: Applied
Answer: b. capacity to maintain their body temperature
Rationale: Certain mammals survived the mass extinction produced by dust clouds some 65 million years ago because these mammals had fur that allowed them to retain their body heat.

1.1-82. _____ is thought to be an advantage associated with the development of color vision in primates.
a. The ability to breed at night
b. The ability to move in the forest at night
c. The capacity to discriminate ripe from unripe fruit
d. The capacity to communicate using symbols

e. Rapid nerve conduction
Difficulty: 3
Question ID: 1.1-82
Page Ref: 17
Topic: Evolution of the Human Species
Skill: Conceptual
Answer: c. The capacity to discriminate ripe from unripe fruit
Rationale: The capacity to discriminate ripe from unripe fruit is thought to be an advantage associated with the development of color vision in primates.

1.1-83. Which of the following was the key characteristic of early humans that allowed them to effectively out-compete other species?
a. Color vision allowed for the detection of ripe fruit and game.
b. Mastery of fire allowed for provision of warmth in shelters.
c. Agile hands allowed for the creation and use of tools.
d. Mastery of fire allowed food to be cooked.
e. A larger brain allowed for more complicated behavior.
Difficulty: 1
Question ID: 1.1-83
Page Ref: 18
Topic: Evolution of Large Brains
Skill: Factual
Answer: e. A larger brain allowed for more complicated behavior.
Rationale: Early humans showed traits that allowed them to out compete other species – these traits were a function of the larger brains developed by early humans.

1.1-84. With regard to the surviving members of the primate family tree,
a. members of the family tree share 78.8% of their DNA.
b. members of the family tree share 98.8% of their DNA.
c. chimpanzees and gorillas share 50% of their genes.
d. humans share only 1.2% of their genes with other members of the family tree.
e. there is little genetic similarity between primate groups.
Difficulty: 2
Question ID: 1.1-84
Page Ref: 18-19
Topic: Evolution of the Human Species
Skill: Factual
Answer: b. members of the family tree share 98.8% of their DNA.
Rationale: Current members of the hominid family tree share 98.8% of their DNA.

1.1-85. Which of the following is true of the hominid species?
a. Homo sapiens left Africa around 1.7 million years ago.

b. Homo erectus made tools from stone.
c. Homo sapiens eventually killed off Homo neanderthalis through armed conflicts.
d. Modern humans are known as Homo sapiens.
e. Homo sapiens evolved directly from Homo neanderthalis.
Difficulty: 3
Question ID: 1.1-85
Page Ref: 18
Topic: Evolution of the Human Species
Skill: Factual
Answer: d. Modern humans are known as Homo sapiens.
Rationale: Modern humans are known as Homo sapiens.

1.1-86. Which of the following is correct with regard to the relation between brain size and body size?
a. Human brains are larger than other species when expressed relative to total body weight.
b. Human brains are larger than elephant brains in terms of absolute size.
c. The human brain is more than 5% of total body weight.
d. The elephant brain is larger than the human brain in terms of percent of body weight.
e. Larger brains require smaller bodies.
Difficulty: 2
Question ID: 1.1-86
Page Ref: 20-21
Topic: Evolution of Large Brains
Skill: Factual
Answer: a. Human brains are larger than other species when expressed relative to total body weight.
Rationale: Human brains are larger than other species when expressed relative to total body weight as well as by the number of neurons per gram brain weight.

1.1-87. _____ refers to the concept that human brain maturation takes a long time relative to that of other species.
a. Adaptation
b. Mutational drift
c. Schizotemy
d. Neoteny
e. Maladaptation
Difficulty: 2
Question ID: 1.1-87
Page Ref: 20
Topic: Evolution of Large Brains
Skill: Factual
Answer: d. Neoteny

Rationale: Neoteny refers to the concept that human brain maturation takes a long time relative to that of other species.

1.1-88. An adult human brain undergoes a _____-fold increase in weight relative to that of the newborn brain.
a. two
b. four
c. six
d. eight
e. ten
Difficulty: 2
Question ID: 1.1-88
Page Ref: 20
Topic: Evolution of Large Brains
Skill: Factual
Answer: b. four
Rationale: An adult human brain undergoes a four-fold increase in weight relative to that of the newborn brain.

1.1-89. Which of the following is an argument made by the text author regarding the use of animals by humans?
a. Owning a pet requires permission from a veterinarian.
b. Pet homes are regularly inspected by the government.
c. More suffering occurs with pet owning than with research.
d. More animals die in research projects than when used as pets.
e. No animal research has been useful for understanding and treating human disease.
Difficulty: 2
Question ID: 1.1-89
Page Ref: 22
Topic: Ethical Issues in Research with Animals
Skill: Factual
Answer: c. More suffering occurs with pet owning than with research.
Rationale: Scientific research involving animals requires humane treatment and the alleviation of pain. More suffering occurs with pet owning than with research.

1.1-90. Nicholl and Russell's research indicates that animal rights activists are most concerned with the
a. issue of hunting and trapping of animals.
b. eating of animals as food.
c. use of animals as companions to humans
d. use of animals as a source of fur for human clothing.
e. use of animals as subjects for research

Difficulty: 2
Question ID: 1.1-90
Page Ref: 23
Topic: Ethical Issues in Research with Animals
Skill: Factual
Answer: e. use of animals as subjects for research
Rationale: Animal rights activists are most concerned with the use of animals for research.

1.1-91. Which of the following statements would least likely be made by an animal rights activist?
a. Animal research is unethical.
b. Animals have the same degree of rights as do humans.
c. The use of animals in research can be justified by the benefits of such research.
d. Animal research must be supervised by veterinarians.
e. There should be limits to the types of studies that are done using animals.
Difficulty: 2
Question ID: 1.1-91
Page Ref: 23
Page Topic: Ethical Issues in Research with Animals
Skill: Conceptual
Answer: c. The use of animals in research can be justified by the benefits of such research.
Rationale: An animal rights activist would disagree with the assertion that the use of animals in research can be justified by the benefits of such research. They would agree that animal research is unethical and that animals have the same rights as humans.

1.1-92. Your textbook author views _____ as an indispensable use of animals.
a. research for the treatment of human disease
b. use as a source of food
c. use as companions to humans
d. use as a source of fur
e. value as entertainment
Difficulty: 2
Question ID: 1.1-92
Page Ref: 23
Topic: Ethical Issues in Research with Animals
Skill: Factual
Answer: a. research for the treatment of human disease
Rationale: An indispensable use of animals is for research on the treatment of human disease.

1.1-93. A stroke induces brain damage because of
a. compression of glial cells.
b. reduced blood flow to a region of the brain.

c. increased cranial pressure.
d. increased nutrient flow to brain tissue.
e. increased blood flow to a region of the brain.
Difficulty: 2
Question ID: 1.1-93
Page Ref: 23
Topic: Ethical Issues in Research with Animals
Skill: Factual
Answer: b. reduced blood flow to a region of the brain.
Rationale: A stroke can induce brain damage by reduced blood flow to a region of the brain.

1.1-94. Research in which insulin is extracted from animals is currently the most effective means to study and treat which of the following human diseases?
a. drug addiction
b. stroke
c. schizophrenia
d. obesity
e. diabetes
Difficulty: 2
Question ID: 1.1-94
Page Ref: 23
Topic: Ethical Issues in Research with Animals
Skill: Conceptual
Answer: e. diabetes.
Rationale: The hormone insulin was extracted from animals and used to lower blood sugar.

1.1-95. _____ is the original name for the field that involves the study of the physiology of behavior.
a. Behavioral neuroscience
b. Biopsychology
c. Psychobiology
d. Physiological psychology
e. Biological pseudoscience
Difficulty: 1
Question ID: 1.1-95
Page Ref: 24
Topic: Careers in Neuroscience
Skill: Factual
Answer: d. Physiological psychology
Rationale: Physiological psychology is the original name for the field that involves the study of the physiology of behavior.

1.1-96. _____ is the common name used today for the area that involves the study the physiology of behavior.
a. Behavioral neuroscience
b. Biopsychology
c. Psychobiology
d. Physiological psychology
e. Biological pseudoscience
Difficulty: 1
Question ID: 1.1-96
Page Ref: 24
Topic: Careers in Neuroscience
Skill: Factual
Answer: a. Behavioral neuroscience
Rationale: Behavioral neuroscience is the common name used today for the area that involves the study the physiology of behavior.

1.1-97. _____ are physicians trained to diagnose and to treat central nervous system diseases.
a. Psychologists
b. Neurologists
c. Anatomists
d. Behavioral neuroscientists
e. Experimental neuropsychologists
Difficulty: 2
Question ID: 1.1-97
Page Ref: 24
Topic: Careers in Neuroscience
Skill: Factual
Answer: b. Neurologists
Rationale: Neurologists are physicians trained to diagnose and to treat central nervous system diseases.

Fill-in-the-Blank Questions

1.2-1. The notion that natural phenomena such as the wind are controlled by spirits is known as _____.
Difficulty: 1
Question ID: 1.2-1
Page Ref: 2
Topic: Introduction
Skill: Factual
Answer: animism

1.2-2. _____ is the belief that mind and body are separate entities.
Difficulty: 2
Question ID: 1.2-2
Page Ref: 3
Topic: Introduction
Skill: Factual
Answer: Dualism

1.2-3. A person who has sustained damage to the primary visual cortex reports being blind. The ability of such a person to reach out and grasp a nearby object is known as _____.
Difficulty: 1
Question ID: 1.2-3
Page Ref: 4
Topic: Blindsight
Skill: Conceptual
Answer: blindsight

1.2-4. Transection of the corpus callosum is useful in reducing the symptoms of _____.
Difficulty: 2
Question ID: 1.2-4
Page Ref: 5
Topic: Split Brains
Skill: Conceptual
Answer: epilepsy

1.2-5. Unilateral neglect is produced by damage to the _____ parietal cortex.
Difficulty: 2
Question ID: 1.2-5
Page Ref: 6
Topic: Unilateral Neglect Skill: Factual
Answer: right

1.2-6. The first textbook of physiological psychology was written by _____.
Difficulty: 2
Question ID: 1.2-6
Page Ref: 9
Topic: The Nature of Behavioral Neuroscience
Skill: Factual
Answer: Wilhelm Wundt

1.2-7. _____ involves the use of simple processes to explain a more complex phenomenon.

Difficulty: 2
Question ID: 1.2-6
Page Ref: 10
Topic: The Goals of Research
Skill: Conceptual
Answer: Reduction

1.2-8. _____ argued that the function of the brain was to cool the passions of the heart.
Difficulty: 2
Question ID: 1.2-7
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: Aristotle

1.2-9. _____ is considered to be the father of modern philosophy.
Difficulty: 2
Question ID: 1.2-8
Page Ref: 11
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: René Descartes

1.2-10. Stimulation of _____ cortex results in muscle contraction on the opposite side of the body.
Difficulty: 2
Question ID: 1.2-10
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Factual
Answer: primary motor

1.2-11. _____ involves the measurement of changes in behavior following damage to portions of the brain.
Difficulty: 2
Question ID: 1.2-9
Page Ref: 13
Topic: Biological Roots of Behavioral Neuroscience
Skill: Conceptual
Answer: Experimental ablation

1.2-12. _____ proposed the principles of evolution and natural selection.

Difficulty: 1
Question ID: 1.2-12
Page Ref: 14
Topic: Natural Selection and Evolution
Skill: Factual
Answer: Charles Darwin

1.2-13. _____ are accidental changes in the chromosomal structure of sperm or eggs.
Difficulty: 2
Question ID: 1.2-13
Page Ref: 16
Topic: Functionalism and the Inheritance of Traits
Skill: Factual
Answer: Mutations

1.2-14. Modern humans are known as _____.
Difficulty: 2
Question ID: 1.2-14
Page Ref: 18
Topic: Evolution of the Human Species
Skill: Factual
Answer: Homo sapiens

1.2-15. The surviving members of the _____ family include humans, gorillas, chimpanzees, and orangutans.
Difficulty: 3
Question ID: 1.2-15
Page Ref: 17
Topic: Evolution of the Human Species
Skill: Factual
Answer: hominid

1.2-16. The prolongation of brain maturation in the young human is known as _____.
Difficulty: 2
Question ID: 1.2-16
Page Ref: 20
Topic: Evolution of Large Brains
Skill: Factual
Answer: neoteny

1.2-17. _____ results in more animal suffering than does research.
Difficulty: 2

Question ID: 1.2-17
Page Ref: 22
Topic: Ethical Issues in Research with Animals
Skill: Factual
Answer: Pet owning

1.2-18. The neurological disorder involving bleeding in the brain is known as a _____.
Difficulty: 2
Question ID: 1.2-18
Page Ref: 23
Topic: Ethical Issues in Research with Animals
Skill: Factual
Answer: stroke

1.2- 19. _____ is the original name for the field of study now known as behavioral neuroscience.
Difficulty: 3
Question ID: 1.2-19
Page Ref: 24
Topic: Careers in Neuroscience
Skill: Factual
Answer: Physiological psychology

1.2-20. _____ are physicians trained to diagnose and treat central nervous system diseases.
Difficulty: 3
Question ID: 1.2-20
Page Ref: 24
Topic: Careers in Neuroscience
Skill: Factual
Answer: Neurologists

Essay Questions

1.3-1. Contrast the philosophical positions of animism, dualism, and monism.
Difficulty: 2
Question ID: 1.3-1
Page Ref: 2-3
Topic: Introduction
Skill: Factual

Answer: Animism is the view that objects have spirits that move them. Dualism is the philosophical view that mind and brain are separate but interacting. Monism is the view that mind is a property of the brain.

1.3-2. Discuss evidence that suggests consciousness is a physiological function.
Difficulty: 3
Question ID: 1.3-2
Page Ref: 3-8
Topic: Understanding Human Consciousness: A Psychological Approach
Skill: Conceptual
Answer: Consciousness appears to be localized to discrete circuits and allows us to more readily adapt to new environments. Brain damage can alter consciousness, as in the case of the split-brain syndrome. Drugs can also alter consciousness.

1.3-3. What do the behaviors of individuals who have had the "split-brain" operation tell us about brain function?
Difficulty: 3
Question ID: 1.3-3
Page Ref: 5-6
Topic: Split Brains
Skill: Conceptual
Answer: The split-brain procedure is used to treat severe epilepsy. Persons who undergo this procedure suffer from failure of the two hemispheres to communicate through the corpus callosum. Different psychological functions are localized in the two hemispheres.

1.3-4. Describe the phenomenon known as unilateral neglect and describe at least one research study that suggests that such persons are not simply blind.
Difficulty: 2
Question ID: 1.3-4
Page Ref: 6-8
Topic: Unilateral Neglect
Skill: Conceptual
Answer: Damage to the right parietal lobe results in a person who ignores objects on his left side and is unaware of the left side of an object located anywhere. These persons are not simply blind, because they can make judgments about objects on their left side.

1.3-5. Describe the technique of ablation and identify the researcher who was responsible for its development.
Difficulty: 2
Question ID: 1.3-5
Page Ref: 13
Topic: Biological Roots of Physiological Psychology

Skill: Conceptual
Answer: Ablation involves the physical manipulation of the brain and allows for an assessment of a change in function after the manipulation. Experimental ablation was developed by Pierre Flourens.

1.3-6. Identify two early key contributors to the development of physiology and discuss the implications that their work had for the science of neurophysiology.
Difficulty: 2
Question ID: 1.3-6
Page Ref: 11-14
Topic: Biological Roots of Physiological Psychology
Skill: Conceptual
Answer: Two of the following should be discussed. Galvani used electrical current to study muscle contraction in the frog. Muller argued for the use of experimental methods to study physiology. Helmholtz developed methods and techniques to study the physiology of vision and audition. Flourens developed the technique of experimental ablation, which can provide insight into the functions of brain regions.

1.3-7. Describe the implications of Galvani's research for Descartes's view of how nerves control muscle activity.
Difficulty: 2
Question ID: 1.3-7
Page Ref: 13
Topic: Biological Roots of Physiological Psychology
Skill: Conceptual
Answer: Galvani was able to contract the frog muscle via electrical stimulation when the muscle was detached from the body -- thus it was not pressure exerted from the brain that caused muscle contraction.

1.3-8. Give examples of structural and behavioral characteristics that might confer selective advantages to an organism.
Difficulty: 2
Question ID: 1.3-8
Page Ref: 15-16
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: Natural selection suggests that certain characteristics of an organism offer an advantage that allows the organism to reproduce and to pass on that characteristic to its offspring. The coloring of an organism may allow it to blend into the background, thus escaping detection by predators. The capacity to remain still (i.e., freeze) may similarly allow an organism to avoid predation.

1.3-9. Discuss a role that mutations play in the process of natural selection.
Difficulty: 3
Question ID: 1.3-9
Page Ref: 16
Topic: Functionalism and the Inheritance of Traits
Skill: Conceptual
Answer: Mutations increase the range of features or behaviors seen in the organism. Most of the time, this is harmful to the organism or to its reproductive fitness. Very rarely, the mutation results in a feature or behavior that increases the fitness of an organism; in these cases, the mutation is likely to become part of the preferred genetic makeup of the species.

1.3-10. Explain the typical significance of a genetic mutation for an organism.
Difficulty: 3
Question ID: 1.3-11
Page Ref: 16
Topic: Functionalism and the Inheritance of Traits
Skill: Factual
Answer: A mutation is an accidental change in the chromosomes of sperms or eggs that join together. Most mutations are deleterious, and only a few confer a selective advantage to the offspring.

1.3-11. Discuss the use of animals in research and the ethical issues associated with such use. Make an argument a) FOR and b) AGAINST their use.
Difficulty: 3
Question ID: 1.3-11
Page Ref: 21-23
Topic: Ethical Issues in Research with Animals
Skill: Conceptual
Answer: A relatively small percentage of animals are used in neuroscience research, and their use must be justified by the gain in knowledge produced by the research. An argument FOR might focus on the fact that such research may produce benefits that are real and that cannot be realized in any other way. An argument AGAINST might suggest that humans and animals are so different that results from animals are not useful for understanding humans.