

Into

True / False

1. An ontogenetic explanation is one that describes the development of a structure or behavior.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

2. Gottfried Leibniz (1714) posed the question: "Why is there something rather than nothing?"

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.02 - List three general points that are important to remember from this text.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

3. The mind-body problem refers to how the mind controls the body.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.02 - List three general points that are important to remember from this text.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

4. The universe could have been different in many ways, nearly all of which would have made life impossible

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.02 - List three general points that are important to remember from this text.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

5. Chalmers explanation of the mind-body problem has largely laid the issue to rest.

a. True

b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.02 - List three general points that are important to remember from this text.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

6. Neurons vary enormously in size, shape, and functions.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

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LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

7. Perception occurs primarily in sense organs.

a. True

b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

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TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

8. Electrical stimulation of your brain can produce a hand experience even if you had no hand.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.01 - Briefly state the mind-brain problem and contrast monism with dualism.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

9. Mental activity and certain types of brain activity are, so far as we can tell, inseparable.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.01 - Briefly state the mind-brain problem and contrast monism with dualism.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

10. Research scientists are free to do as they wish when conducting research with animals.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

11. The underlying mechanisms of behavior are similar across species.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

12. Invertebrate nerve action follows the same basic principles as human nerves.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

13. Minimalists do not tolerate any kind of animal research.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

14. Abolitionists maintain that animals do not have the same rights as humans.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

15. The dispute between abolitionists and animal researchers is a dispute between two ethical positions.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

TOPICS: INT.1 Overview and Major Issues

Multiple Choice

16. Biological psychologists are primarily interested in the study of the physiological, evolutionary, and \_\_\_\_.

- a. social influences on attitudes
- b. developmental mechanisms of behavior and experience
- c. cultural mechanisms of society as a whole
- d. psychological influences on disease

ANSWER: b

DIFFICULTY: Bloom's: Understand

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17. A cognitive neuroscientist is most likely to \_\_\_\_.

- a. conduct behavioral tests to determine the abilities and disabilities of people with various kinds of brain damage
- b. study scans of brain anatomy or activity to analyze and explore people's knowledge, thinking, and problem solving
- c. relate behaviors to the functions they have served and, therefore, the presumed selective pressures that caused them to evolve
- d. identify educational needs of schoolchildren, devise a plan to meet the needs, and then help teachers implement it

ANSWER: b

DIFFICULTY: Bloom's: Understand

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18. Jill studies how hormones influence sexual behavior of rats. She is most likely a \_\_\_\_.

- a. biological psychologist
- b. neuroscientist
- c. clinical psychologist
- d. psychiatrist

ANSWER: a

DIFFICULTY: Bloom's: Analyze

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19. A fundamental property is one that \_\_\_\_.

- a. answers all questions
- b. occurs only in certain parts of the nervous system
- c. cannot be reduced to something else
- d. cannot be explained

ANSWER: c

DIFFICULTY: Bloom's: Analyze

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20. A person who believes that hormones released at different stages of the menstrual cycle affect a person's mood is using a(n) \_\_\_\_ explanation.

- a. functional
- b. ontogenetic
- c. physiological
- d. evolutionary

ANSWER: c

DIFFICULTY: Bloom's: Analyze

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TOPICS: INT.1 Overview and Major Issues

21. A(n) \_\_\_\_ explanation describes why a structure or behavior evolved as it did.

- a. functional
- b. ontogenetic
- c. physiological
- d. evolutionary

ANSWER: a

DIFFICULTY: Bloom's: Analyze

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22. A(n) \_\_\_\_ describes development, including the influences of genes, nutrition, experiences, and their interactions.

- a. functional
- b. ontogenetic
- c. physiological
- d. evolutionary

ANSWER: b

DIFFICULTY: Bloom's: Analyze

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23. Understanding how genes, nutrition, and experience work together to produce a tendency toward a particular sexual orientation is an example of a(n) \_\_\_\_ explanation.

- a. ontogenetic
- b. evolutionary
- c. functional
- d. common sense

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

24. Which type of explanation best describes how a structure or behavior develops?

- a. physiological
- b. ontogenetic
- c. evolutionary
- d. functional

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

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TOPICS: INT.1 Overview and Major Issues

25. A(n) \_\_\_\_ explanation describes eating in terms of the hypothalamus affecting insulin production, which affects the availability of glucose in cells.

- a. physiological
- b. ontogenetic
- c. evolutionary
- d. functional

ANSWER: a

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

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TOPICS: INT.1 Overview and Major Issues

26. Explaining differences in running speed as a function of differences in muscle fiber types is an example of a(n) \_\_\_\_ explanation.

- a. ontogenetic
- b. physiologicalphysiological
- c. evolutionary
- d. functional

ANSWER: b

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

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TOPICS: INT.1 Overview and Major Issues

27. A person who studies the genetic predisposition to be aggressive in combination with early aggressive experiences is seeking a(n) \_\_\_\_ explanation.

- a. physiological
- b. behavioral
- c. evolutionary
- d. ontogenetic

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Biological Explanations of Behavior

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TOPICS: INT.1 Overview and Major Issues

28. Mapping out the relationship between shared bone structures across different species suggests that there is a(n) \_\_\_\_ explanation.

- a. ontogenetic
- b. evolutionary
- c. behavioral
- d. physiological

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

29. An evolutionary explanation of why we get goose bumps when cold is that \_\_\_\_.



- a. our sympathetic nervous system is activated
- b. we inherited the mechanism from our remote ancestors who had more hair
- c. we have a preference for being warm
- d. our children are often raised in cold environments

ANSWER: b

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

30. Human language developed as the result of genes and the opportunity to hear language during a sensitive period in early life. What type of explanation is this?

- a. physiological
- b. ontogenetic
- c. evolutionary
- d. functional

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Biological Explanations of Behavior

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TOPICS: INT.1 Overview and Major Issues

31. Some animals have camouflage that matches their typical surroundings in order to provide protection from predators. What type of explanation does this illustrate?

- a. evolutionary
- b. functional
- c. ontogenetic
- d. physiological

ANSWER: b

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

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TOPICS: INT.1 Overview and Major Issues

32. Which type of explanation might describe the presence of a behavior in a particular species by showing how that behavior increased the reproductive success of the species?

- a. physiological
- b. ontogenetic

- c. evolutionary
- d. solipsistic

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

33. Which type of explanation describes why a particular structure or behavior is advantageous?

- a. physiological
- b. ontogenetic
- c. evolutionary
- d. functional

ANSWER: d

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

34. In a small population of sheep, the dominant male may produce many more offspring than the other males, spreading his genes. This is an example of \_\_\_\_.

- a. assimilation
- b. artificial selection
- c. genetic drift
- d. recombination

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

35. Which explanation of human behavior focuses most on learning through experience?

- a. physiological
- b. ontogenetic
- c. evolutionary
- d. functional

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

36. Consciousness does not occur when you are \_\_\_\_.

- a. in a coma
- b. daydreaming
- c. watching television
- d. exercising

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

37. An adult male sparrow sings its normal song \_\_\_\_.

- a. if he hears the song during a sensitive period early in his life
- b. only when he hears a female bird singing
- c. if his own species' song is the first song he hears when young
- d. regardless of whether or not he has ever heard his species' song from another bird

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

TOPICS: INT.1 Overview and Major Issues

38. Consciousness occurs \_\_\_\_.

- a. in all kinds of nervous systems some of the time
- b. in certain parts of certain kinds of nervous system all of the time
- c. in certain parts of certain kinds of nervous systems some of the time
- d. in all kinds of nervous systems all of the time

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.01 - Briefly state the mind-brain problem and contrast monism with dualism.

TOPICS: INT.1 Overview and Major Issues

39. The view of the brain from above is called the \_\_\_\_ view.

- a. anterior

- b. ventral
- c. dorsal
- d. posterior

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

40. A particular area of a songbird brain grows under the influence of testosterone; hence, it is larger in breeding males than in females or immature birds. That brain area enables a mature male to sing. What type of explanation is illustrated here?

- a. evolutionary
- b. ontogenetic
- c. neurological
- d. physiological

ANSWER: d

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

41. In many species, a young male bird learns its song by listening to adult males. Development of the song requires certain genes and the opportunity to hear the appropriate song during a sensitive period early in life. What type of explanation is illustrated here?

- a. evolutionary
- b. ontogenetic
- c. neurological
- d. physiological

ANSWER: b

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

42. Certain pairs of species have similar songs. For example, dunlins and Baird's sandpipers, two shorebird species, give their calls in distinct pulses, unlike other shorebirds. What type of explanation is suggested here?

- a. evolutionary
- b. ontogenetic
- c. neurological
- d. physiological

ANSWER: a

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

43. The sea dragon is a fish that looks and acts like kelp in order to attract its food. A researcher proposes that this is due to a genetic modification that expands smaller appendages already present in these fish's ancestors. What type of explanation is this?

- a. functional
- b. evolutionary
- c. ontogenetic
- d. biological

ANSWER: b

DIFFICULTY: Bloom's: Apply

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

44. Which field is least likely to focus primarily on research?

- a. neuroscience
- b. psychophysiology
- c. neurochemistry
- d. neurology

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

45. A(n) \_\_\_\_ investigates the chemical reactions in the brain.

- a. neurochemist
- b. psychophysiolgologist
- c. comparative psychologist
- d. neurologist

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

46. A stroke patient might seek the aid of a(n) \_\_\_\_ to increase the functions of daily life.

- a. neuroscientist
- b. clinical psychologist
- c. occupational therapist
- d. neurochemist

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

47. According to David Chalmers, consciousness is \_\_\_\_.

- a. a fundamental property of matter
- b. not necessary for brain functioning
- c. easy to observe
- d. independent of the brain

ANSWER: a

DIFFICULTY: Bloom's: Apply

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

48. Someone who investigates how the functioning of the brain and other organs influences behavior is most likely to be called a \_\_\_\_.

- a. sociobiologist
- b. neuropsychologist
- c. behavioral neuroscientist
- d. comparative psychologist

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

49. A neuropsychologist \_\_\_\_.

- a. has an M.D. and specializes in the treatment of brain damage
- b. conducts research on animal behavior
- c. is more often a teacher than a practitioner
- d. tests the abilities and disabilities of people with brain damage

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

50. A comparative psychologist \_\_\_\_.

- a. compares the reactions different people have in similar situations
- b. considers the evolutionary histories of different species and their behaviors
- c. compares nervous system responses of different people
- d. helps people with emotional distress

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

51. Which specialist is most likely to work with people with brain damage?

- a. comparative psychologist
- b. biopsychologist
- c. neuropsychologist
- d. psychobiologist

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

52. A psychiatrist is most likely to \_\_\_\_.

- a. help people with emotional distress
- b. perform brain surgery
- c. treat people with brain damage
- d. relate behaviors to the functions they have served in their

evolutionary past

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

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TOPICS: INT.1 Overview and Major Issues

53. According to Tinbergen, the argument that humans are essentially different from all other animals and that the gap between humans and animals can never be bridged \_\_\_\_.

- a. assumes that it will be futile even to search for animal roots
- b. is essential to the meaningful study of human neuropsychology
- c. is the only scientifically-defensible point of view
- d. will stimulate research into the relationship between the mind and

brain

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

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TOPICS: INT.1 Overview and Major Issues

54. Perception occurs in \_\_\_\_.

- a. waves
- b. the brain
- c. receptors
- d. transducers

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.01 - Briefly state the mind-brain problem and contrast monism with dualism.

TOPICS: INT.1 Overview and Major Issues

55. Nearly all neuroscientists and philosophers support the position of \_\_\_\_.

- a. monism



- b. exceptionalism
- c. dualism
- d. relativism

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.02 - List three general points that are important to remember from this text.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

56. What idea states that minds are one type of substance and matter, like the brain, is another type of substance?

- a. dualism
- b. monism
- c. exceptionalism
- d. relativism

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.02 - List three general points that are important to remember from this text.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

57. Who is most associated with the idea that consciousness should be regarded as a fundamental property?

- a. Chalmers
- b. Descartes
- c. Leibniz
- d. Tinbergen

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

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KEYWORDS: New

58. After much analysis, string theorists in the 1980s concluded that \_\_\_\_.

- a. the universe could have taken a vast number of forms
- b. while other universes are possible, they are highly improbable
- c. the universe can only take a small number of forms

- d. ours is likely the only universe that could ever exist

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

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TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

59. To propose that consciousness is a fundamental property essentially means that \_\_\_\_.

- a. we know it to be the fundamental unit of life
- b. we know it to be transient, and occurring at random times
- c. we have given up on explaining it
- d. we have a better understanding of how it occurs in the brain

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.01 - Briefly state the mind-brain problem and contrast monism with dualism.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

60. Neurons \_\_\_\_.

- a. convey messages to glands
- b. have an oval or round shape
- c. are typically very large
- d. are usually smaller than glia

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

61. Which type of psychologist would be most likely to study which brain regions and neurotransmitter systems were involved with schizophrenia?

- a. clinical
- b. biological
- c. comparative
- d. developmental

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

62. When asked why a particular behavior occurs, people typically rely on \_\_\_\_ explanations.

- a. functional
- b. commonsense
- c. alternative
- d. cost-benefit

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

63. A(n) \_\_\_\_ explanation relies on activity of the brain and other organs.

- a. ontogenetic
- b. evolutionary
- c. physiological
- d. functional

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

64. The view of the brain from below is called the \_\_\_\_ view.

- a. anterior
- b. linear
- c. ventral
- d. dorsal

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.  
TOPICS: INT.1 Overview and Major Issues

65. A(n) \_\_\_\_ explanation of the brain invokes the chemical reactions that enable hormones to influence brain activity.

- a. ontogenetic
- b. evolutionary
- c. physiological
- d. functional

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

66. A(n) \_\_\_\_ explanation of the brain invokes the routes by which brain activity controls muscle contractions.

- a. ontogenetic
- b. evolutionary
- c. physiological
- d. functional

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

67. The term ontogenetic comes from the Greek word that relating to the \_\_\_\_.

- a. origin of being
- b. cause of actions
- c. meaning of life
- d. goals of actions

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

68. A(n) \_\_\_\_ explanation of the brain might invoke the gradual maturation of the frontal parts of the brain.

- a. ontogenetic
- b. evolutionary
- c. physiological
- d. functional

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

69. A(n) \_\_\_\_ explanation reconstructs the ancestral history of a behavior or structure.

- a. ontogenetic
- b. evolutionary
- c. physiological
- d. functional

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

70. What type of explanations call attention to behavioral similarities among related species?

- a. ontogenetic
- b. evolutionary
- c. physiological
- d. functional

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

71. A(n) \_\_\_\_ explanation describes why a structure or behavior evolved as it did.

- a. ontogenetic
- b. evolutionary
- c. physiological
- d. functional

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Biological Explanations of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

72. A(n) \_\_\_\_ is most likely to have a PhD and study the anatomy, biochemistry, or physiology of the nervous system.

- a. psychiatrist
- b. neuroscientist
- c. neurologist
- d. neurosurgeon

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

73. Most \_\_\_\_ have a mixture of psychological and medical training and work in hospitals and clinics.

- a. psychophysicologists
- b. neurochemists
- c. neuropsychologists
- d. physiological psychologists

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

74. A researcher who uses scans of brain anatomy or activity, to analyze and explore how people with autism spectrum disorders process facial expressions is most likely a(n) \_\_\_\_.

- a. cognitive neuroscientist
- b. comparative psychologist
- c. psychophysiologicalist
- d. neurologist

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

75. Mr. Spindero periodically visits a hospital clinic where he takes various paper and pencil tests that document the progression of his dementia. A(n) \_\_\_\_ is most likely to be administering the tests.

- a. neurologist
- b. psychologist
- c. neuropsychologist
- d. cognitive neuroscientist

ANSWER: c

DIFFICULTY: Bloom's: Apply

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

76. A(n) \_\_\_\_ research might relate the behaviors of different species to their habitats.

- a. evolutionary psychologist
- b. cognitive neuroscientist
- c. behavioral neuroscientist
- d. comparative psychologist

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

77. A(n) \_\_\_\_ therapist is most likely to provide exercise and other treatments to help people with muscle or nerve problems, pain, or anything else that impairs movement.

- a. cognitive
- b. behavioral
- c. occupational
- d. physical

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

78. A(n) \_\_\_\_ people improve their ability to perform functions of daily life.

- a. cognitive
- b. behavioral
- c. occupational
- d. physical

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

79. Following her stroke, Mrs. Hakim, who has limited use of her right arm, will likely work with a(n) \_\_\_\_ therapist who helps her relearn how to dress herself.

- a. cognitive
- b. behavioral
- c. occupational
- d. physical

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New



80. After nine-year-old Shane suffers a traumatic brain injury when he was hit by a car accident, a(n) \_\_\_\_ therapist helps him learn how to walk again.

- a. cognitive
- b. behavioral
- c. developmental
- d. physical

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

81. Why does a clinical psychologist need to have a working understanding of neuroscience?

- a. To make informed decisions about which medications to prescribe
- b. To make more accurate diagnoses
- c. To better communicate with clients' physicians
- d. To better handle insurance approvals for treatment

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

82. What discipline deals exclusively with nervous system disorders?

- a. clinical psychology
- b. neurology
- c. psychiatry
- d. occupational therapy

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

83. The activities of a social worker are most likely to overlap with those of a(n) \_\_\_\_.

- a. clinical psychologist

- b. neurologist
- c. psychiatrist
- d. occupational therapist

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

84. A(n) \_\_\_\_ is most likely to be concerned with selective pressures.

- a. neurosurgeon
- b. clinical psychologist
- c. clinical social worker
- d. evolutionary psychologist

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

85. A(n) \_\_\_\_ is most likely to be involved in measuring heart rate, breathing rate, brain waves, and other body processes.

- a. occupational therapist
- b. neuropsychologist
- c. psychiatric social worker
- d. psychophysiological

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

86. Casey believes that there are no circumstances under which animal research is acceptable. Casey is best described as a(n) \_\_\_\_.

- a. minimalist
- b. exclusionist
- c. abolitionist
- d. inclusionist

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

87. Minimalists believe that \_\_\_\_.

- a. all research should be done on animals
- b. some animal research is acceptable, but not all
- c. no animal research should be conducted
- d. researchers should use only small animals

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

88. Researchers who use animals in their research are most likely to agree, in principle, with \_\_\_\_.

- a. minimalists
- b. exclusionists
- c. abolitionists
- d. inclusionists

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

89. In the context of the "three Rs" of animal research, refinement refers to \_\_\_\_.

- a. reducing pain and discomfort
- b. recognizing potential confounders
- c. reusing prior research analysis
- d. recombining effective statistical tests

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.  
 TOPICS: INT.1 Overview and Major Issues  
 KEYWORDS: New

90. In the context of the “three Rs” of animal research, replacement refers to \_\_\_\_.
- avoiding the use of irreversible procedures
  - identifying less painful procedures
  - using computer models if possible
  - ensuring that animals are only used in one experiment

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.  
 TOPICS: INT.1 Overview and Major Issues  
 KEYWORDS: New

91. In the context of the “three Rs” of animal research, reduction refers to minimizing \_\_\_\_.

- the number of animals used
- the amount of pain
- alternative explanations
- ethical concerns

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.  
 TOPICS: INT.1 Overview and Major Issues  
 KEYWORDS: New

92. Institutional Animal Care and Use Committees must include a(n) \_\_\_\_.

- community member
- abolitionist
- animal rights activist
- minimalist

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.  
 TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

93. The extreme polarization that characterizes the debate about the use of animals in research \_\_\_\_.

- a. interferes with open-minded contemplation of the difficult issues
- b. has led to universities opening animal laboratories to the public
- c. has led to the development of compromises that are acceptable to most
- d. creates an atmosphere that favors useful, spirited debate

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

94. The \_\_\_\_ is responsible for the review of proposed experiments.

- a. Institutional Review Board
- b. Institutional Animal Care and Use Committee
- c. Committee for the Protection of Animal Rights
- d. Office of Research Participants

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Career Opportunities

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

95. If you are interested in clinical psychology, school psychology, social work, physical therapy, or another field that is on the outskirts of neuroscience, which resource would be a good choice?

- a. The Journal of Neuroscience
- b. Neurology
- c. Scientific American Mind
- d. Nature Neuroscience

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

96. If you are interested in clinical psychology, school psychology, social work, physical therapy, or another field that is on the outskirts of neuroscience, which resource would be a good choice?

- a. Archives of General Psychiatry
- b. Neurology
- c. The Journal of Neuroscience
- d. The Dana Foundation website

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

97. An evolutionary psychologist would likely be most interested in studying \_\_\_\_.

- a. altruistic behavior of meerkats
- b. cardiovascular function across species
- c. anatomy of the rat brain
- d. neurotransmitters in primates

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

98. Which question is suggestive of the so-called mind-body problem?

- a. What genes are involved in schizophrenia?
- b. How did altruism develop?
- c. How do intellectual disabilities affect people?
- d. Why are certain types of brain activity conscious?

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

99. The characteristic features of an animal are almost always \_\_\_\_.

- a. fundamental properties
- b. modifications of something found in the ancestral species

- c. highly variable across species
- d. the result of genetic drift

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

100. A dominant male with many offspring is best described as spreading \_\_\_\_.

- a. only those genes that helped him become dominant
- b. genes that are directly related to his becoming dominant
- c. all of his genes, including genes that are irrelevant to dominance
- d. genes that are directly or indirectly related to dominance

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

101. The observation that zone-tailed hawks resemble vultures in both appearance and flight behavior, their prey disregard them, enabling the hawks to pick up easy meals is most suggestive of a(n) \_\_\_\_ approach.

- a. ontogenetic
- b. evolutionary
- c. functional
- d. physiological

ANSWER: C

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

102. Evolutionary explanations call attention to \_\_\_\_.

- a. behavioral differences among related species
- b. behavioral similarities among related species
- c. behavioral similarities among distantly-related species
- d. behavioral similarities among unrelated species

ANSWER: B

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

103. Who proposed that biological explanations of behavior fall into four categories?

- a. Chalmers
- b. Descartes
- c. Leibniz
- d. Tinbergen

ANSWER: D

DIFFICULTY: Bloom's: Understand

REFERENCES: The Biological Approach to Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.03 - Give examples of physiological, ontogenetic, evolutionary, and functional explanations of behavior.

TOPICS: INT.1 Overview and Major Issues

KEYWORDS: New

104. How do most biological psychologists feel regarding the use of animals in research?

- a. They believe that any animal has the same rights as any human.
- b. They will avoid using painful procedures, unless they will directly benefit the animal.
- c. They are working to replace all animal experimentation with computer simulations.
- d. They use animals only if the potential benefits to humans outweigh the costs to the animals.

ANSWER: D

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

105. The function of an Institutional Animal Care and Use Committee is to \_\_\_\_.

- a. evaluate veterinarians who provide care to laboratory animals
- b. determine whether research is merely for the benefit of humans
- c. evaluate proposed experiments to ensure that they minimize pain and discomfort
- d. provide food and water for lab animals, and keep cages clean



ANSWER: C

DIFFICULTY: Bloom's: Understand

REFERENCES: The Use of Animals in Research

LEARNING OBJECTIVES: KALA.BIOP.16.INT.01.04 - Discuss the ethical issues of research with laboratory animals.

TOPICS: INT.1 Overview and Major Issues

## Chapter 1

### True / False

1. Dendrites contain the nuclei, ribosomes, mitochondria, and other structures found in most cells.

a. True

b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

2. Neurons receive information and transmit it to other cells.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

3. An afferent axon brings information into a structure.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

4. An efferent axon carries information away from a structure.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

5. The greater the surface area of a dendrite, the more information it can receive from other neurons.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

6. Neurons are distinguished from other cells by their shape.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

7. Glial cells serve many functions.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

8. Glial cells transmit information across long distances.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

9. Schwann cells build the myelin sheaths in the periphery of the body.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

10. The blood-brain barrier is made up of closely packed glial cells.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

11. The difference in voltage in a resting neuron is called the resting potential.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

12. Increasing the electrical gradient for potassium will reduce the tendency for potassium ions to exit the neuron.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

13. At the resting potential, the potassium channels are completely closed and the sodium channels are almost closed.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

14. A prolonged increase in the permeability of the membrane to sodium ions would interfere with a neuron's ability to have an action potential.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

15. Both dendrites and cell bodies are capable of producing action potentials.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

## Multiple Choice

**16. The two basic kinds of cells in the nervous system are \_\_\_\_.**

- a. neurons and glia
- b. dendrites and axons
- c. ribosomes and lysosomes
- d. neurons and axons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**17. Santiago Ramon y Cajal demonstrated that \_\_\_\_.**

- a. at rest, the neuron has a negative charge inside its membrane
- b. neurons are separate from one another
- c. neurons communicate at specialized junctions called synapses
- d. action potentials follow the all-or-none law

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**18. Which scientific work did Cajal apply to his study of infant brains?**

- a. Charles Sherrington's study of reflexes
- b. Camillo Golgi's cell staining method
- c. Perves & Hadley's dye injection method
- d. Galileo's invention of the telescope

ANSWER: a

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**19. The cell membrane is composed of two layers of \_\_\_\_.**

- a. protein
- b. fat
- c. carbohydrate

- d. plasma

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

20. Neurons differ most strongly from other body cells in their \_\_\_\_.

- a. temperature
- b. shape
- c. osmotic pressure
- d. mitochondria

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

21. What do neurons have that other cells do not?

- a. a plasma membrane
- b. large, branching extensions
- c. protein channels
- d. an endoplasmic reticulum

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

22. What structure is composed of two layers of fat molecules that are free to flow around one another?

- a. the endoplasmic reticulum
- b. a ribosome
- c. a mitochondrion
- d. the membrane

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

23. Water, oxygen, and \_\_\_\_ most freely flow across a cell membrane.

- a. calcium
- b. positively charged ions
- c. magnesium
- d. carbon dioxide

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

24. The structure that contains a cell's chromosomes is called the \_\_\_\_.

- a. endoplasmic reticulum
- b. nucleus
- c. mitochondrion
- d. ribosome

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

25. Small, charged molecules can cross the cell membrane through \_\_\_\_.

- a. diffusion
- b. ribosomes
- c. mitochondria
- d. protein channels

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

26. Protein channels allow \_\_\_\_ molecules to cross the cell membrane.

- a. large charged
- b. small charged
- c. large uncharged

- d. small uncharged

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

27. Ribosomes are the part of a cell that \_\_\_\_.

- a. performs metabolic activities
- b. breaks down harmful chemicals
- c. transports proteins
- d. synthesizes new proteins

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

28. The endoplasmic reticulum is a \_\_\_\_.

- a. network of thin tubes that transport newly synthesized proteins
- b. site where the cell synthesizes new protein molecules
- c. structure that separates the inside of the cell from the outside
- d. structure that contains the chromosomes

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

29. Dendrites \_\_\_\_.

- a. contain the nucleus, ribosomes, and other structures found in most cells
- b. are branching fibers that get narrower near their ends
- c. are thin fibers of constant diameter
- d. are an insulating material that cover an axon

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.



TOPICS: 1.1 The Cells of the Nervous System

30. The branching fibers that form the information-receiving pole of the nerve cells are called \_\_\_\_.

- a. motor neurons
- b. dendrites
- c. sensory neurons
- d. axons

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**31. The surface of a dendrite is lined with specialized junctions through which the dendrite receives information from other neurons. What are these junctions called?**

- a. synaptic receptors
- b. axons
- c. synaptic hillocks
- d. glia

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

32. The tree-like branches of a neuron that receive information from other neurons are called \_\_\_\_.

- a. axons
- b. dendrites
- c. soma
- d. myelin

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

33. Many dendrites contain short outgrowths called spines that \_\_\_\_.

- a. increase the surface area available for synapses
- b. increase the speed of transmission
- c. eliminate cell waste products
- d. increase the symmetry of the cel.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

34. As compared to dendrites, axons usually \_\_\_\_.

- a. form the information-receiving pole of the neuron
- b. are shorter in length
- c. are covered with myelin
- d. taper in diameter toward their periphery

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

35. The insulating material that covers many vertebrate axons is called the \_\_\_\_.

- a. dendrite
- b. myelin sheath
- c. cell body or soma
- d. presynaptic terminal

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

36. Nodes of Ranvier are \_\_\_\_.

- a. gaps in the myelin of axons
- b. also known as myelin sheath
- c. spiny outgrowths on dendrites
- d. responsible for cell metabolism

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

37. Gaps in the insulating material that surrounds axons are known as \_\_\_\_.

- a. interpeduncular nuclei
- b. nodes of Ranvier
- c. myelin synapses
- d. presynaptic terminals

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

38. A presynaptic terminal is also known as \_\_\_\_.

- a. an end bulb
- b. a node of Ranvier
- c. myelin
- d. a spine

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

39. An axon has many branches, each of which swells at its tip. These are known as \_\_\_\_.

- a. presynaptic terminals
- b. efferent axons
- c. afferent axons
- d. intrinsic neurons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

40. Chemicals are released by axons \_\_\_\_.

- a. into the presynaptic terminal
- b. into the junction between neurons
- c. through the efferent terminals
- d. to the mitochondria

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

41. Neurons typically have one \_\_\_\_, but many \_\_\_\_.

- a. dendrite; axons
- b. axon; dendrites
- c. cell body; axons
- d. dendrite; cell bodies

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

42. As a general rule, axons convey information \_\_\_\_.

- a. toward dendrites of their own cell
- b. toward their own cell body
- c. away from their own cell body
- d. to surrounding glia

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

43. If you were to accidentally touch a hot stove with your hand, you would quickly pull your hand away. The information carried to the muscles in your arm to make them contract was carried by \_\_\_\_.

- a. efferent neurons
- b. afferent neurons
- c. intrinsic neurons
- d. sensory neurons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

44. If all of a neuron's dendrites or axons were contained within the spinal cord, it would be considered a(n) \_\_\_\_ neuron.

- a. efferent
- b. afferent
- c. intrinsic
- d. Purkinje

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

45. What type of neuron in the pons receives information only from other cells in the pons and sends information only to other cells in the pons?

- a. afferent
- b. efferent
- c. intrinsic
- d. inter-synaptic

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

46. Glial cells \_\_\_\_.

- a. are less numerous than neurons in the human brain.
- b. transmit information over long distances within the central nervous system.
- c. occupy about ten times more space in the brain than do neurons.
- d. are smaller but more numerous than neurons in the human brain.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**47. What type of glia helps to synchronize the activity of axons?**

- a. oligodendrocytes
- b. astrocytes
- c. radial glia
- d. Schwann cells

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**48. Which type of glia remove waste material in the nervous system?**

- a. astrocytes
- b. Schwann cells
- c. oligodendrocytes
- d. radial glia

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**49. What type of glial cells myelinate axons in the brain and spinal cord?**

- a. oligodendrocytes
- b. Schwann cells
- c. radial glia
- d. astrocytes

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

**50. Which type of glia release chemicals that modify the activity of neighboring neurons?**

- a. astrocytes
- b. Schwann cells
- c. oligodendrocytes
- d. radial glia

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

51. Which type of glia builds myelin sheaths around axons in the periphery of the body?

- a. astrocytes
- b. Schwann cells
- c. oligodendrocytes
- d. radial glia

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

52. \_\_\_\_ in the brain and spinal cord and \_\_\_\_ in the periphery are specialized types of glia that build the myelin sheaths that surround neurons.

- a. Oligodendrocytes; Schwann cells
- b. Schwann cells; oligodendrocytes
- c. Microglia; oligodendrocytes
- d. Radial glia; Schwann cells

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

53. Glial cells whose function most closely resembles that of the immune system are called \_\_\_\_.

- a. oligodendrocytes
- b. Schwann cells
- c. microglia
- d. radial glia

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

54. Radial glia \_\_\_\_.

- a. guide the migration of neurons during embryonic development
- b. synchronize the activity of axons
- c. wrap around the presynaptic terminals of several axons
- d. build the myelin sheaths that surround and insulate certain axons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Anatomy of Neurons and Glia

LEARNING OBJECTIVES: KALA.BIOP.16.01.01 - Describe neurons and glia, the cells that constitute the nervous system.

TOPICS: 1.1 The Cells of the Nervous System

55. What mechanism prevents or slows some chemicals from entering the brain, while allowing others to enter?

- a. a threshold
- b. a blood-brain barrier
- c. an endoplasmic wall
- d. a differential-drug inhibitor

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

56. What happens to a virus that manages to cross the blood-brain barrier and enter the brain?

- a. It is quickly destroyed by natural killer cells.
- b. It gets trapped in a neuron, and then both are destroyed by natural killer cells.
- c. It gets trapped in a glial cell, and then both are destroyed by natural killer cells.
- d. It remains there and may cause negative effects several years later.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier



LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

57. Molecules that can cross the blood-brain barrier are usually \_\_\_\_.

- a. large, uncharged molecules, such as lactose
- b. large, charged molecules
- c. neurotransmitters, such as dopamine
- d. molecules that can dissolve in the fats of the capillary walls

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

58. The major disadvantage of a blood-brain barrier is that \_\_\_\_.

- a. many chemicals can easily diffuse into the brain
- b. so much glucose is required to maintain it
- c. certain required chemicals must be actively transported
- d. viruses cannot escape

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

59. Glucose enters the brain via which type of transport?

- a. indirect transport
- b. direct transport
- c. passive transport
- d. active transport

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Blood-Brain Barrier

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

60. What is the main source of nutrition for vertebrate neurons?

- a. fats

- b. glucose
- c. sodium
- d. complex carbohydrates

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Nourishment of Vertebrate Neurons

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

61. Why do neurons rely so heavily on glucose as their source of nutrition?

- a. Neurons lack the enzymes necessary to metabolize other fuels.
- b. Glucose is the only fuel that can be used even in the absence of vitamins.
- c. Glucose is not used extensively by other parts of the body.
- d. Other fuels do not readily cross the blood-brain barrier.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Nourishment of Vertebrate Neurons

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

62. Why does the brain need thiamine?

- a. to enable glucose to cross the blood-brain barrier
- b. as a source of fuel in case there is not enough glucose
- c. as a building block for making proteins
- d. to enable it to metabolize glucose

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Nourishment of Vertebrate Neurons

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood-brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

63. What leads to Korsakoff's syndrome?

- a. thiamine deficiency due to chronic alcoholism
- b. glucose deficiency due to chronic alcoholism
- c. viruses that manage to cross the blood-brain barrier
- d. glial cells that over-reproduce and increase pressure in the brain

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Nourishment of Vertebrate Neurons

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood–brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

64. Korsakoff's syndrome \_\_\_\_.

- a. is marked by severe memory impairments
- b. results from too much thiamine
- c. results from lack of oxygen to the brain
- d. is due to a breakdown of the blood-brain barrier

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Nourishment of Vertebrate Neurons

LEARNING OBJECTIVES: KALA.BIOP.16.01.02 - Summarize how the blood–brain barrier relates to protection and nutrition of neurons.

TOPICS: 1.1 The Cells of the Nervous System

65. The membrane of a neuron is composed of \_\_\_\_ with \_\_\_\_ embedded in them.

- a. carbohydrates; purines
- b. fat molecules; proteins
- c. proteins; neurotransmitters
- d. benzene molecules; carbohydrates

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium–potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

66. What term describes the difference in voltage that typically exists between the inside and the outside of a neuron?

- a. concentration gradient
- b. generator potential
- c. resting potential
- d. shock gradient

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium–potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

67. The idea that a neuron's membrane is polarized refers to a difference in electrical potential between \_\_\_\_.

- a. the axons and the dendrites
- b. the axon hillock and the cell body
- c. sodium ions and potassium ions
- d. the inside and the outside of the membrane

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

68. The resting potential is mainly the result of \_\_\_\_.

- a. negatively charged proteins inside the cell
- b. positively charged proteins inside the cell
- c. negatively charged proteins outside the cell
- d. positively charged proteins outside the cell

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

69. The resting potential of a neuron refers to the \_\_\_\_.

- a. net positive charge on the inside of the neuron
- b. ions which rest in one place in the cell
- c. movement of ions to the outside of the neuron
- d. net negative charge on the inside of the neuron

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

70. What is the approximate resting potential of the inside of a neuron's membrane, relative to the outside?

- a. -70 millivolts
- b. +10 millivolts
- c. 0 millivolts
- d. +90 millivolts

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

71. When the neuronal membrane is at rest, the potassium channels \_\_\_\_.

- a. permit potassium ions to pass quickly and easily
- b. permit potassium ions to pass slowly
- c. prohibit any movement of potassium ions
- d. help to open up the sodium channels

ANSWER: b

DIFFICULTY: help to open up the sodium channels

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

72. When the neuronal membrane is at rest, the sodium channels \_\_\_\_.

- a. permit sodium ions to pass quickly and easily
- b. are at equilibrium with potassium channels
- c. are closed, so there is almost no flow of sodium
- d. allow sodium to leak out as a steady, continuous drip

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

73. Which of the following describes selective permeability?

- a. Ions can only travel in certain directions across the membrane.
- b. Only certain molecules are allowed to cross the membrane freely.
- c. Only certain types of stimulation will result in an action potential.
- d. All molecules must pass through designated channels.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

74. When a neuron's membrane is at rest, the concentration gradient tends to move sodium \_\_\_\_ the cell and the electrical gradient tends to move it \_\_\_\_ the cell.

- a. into; into
- b. into; out of
- c. out of; into
- d. out of; out of

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

75. When a neuron's membrane is at rest, the concentration gradient tends to move potassium \_\_\_\_ the cell and the electrical gradient tends to move it \_\_\_\_ the cell.

- a. into; into
- b. into; out of
- c. out of; into
- d. out of; out of

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

76. Electrical gradients lead to the \_\_\_\_.

- a. general movement of ions into the neuron
- b. general movement of ions out of the neuron
- c. movement of ions to areas having the same electrical charges
- d. movement of ions to areas having opposite electrical charges

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

77. Under which conditions would the sodium-potassium pump likely be far less effective in creating a concentration gradient?

- a. if dendrites were generally longer than axons
- b. if the glia-to-neuron ratio were higher
- c. if selective permeability of the membrane did not exist
- d. if it were an active transport system that required energy

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

78. The net effect of each cycle of the sodium-potassium pump is to \_\_\_\_.

- a. decrease the number of positively charged ions within the cell
- b. increase the number of positively charged ions within the cell
- c. decrease the number of positively charged ions outside the cell
- d. increase the number of negatively charged ions within the cell

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

**79. What is one major cause for the resting potential of a neuron's membrane?**

- a. a difference in size between axons and dendrites
- b. a high permeability of the membrane to water molecules
- c. the refractory period of the membrane
- d. the sodium-potassium pump

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium–potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

80. The concentration gradient refers to the \_\_\_\_.

- a. fact that the concentration of ions is greater on the inside of a neuron
- b. fact that the concentration of ions is greater on the outside of a neuron
- c. difference in distribution for various ions between the inside and outside of the membrane
- d. negatively charged proteins inside the cell

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium–potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

81. Which event will increase the concentration gradient of sodium?

- a. decreasing permeability to potassium ions
- b. increasing activity of the sodium potassium pump
- c. increasing membrane permeability to sodium ions
- d. increasing membrane permeability to chloride ions

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium–potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

82. The concentration gradient for potassium tends to \_\_\_\_.

- a. draw potassium into the cell
- b. push chloride out of the cell
- c. push sodium out of the cell
- d. push potassium out of the cell

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium–potassium pump and the properties of the membrane lead to the resting potential of a neuron.



TOPICS: 1.2 The Nerve Impulse

83. When the neuron is at rest, what is primarily responsible for moving potassium ions OUT of the cell?

- a. a concentration gradient
- b. an electrical gradient
- c. both a concentration gradient and an electrical gradient
- d. the sodium-potassium pump

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

84. When a neuron is at rest, what is primarily responsible for moving potassium ions into the cell?

- a. concentration gradient
- b. an electrical gradient
- c. the sodium-potassium pump
- d. both the sodium-potassium pump and electrical gradient

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

85. When a membrane is at rest, what attracts potassium ions to the inside of the cell?

- a. an electrical gradient
- b. a concentration gradient
- c. both an electrical gradient and a concentration gradient
- d. neither an electrical gradient nor a concentration gradient

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

86. When a membrane is at rest, what attracts sodium ions to the inside of the cell?

- a. an electrical gradient
- b. a concentration gradient
- c. both an electrical gradient and a concentration gradient
- d. neither an electrical gradient nor a concentration gradient

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

87. Which of the following is an advantage of having a resting potential?

- a. The toxic effects of sodium are minimized inside the cell.
- b. No energy is required to maintain it.
- c. The cell is prepared to respond quickly to a stimulus.
- d. All of the ions are maintained in equal concentrations throughout the cytoplasm.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Resting Potential of the Neuron

LEARNING OBJECTIVES: KALA.BIOP.16.01.03 - Explain how the sodium-potassium pump and the properties of the membrane lead to the resting potential of a neuron.

TOPICS: 1.2 The Nerve Impulse

88. Ordinarily, stimulation of a neuron takes place \_\_\_\_.

- a. through hyperpolarization
- b. at the synapse
- c. in the mitochondria
- d. in the endoplasmic reticulum

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

89. What occurs when a stimulus shifts the potential inside a neuron from the resting potential to a more negative potential?

- a. hyperpolarization
- b. depolarization
- c. an action potential
- d. a threshold

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

90. Which action will produce a hyperpolarization of a neuron?

- a. applying a negative charge inside the neuron with a microelectrode
- b. applying a positive charge inside the neuron with a microelectrode
- c. increasing the membrane's permeability to sodium
- d. decreasing the membrane's permeability to potassium

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

91. The neuron will produce an action potential only if the depolarization exceeds the \_\_\_\_.

- a. The neuron will produce an action potential only if the depolarization exceeds the \_\_\_\_.
- b. the resting potential
- c. hyperpolarization
- d. the refractory period

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

92. A membrane produces an action potential whenever the potential across it reaches what level?

- a. the resting potential
- b. -90 mV
- c. the threshold of excitation
- d. the refractory period

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

93. What action tends to open the sodium gates across a neuron's membrane?

- a. hyperpolarization of the membrane
- b. depolarization of the membrane
- c. increase in the sodium concentration outside the neuron
- d. passing the peak of the action potential and entering the refractory

period

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

94. What occurs when depolarization is less than the cell's threshold?

- a. Sodium is prevented from crossing the membrane.
- b. Potassium is prevented from crossing the membrane.
- c. Sodium crosses the membrane only slightly more than usual.
- d. The cell will still produce an action potential.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

95. Which action would depolarize a neuron?

- a. decreasing membrane permeability to calcium
- b. increasing membrane permeability to potassium
- c. decreasing membrane permeability to sodium
- d. increasing membrane permeability to sodium

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

96. The action potential of a neuron depends mostly on what movement of ions?

- a. sodium ions entering the cell
- b. sodium ions leaving the cell
- c. potassium ions entering the cell
- d. potassium ions leaving the cell

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

97. In the normal course of an action potential, \_\_\_\_.

- a. sodium channel remain open for long periods of time
- b. the concentration of sodium equalizes across the membrane
- c. sodium remains much more concentrated outside than inside the neuron
- d. subthreshold stimulation intensifies the action potential

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

98. Voltage-activated channels are channels for which a change in the voltage across the membrane alters their \_\_\_\_.

- a. permeability
- b. length
- c. number
- d. threshold

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

99. At the peak of the action potential, the electrical gradient of potassium \_\_\_\_.

- a. is the same as during the resting potential
- b. pulls sodium into the cell

- c. pushes potassium out of the cell
- d. pulls potassium into the cell

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

100. When the potential across a membrane reaches threshold, the sodium channels \_\_\_\_.

- a. open to let sodium enter the cell rapidly
- b. close to prevent sodium from entering the cell
- c. open to let sodium exit the cell rapidly
- d. close to prevent sodium from exiting the cell

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

101. A drug that blocks the sodium gates of a neuron's membrane will \_\_\_\_.

- a. decrease the threshold
- b. block the action potential
- c. cause repeated action potentials
- d. eliminate the refractory period

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

102. After the peak of an action potential, what prevents sodium ions from continuing to enter the cell?

- a. There is no longer a concentration gradient for sodium.
- b. The sodium-potassium pump greatly increases its rate of activity.
- c. All the available sodium ions have already entered the cell.
- d. The sodium gates in the membrane close.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

103. At what point do the sodium gates begin to close, shutting out further entry of sodium into the cell?

- a. at the peak of the action potential
- b. when the threshold is reached
- c. at the end of the relative refractory period
- d. when the concentration gradient for sodium is eliminated

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

104. What causes potassium ions to leave the axon just after the peak of the action potential?

- a. a continuing concentration gradient and the opening of the potassium gates
- b. an increase in the concentration gradient across the membrane
- c. an increased tendency of the sodium-potassium pump to push potassium out
- d. binding of potassium ions to proteins that leave at this time

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

105. A drug will prevent an action potential if it \_\_\_\_.

- a. lowers the threshold of the membrane
- b. blocks the movement of potassium across the membrane
- c. blocks the movement of sodium across the membrane
- d. increases the movement of sodium across the membrane

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

106. Local anesthetic drugs attach to the sodium channels of the membrane, which \_\_\_\_.

- a. allows sodium ions to enter and stop action potential
- b. prevents potassium ions from entering and stopping action potential
- c. allows potassium ions to enter and stop action potential
- d. prevents sodium ions from entering and stopping action potential

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

107. The all-or-none law states that \_\_\_\_.

- a. a neuron produces an action potential of maximal strength, or none at all
- b. all neurons fire or none at all
- c. all neurons in a pathway fire at the same time, or none do
- d. all ions move in the same direction, or none do

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.05 - State the all-or-none law of the action potential.

TOPICS: 1.2 The Nerve Impulse

108. According to the all-or-none law, \_\_\_\_.

- a. all neurons produce an action potential at the same time or none at all
- b. all of the extracellular sodium enters the axon, or none at all
- c. once an axon reaches threshold, the amplitude and velocity of an action potential are nearly equal each time
- d. neurons are either active all the time or not at all

ANSWER: C

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.05 - State the all-or-none law of the action potential.

TOPICS: 1.2 The Nerve Impulse

109. The primary feature of a neuron that prevents the action potential from traveling back from where it just passed is the \_\_\_\_.



- a. concentration gradient
- b. refractory period
- c. sodium potassium pump
- d. phospholipid bilayer

ANSWER: B

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

110. During the relative refractory period, the \_\_\_\_.

- a. sodium gates are firmly closed
- b. sodium gates are reverting to their usual state
- c. sodium gates are wide open
- d. potassium gates are firmly closed

ANSWER: B

DIFFICULTY: Bloom's: Understand

REFERENCES: The Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

111. What will most affect the speed of an action potential?

- a. the strength of the stimulus
- b. the time since the last action potential
- c. the length of the axon
- d. the resistance of the membrane

ANSWER: D

DIFFICULTY: Bloom's: Understand

REFERENCES: Propagation of the Action Potential

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

112. The speed of an action potential down an unmyelinated axon is best described as \_\_\_\_.

- a. the speed of electricity, regardless of the size of the axon
- b. less than 1 meter per second, regardless of the size of the axon
- c. faster in thin axons than in thick ones
- d. faster in thick axons than in thin ones

ANSWER: D

DIFFICULTY: Bloom's: Understand

REFERENCES: The Myelin Sheath and Saltatory Conduction

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

113. The function of a myelin sheath is to \_\_\_\_.

- a. prevent action potentials from traveling in the wrong direction
- b. increase the velocity of transmission along an axon
- c. increase the magnitude of an action potential
- d. provide a store of nutrients for the neuron

ANSWER: B

DIFFICULTY: Bloom's: Understand

REFERENCES: The Myelin Sheath and Saltatory Conduction

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

114. In what direction does a local neuron transmit information?

- a. through its dendrites to cell body to axon
- b. through its axon to cell body to dendrites
- c. only toward the cell body
- d. equally well in any direction

ANSWER: D

DIFFICULTY: Bloom's: Understand

REFERENCES: Local Neurons

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

115. Which of the following describes the transmission of information in a local neuron?

- a. The signal decreases in strength as it travels.
- b. The signal increases in strength as it travels.
- c. The signal strength remains constant as it travels.
- d. Local neurons do not transmit any information.

ANSWER: A

DIFFICULTY: Bloom's: Understand

REFERENCES: Local Neurons

LEARNING OBJECTIVES: KALA.BIOP.16.01.04 - Discuss how the movement of sodium and potassium ions produces the action potential and recovery after it.

TOPICS: 1.2 The Nerve Impulse

True / False

1. Transmission of information between neurons occurs in the same way as transmission along an axon.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Analyze

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

2. Only sensory neurons are found in a reflex arc.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

3. At synapses, the cell that receives the message is called the presynaptic neuron.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

4. Electrical communication between neurons is faster than chemical communication within neurons.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

5. The amount of temporal summation depends on the rate of stimulation.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

6. Spatial summation is the result of synaptic inputs from different locations arriving at the same time.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

7. Inhibitory synapses actively suppress excitatory responses.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

8. Gases can be used as neurotransmitters.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

9. Neurotransmitter levels in the brain can be affected by changes in diet.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

10. Most of the known neurotransmitters are synthesized from amino acids.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

11. Most neurons release more than one kind of neurotransmitter.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

12. Generally speaking, a neuron will release a greater number of neurotransmitters than what it will respond to with its own receptors.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

13. Whether or not a neurotransmitter is excitatory depends on the response of the postsynaptic receptor.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

14. Most of the brain's excitatory ionotropic synapses use the neurotransmitter glutamate.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

15. Metabotropic synapses use a large variety of transmitters.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

Multiple Choice

16. Charles S. Sherrington was the first to infer the properties of \_\_\_\_.

- a. synapses
- b. the refractory period
- c. the sodium-potassium pump
- d. dendrites and axons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.01 - Describe how Charles Sherrington used behavioral observations to infer the major properties of synapses.

TOPICS: 2.1 The Concept of the Synapse

17. Sherrington studied \_\_\_\_, which are automatic muscular responses to stimuli.

- a. instincts
- b. reflexes
- c. inhibitions
- d. aversions

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

18. Specialized junctions between neurons are called \_\_\_\_.

- a. nodes of Ranvier
- b. spines
- c. dendrites
- d. synapses

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

19. On the basis of what evidence were the properties of synapses first inferred?

- a. the electron microscope
- b. single-neuron recordings
- c. behavioral observations
- d. PET scans

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.01 - Describe how Charles Sherrington used behavioral observations to infer the major properties of synapses.

TOPICS: 2.1 The Concept of the Synapse

20. The circuit from sensory neuron to muscle response is called \_\_\_\_.

- a. a reflex arc
- b. a synapse
- c. flexion
- d. extension

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

21. What is the proper ordering of a reflex arc?

- a. motor neuron, sensory neuron, interneuron.
- b. sensory neuron, motor neuron, interneuron.
- c. motor neuron, interneuron, sensory neuron.
- d. sensory neuron, interneuron, motor neuron.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

22. Why is the speed of conduction through a reflex arc slower than the speed of conduction of an action potential along an axon?

- a. Transmission between neurons at synapses is slower than along axons.
- b. The longer an axon, the slower its velocity.
- c. Interneurons have thicker axons than other neurons.
- d. There are greater amounts of myelin involved in the reflex arc.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse



23. Sherrington deduced that transmission at a synapse must be slower than conduction along an axon. This was based on what kind of evidence?

- a. temporal summation
- b. drugs that increase or inhibit activity at synapses
- c. the speed of reflexive responses
- d. differences in diameter between axons and dendrites

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.01 - Describe how Charles Sherrington used behavioral observations to infer the major properties of synapses.

TOPICS: 2.1 The Concept of the Synapse

24. A certain weak stimulus produces no reflexive response, but a rapid repetition of that stimulus may produce such a response. What is this phenomenon called?

- a. spatial summation
- b. temporal summation
- c. saltatory conduction
- d. synaptic combination

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

25. Sherrington found that repeated stimuli within a brief time have a cumulative effect. He referred to this phenomenon as \_\_\_\_.

- a. temporal summation
- b. spatial summation
- c. synaptic summation
- d. saltatory summation

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.01 - Describe how Charles Sherrington used behavioral observations to infer the major properties of synapses.

TOPICS: 2.1 The Concept of the Synapse

26. Temporal summation most likely occurs with \_\_\_\_.

- a. infrequent, subthreshold excitation
- b. rapid succession of stimuli that each exceed threshold

- c. infrequent, inhibitory stimuli
- d. rapid succession of subthreshold excitation

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

27. Charles Sherrington would most likely agree with which statement about reflexes?

- a. The overall speed of conduction through a reflex arc is faster than conduction along an axon.
- b. Repeated stimuli occurring within a brief time can have a cumulative effect.
- c. Each neuron physically merges with the next one during a reflexive response.
- d. Excitatory synapses are more important than inhibitory synapses.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.01 - Describe how Charles Sherrington used behavioral observations to infer the major properties of synapses.

TOPICS: 2.1 The Concept of the Synapse

28. To measure temporal summation in single cells, researchers \_\_\_\_.

- a. attach electrodes to the scalp
- b. insert an microelectrode into the scalp
- c. collect sodium and potassium ions from nearby glial cells
- d. record depolarizations of the postsynaptic neuron

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

29. A graded depolarization is known as an \_\_\_\_.

- a. EPIP
- b. IPSP
- c. ESPN
- d. EPSP

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

30. Which statement is TRUE of EPSPs?

- a. They work in pairs to produce an action potential.
- b. They decay over time and space.
- c. They can be either excitatory or inhibitory.
- d. They occur because potassium gates open.

ANSWER: b

DIFFICULTY: 51

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

31. An EPSP is a(n) \_\_\_\_.

- a. graded depolarization
- b. depolarization with a rebounding hyperpolarization
- c. graded hyperpolarization
- d. action potential in a reflex arc

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

32. The primary difference between an EPSP and an action potential is that \_\_\_\_.

- a. the magnitude of an action potential decreases as it travels along the membrane
- b. EPSPs occur without sodium ions entering the cell
- c. action potentials are always hyperpolarizations
- d. EPSPs are subthreshold events that decay over time and space

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

33. Depolarization is to \_\_\_\_ as hyperpolarization is to \_\_\_\_.

- a. excitation; inhibition
- b. inhibition; excitation
- c. increasing the threshold; decreasing the threshold
- d. decreasing the threshold; increasing the threshold

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

34. What causes an EPSP?

- a. the deactivation of cytoplasmic enzymes
- b. the opening of sodium channels
- c. the opening of potassium channels
- d. the deactivation of stress response pathways

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

35. Which process indicates spatial summation?

- a. Present two or more weak stimuli at the same time.
- b. Start action potentials at both ends of one axon at the same time.
- c. Do not allow a flexor muscle to relax before stimulating it again.
- d. Present a rapid sequence of weak stimuli.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

36. Spatial summation refers to \_\_\_\_.

- a. multiple weak stimulations that occur in rapid succession
- b. a decrease in responsiveness after repeated stimulation
- c. multiple weak stimulations that occur at the same time
- d. an increase in the strength of action potentials after repeated

stimulation

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

37. What is the primary difference between temporal summation and spatial summation?

- a. Only spatial summation can produce an action potential.
- b. Spatial summation depends on contributions from more than one sensory neuron.
- c. Temporal summation produces a hyperpolarization instead of a depolarization.
- d. Spatial summation alters the response of more than one postsynaptic cell.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

38. Simultaneous weak stimuli at different locations produce a greater reflexive response than one of the stimuli by itself. What is this phenomenon called?

- a. Sherrington's law
- b. temporal summation
- c. spatial summation
- d. the all-or-none law

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

39. What do temporal summation and spatial summation have in common?

- a. Both involve the activity of only two neurons.
- b. Both require a response from the brain.
- c. Both depend on a combination of visual and auditory stimuli.
- d. Both enable a reflex to occur in response to weak stimuli.

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

40. Temporal summation is to \_\_\_\_ as spatial summation is to \_\_\_\_.

- a. time; location
- b. EPSP; IPSP
- c. location; time
- d. depolarization; hyperpolarization

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

41. Which pattern of post-synaptic excitation will most likely result in an action potential?

- a. rapid sequence of EPSPs
- b. rapid sequence of IPSPs
- c. large number of simultaneous IPSPs
- d. large number of simultaneous IPSPs and EPSPs

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

42. When a vertebrate animal contracts the flexor muscles of a leg, it relaxes the extensor muscles of the same leg. Sherrington considered this evidence for the existence of \_\_\_\_.

- a. spatial summation
- b. temporal summation
- c. inhibitory messages
- d. the delay in transmission at synapses

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

43. What ordinarily prevents extensor muscles from contracting at the same time as flexor muscles?

- a. the ligaments and tendons that bind them together
- b. learned patterns of coordination in the cerebral cortex
- c. inhibitory synapses in the spinal cord
- d. control of both muscles by different branches of the same axon

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

44. In a reflex arc, the coordination between contraction of certain muscles and relaxation of others is mediated by \_\_\_\_.

- a. glial cells
- b. motor neurons
- c. sensory neurons
- d. interneurons

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

45. A normal, healthy animal never contracts the flexor muscles and the extensor muscles of the same leg at the same time. Why not?

- a. When the interneuron sends excitatory messages to one, inhibitory messages go to the other.
- b. Both muscles are mechanically connected in a way that makes it impossible for both to contract at the same time.
- c. Such coordination is learned through prenatal movement.
- d. Both muscles are controlled by branches of the same axon.

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

46. Inhibitory synapses on a neuron \_\_\_\_.

- a. hyperpolarize the postsynaptic cell
- b. weaken the cell's polarization
- c. increase the probability of an action potential
- d. move the potential closer to the cell's threshold

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Properties of Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

47. A temporary hyperpolarization is known as an \_\_\_\_.

- a. EPSP
- b. IPSP
- c. ISPS
- d. EPIP

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

48. Which process will most likely result in an IPSP?

- a. potassium ions entering the cell
- b. sodium ions entering the cell
- c. chloride ions entering the cell
- d. chloride ions leaving the cell

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Relationship among EPSP, IPSP, and Synapses 95 Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

49. Increased permeability to which type of ion would most likely result in an IPSP?

- a. sodium
- b. potassium
- c. calcium
- d. bicarbonate

ANSWER: b



DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

50. An IPSP represents \_\_\_\_.

- a. the location where a dendrite branches
- b. a gap in a myelin sheath
- c. a subthreshold depolarization
- d. a temporary hyperpolarization

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

51. Increased permeability to \_\_\_\_ would most likely result in an IPSP.

- a. sodium
- b. potassium
- c. calcium
- d. bicarbonate

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

52. An EPSP is to \_\_\_\_ as an IPSP is to \_\_\_\_.

- a. hyperpolarization; depolarization
- b. depolarization; hyperpolarization
- c. spatial summation; temporal summation
- d. temporal summation; spatial summation

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

53. Even at rest, most neurons have periodic production of action potentials, known as the \_\_\_\_.

- a. spontaneous firing rate
- b. excitatory firing rate
- c. all-or-none law
- d. law of compensation

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

54. The "decision" for a neuron to fire is determined by the \_\_\_\_.

- a. number of EPSPs only
- b. spontaneous firing rate
- c. number of IPSPs only
- d. ratio of EPSPs to IPSPs

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

55. The "spontaneous firing rate" of a neuron refers to \_\_\_\_.

- a. its resting potential
- b. its rate of energy consumption
- c. its rate of producing action potentials even when it is not stimulated
- d. the velocity of its action potentials under normal conditions

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 The Concept of the Synapse

56. Which statement is TRUE about the spontaneous firing rates of neurons?

- a. EPSPs increase the frequency.
- b. EPSPs decrease the frequency.
- c. IPSPs increase the frequency.
- d. One EPSP equals the effect of two IPSPs.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 Synapses

57. What determines whether a neuron has an action potential?

- a. only the number of EPSPs impinging on an axon
- b. only the number of IPSPs impinging on the dendrites
- c. the combined effects of EPSPs and IPSPs
- d. summation effects of IPSPs

ANSWER: c

DIFFICULTY: summation effects of IPSPs

REFERENCES: Relationship among EPSP, IPSP, and Action Potentials

LEARNING OBJECTIVES: KALA.BIOP.16.02.02 - Relate the activities at a synapse to the probability that a neuron will produce an action potential.

TOPICS: 2.1 Synapses

58. Which one of Sherrington's inferences about the synapse was WRONG?

- a. Transmission at a synapse is slower than transmission of impulses along an axon.
- b. Transmission at the synapse is primarily an electrical process.
- c. Synapses can be either excitatory or inhibitory.
- d. Synapses make spatial summation and temporal summation possible.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Discovery of Chemical Transmission at Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.01 - Describe how Charles Sherrington used behavioral observations to infer the major properties of synapses.

TOPICS: 2.2 Chemical Events at the Synapse

59. Loewi demonstrated that synapses operate by the release of chemicals by \_\_\_\_.

- a. applying adrenaline directly to the heart muscle
- b. collecting fluid from a stimulated frog's heart, transferring it to another frog's heart, and measuring that heart rate
- c. measuring the speed of a dog's reflexes while the dog was under the influence of various drugs
- d. applying an extract of marijuana in eye drops and discovering that it dilated the pupils

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Discovery of Chemical Transmission at Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

60. The research that firmly established synaptic communication as chemical was \_\_\_\_.

- a. Elliot's adrenaline mimicking sympathetic activation
- b. Loewi's transfer of fluid from stimulated frog hearts
- c. Sherrington's study of reflexes
- d. Eccles's measurement of IPSPs

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Discovery of Chemical Transmission at Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

61. After one frog's heart has been stimulated, an extract of fluid from that heart can make a second frog's heart beat faster. What conclusion did Otto Loewi draw from these results?

- a. Transmission at synapses is a chemical event.
- b. The sympathetic and parasympathetic nervous systems are antagonistic.
- c. Transmission at heart muscle synapses is electrical.
- d. Hormones facilitate the actions of the nervous system.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Discovery of Chemical Transmission at Synapses

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

62. Which category of chemicals includes adenosine and several of its derivatives?

- a. neuropeptides
- b. acetylcholine
- c. monoamines
- d. purines

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

63. One advantage of nitric oxide is that it \_\_\_\_.

- a. can be made by neurons efficiently
- b. is easily synthesized in a laboratory
- c. increases the growth of microglia
- d. safe for human cells in large quantities

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

64. Which neurotransmitter is released by stimulated neurons to dilate the blood vessels?

- a. endorphins
- b. glycine
- c. nitric oxide
- d. acetylcholine

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

65. In addition to influencing other neurons, \_\_\_\_ increases blood flow to a specific area of the brain.

- a. endorphins
- b. glycine
- c. nitric oxide
- d. acetylcholine

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

66. What provides the building blocks for synthesizing all neurotransmitters?

- a. proteins found in the diet
- b. breakdown products of DNA
- c. breakdown products formed from other transmitters
- d. methane and ethanol

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Chemical Events at the Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Synapses

67. The basic building blocks for the majority of neurotransmitters are \_\_\_\_.

- a. amino acids
- b. nitric oxide
- c. sugars
- d. carbohydrates

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

68. The catecholamines include \_\_\_\_.

- a. epinephrine, norepinephrine, dopamine, and serotonin
- b. epinephrine, serotonin, and dopamine
- c. dopamine, serotonin, and acetylcholine
- d. epinephrine, norepinephrine, and dopamine

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

69. What makes nitric oxide unique among neurotransmitters?

- a. It is released before the action potential occurs.
- b. It is taken back up into the presynaptic neuron.
- c. It is a gas.
- d. It is an organelle.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

70. What do dopamine, norepinephrine, and epinephrine share in common?

- a. They all affect the same receptors.
- b. They are all synthesized from the same amino acids.
- c. They are all released by the same neurons.
- d. They all are gases.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

71. Avoiding foods with lecithin, such as eggs and peanuts, would affect the levels of which neurotransmitter the most?

- a. acetylcholine
- b. serotonin
- c. GABA
- d. endorphin

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

72. The amino acid tryptophan is the precursor to which neurotransmitter?

- a. dopamine
- b. endorphin
- c. serotonin
- d. nitric oxide

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

73. You are eating a food containing tryptophan. What can you consume with it to increase its entry to the brain?

- a. phenylalanine
- b. carbohydrates
- c. fats
- d. thiamine

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

74. Dopamine and norepinephrine are classified as \_\_\_\_.

- a. second messengers
- b. purines
- c. proteins
- d. catecholamines

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

75. Insulin increases the entry of tryptophan into the brain by \_\_\_\_.

- a. weakening the blood-brain barrier
- b. converting tryptophan into a compound that more easily enters the

brain



- c. increasing metabolic activity only in those areas of the brain that use tryptophan
- d. causing certain competing amino acids to enter other cells, outside the brain

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

76. The presynaptic terminal stores high concentrations of neurotransmitter molecules in \_\_\_\_.

- a. axons
- b. vesicles
- c. peptides
- d. dendrites

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

77. Neuropeptides are synthesized in the \_\_\_\_.

- a. postsynaptic terminal
- b. presynaptic terminal
- c. cell body
- d. dendrites

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

78. Although slower than an action potential, synaptic transmission is still relatively fast because \_\_\_\_.

- a. the synaptic cleft is very narrow
- b. sodium ions are transported quickly

- c. neurotransmitters diffuse faster than electricity
- d. EPSPs travel faster than IPSPs

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

79. Vesicles are located \_\_\_\_.

- a. in postsynaptic terminals
- b. in dendrites
- c. in presynaptic terminals
- d. outside of the neuron in the extracellular fluid

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

80. When an action potential reaches the end of an axon, it evokes the release of neurotransmitters by opening \_\_\_\_ channels in the axon terminal.

- a. chloride
- b. bicarbonate
- c. calcium
- d. oxygen

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

81. When an action potential reaches the end of an axon, the depolarization causes what ionic movement in the presynaptic cell?

- a. sodium out of the cell
- b. lithium out of the cell
- c. iron into the cell
- d. calcium into the cell

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

82. An action potential causes the release of neurotransmitters by \_\_\_\_.

- a. blocking potassium pores in the membrane
- b. opening chloride pores in the membrane
- c. blocking iron pores in the membrane
- d. opening calcium pores in the membrane

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

83. A neuron excretes neurotransmitters through its membrane by a process called \_\_\_\_.

- a. reuptake
- b. exocytosis
- c. endocytosis
- d. synaptic diffusion

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

84. Exocytosis is the process by which neurotransmitters are \_\_\_\_.

- a. released from the presynaptic neuron
- b. synthesized
- c. destroyed
- d. secreted into synaptic vesicles

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

85. What is the synaptic cleft?

- a. the gap between the presynaptic neuron and the postsynaptic neuron
- b. a packet that stores neurotransmitter molecules for release
- c. a subthreshold depolarization mechanism
- d. the long-term storage location for calcium ions

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

86. What happens when a neurotransmitter is released by a presynaptic cell?

- a. It causes calcium to rush into the presynaptic neuron.
- b. It causes calcium to rush into the postsynaptic neuron.
- c. The neurotransmitter passively spreads across the synaptic cleft.
- d. The neurotransmitter is actively transported across the synaptic cleft.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

87. In general, a single neuron releases \_\_\_\_ neurotransmitter(s) and can respond to \_\_\_\_ neurotransmitter(s).

- a. one; many
- b. dozens of; only one
- c. several; only one
- d. several; many

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

88. The main advantage of a neuron releasing more than one neurotransmitter is that:

- a. if it runs out of one, it has others
- b. it can release different transmitters on different occasions
- c. it can send more complex messages
- d. it can release one from the axon's terminal and one from another

location along the axon

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

89. The effect of a neurotransmitter on a postsynaptic neuron is determined by the \_\_\_\_.

- a. speed the action potential traveled down the axon
- b. number of branches of the presynaptic axon
- c. receptors on the postsynaptic membrane
- d. distance between the synapse and the cell body

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

90. A receptor can directly open a channel and thereby exert a(n) \_\_\_\_ effect, or it can produce slower but longer \_\_\_\_ effects.

- a. gated; metabotropic
- b. ionotropic; gated
- c. metabotropic; ionotropic
- d. ionotropic; metabotropic

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

91. Which event is most likely to be dependent on ionotropic effects?

- a. drowsiness
- b. hormone release
- c. hunger
- d. rapid muscle contraction

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

92. Glutamate opens sodium gates, enabling sodium ions to enter the postsynaptic cell. What type of effect is this?

- a. metabotropic
- b. ionotropic
- c. modulatory
- d. orthodromic

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

93. Ionotropic effects \_\_\_\_.

- a. depolarize the postsynaptic membrane
- b. hyperpolarize the postsynaptic membrane
- c. may depolarize or hyperpolarize the postsynaptic membrane
- d. enhance the reabsorption of neurotransmitters

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

94. Ionotropic effects are characterized by \_\_\_\_.

- a. rapid and short-lived effects
- b. rapid and long lasting effects
- c. excitatory effects only
- d. inhibitory effects only

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

95. Which terms refers to a chemical that binds to another chemical?

- a. ligand
- b. electrolyte
- c. vesicle
- d. autoreceptor

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

96. Compared to ionotropic effects, metabotropic effects are \_\_\_\_.

- a. quicker and briefer
- b. slower and briefer
- c. quicker and longer lasting
- d. slower and longer lasting

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

97. Which process is more typical of a metabotropic effect than an ionotropic effect?

- a. producing inhibitory effects on the postsynaptic cell
- b. influencing the speed of conduction by the postsynaptic cell
- c. producing long-lasting effects on the post-synaptic cell

- d. controlling sensory processes

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

98. Receptor molecules for neurotransmitters that exert metabotropic effects are proteins that bind to \_\_\_\_ outside the membrane, and attach to \_\_\_\_ inside the membrane.

- a. calcium; potassium
- b. neurotransmitters; nicotine
- c. neurotransmitters; G-proteins
- d. adenosine; nitric oxide

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

99. "Second messengers" carry their messages to \_\_\_\_.

- a. the presynaptic membrane
- b. areas within the postsynaptic cell
- c. areas within the presynaptic cell
- d. the surrounding glia

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

100. A metabotropic synapse, by way of its second messenger, \_\_\_\_.

- a. has effects localized to one point on the membrane
- b. can influence activity in much of the presynaptic cell
- c. can influence activity in much or all of the postsynaptic cell
- d. has minimal effect on the postsynaptic cell

ANSWER: c



DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

101. Many neurons release neuropeptides mostly from the \_\_\_\_.

- a. vesicles
- b. nodes
- c. axons
- d. dendrites

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

102. A hormone is a chemical that is \_\_\_\_.

- a. secreted by a gland to the outside world
- b. conveyed by the blood to other organs, whose activity it influences
- c. capable of activating or inhibiting muscle fibers
- d. a feedback message from the postsynaptic neuron to the presynaptic

neuron

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Hormones

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

103. Hormones exert their effects \_\_\_\_.

- a. similarly to metabotropic neurotransmitters
- b. similarly to ionotropic neurotransmitters
- c. by attaching to special receptors on muscle fibers
- d. by being metabolized and converted via presynaptic cells

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Hormones

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

104. The anterior pituitary is composed of \_\_\_\_ and the posterior pituitary is composed of \_\_\_\_.

- a. glandular tissue; neural tissue
- b. neural tissue; glandular tissue
- c. neural tissue; neural tissue
- d. glandular tissue; glandular tissue

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Hormones

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

105. Releasing hormones are synthesized in the \_\_\_\_ and released in the \_\_\_\_.

- a. anterior pituitary; bloodstream
- b. hypothalamus; anterior pituitary
- c. hypothalamus; posterior pituitary
- d. posterior pituitary; hypothalamus

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Hormones

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

106. Adrenocorticotrophic hormone (ACTH) controls secretions of the \_\_\_\_.

- a. gonads
- b. mammary glands
- c. thyroid gland
- d. adrenal cortex

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Hormones

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

107. What is the function of the enzyme acetylcholinesterase?

- a. It synthesizes acetylcholine from the diet.
- b. It increases the sensitivity of the postsynaptic cell to acetylcholine.
- c. It blocks further release of the transmitter acetylcholine.

- d. It breaks acetylcholine down into components for recycling.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

108. What happens to acetylcholine after it attaches to a receptor on the postsynaptic cell?

- a. It is broken down into two components.
- b. It is reabsorbed intact by the presynaptic cell.
- c. It is metabolized by the postsynaptic cell as a source of energy.
- d. It continues to stimulate the postsynaptic neuron until replaced by another neurotransmitter.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 3.2 Chemical Events at the Synapse

109. A drug that inhibits the action of the enzyme acetylcholinesterase will have the effect of \_\_\_\_.

- a. prolonging the action of acetylcholine at its synapses
- b. decreasing the duration of action of acetylcholine at its synapses
- c. decreasing the synthesis of acetylcholine by the presynaptic cell
- d. increasing the synthesis of acetylcholine by the presynaptic cell

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.04 - Discuss how certain drugs affect behavior by altering events at synapses.

TOPICS: 3.2 Chemical Events at the Synapse

110. Reuptake is an alternative to which other process?

- a. recycling of neurotransmitters
- b. breaking down neurotransmitters via an enzymatic process
- c. absorbing neurotransmitters by postsynaptic neurons
- d. re-releasing neurotransmitters from postsynaptic neurons

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

111. "Transporter" proteins transport neurotransmitters \_\_\_\_.

- a. back into the presynaptic neuron
- b. across the synapse to the postsynaptic neuron
- c. across the synapse back to the presynaptic neuron
- d. to the appropriate receptor sites

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

112. COMT and MAO are \_\_\_\_.

- a. enzymes that convert catecholamines into inactive chemicals
- b. enzymes that make catecholamines
- c. neurotransmitters in the same group as serotonin
- d. the inactive fragments of catecholamines

ANSWER: A

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

113. The primary method for disposal of peptide neurotransmitters is \_\_\_\_.

- a. Inactivation
- b. reuptake by the presynaptic neuron
- c. Diffusion
- d. reuptake by the postsynaptic neuron

ANSWER: C

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.05 - Contrast neurotransmitters, neuropeptides, and hormones.

TOPICS: 2.2 Chemical Events at the Synapse

114. Activation of autoreceptors tends to \_\_\_\_.

- a. increase further neurotransmitter release
- b. stimulate GABA release
- c. increase sodium-potassium pump activity
- d. decrease further neurotransmitter release

ANSWER: D

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

115. Autoreceptors monitor the \_\_\_\_.

- a. number of action potentials
- b. extracellular sodium concentration
- c. amount of neurotransmitter released
- d. amount of reuptake

ANSWER: C

DIFFICULTY: Bloom's: Understand

REFERENCES: The Sequence of Chemical Events at a Synapse

LEARNING OBJECTIVES: KALA.BIOP.16.02.03 - List and explain the sequence of events at a synapse, from synthesis of neurotransmitters, through stimulation of receptors, to the later disposition of the transmitter molecules.

TOPICS: 2.2 Chemical Events at the Synapse

True / False

1. Neurons that directly convey messages to muscles and glands are part of the central nervous system.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

2. The elbow is more distal to the shoulder than the hand.

- a. True

- b. False

ANSWER: False

DIFFICULTY: Bloom's: Analyze

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.01 - Define the terms used to describe brain anatomy.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

3. Cell bodies of motor neurons are located outside of the spinal cord.

- a. True

- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

4. The parasympathetic nervous system activates the "fight or flight" response.

- a. True

- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Autonomic Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

5. Parasympathetic neurons use acetylcholine as their neurotransmitter.

- a. True

- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Autonomic Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

6. The hindbrain consists of the medulla, the pons, and the cerebellum.

- a. True

- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

7. Some cranial nerves include both sensory and motor components.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

8. Substantia nigra gives rise to the dopamine-containing pathway that facilitates readiness for movement.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Midbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

9. The limbic system is important for motivation and emotional behaviors.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

10. Although relatively small, the hypothalamus is very important for a large range of motivated behaviors.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

11. The choroid plexus reabsorbs the cerebrospinal fluid.

a. True

b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventricles

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

12. Damage to the right hemisphere of the cortex will most likely cause loss of sensory or motor control on the left side of the body.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Analyze

REFERENCES: Organization of the Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

13. Damage to the striate cortex of the right hemisphere causes blindness in the left visual field.

a. True

b. False

ANSWER: True

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Occipital Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

14. The prefrontal cortex is important for working memory.

a. True

b. False

ANSWER: True



DIFFICULTY: Bloom's: Understand

REFERENCES: The Frontal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

15. Many cells in association areas of the brain respond to more than one sensory modality.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: How Do the Parts Work Together?

LEARNING OBJECTIVES: KALA.BIOP.16.03.04 - Describe the binding problem and explain its theoretical importance.

TOPICS: 3.2 The Cerebral Cortex

### Multiple Choice

16. The central nervous system is composed of the \_\_\_\_.

- a. brain and spinal cord
- b. nerves outside the brain and spinal cord exclusively
- c. sympathetic and parasympathetic nervous systems
- d. somatic and autonomic nervous systems

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

17. Together, the somatic nervous system and the autonomic nervous system make up the \_\_\_\_ nervous system.

- a. peripheral
- b. central
- c. sympathetic
- d. dorsal

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

18. Which division of the nervous system consists of neurons that deliver messages from the sensory organs to the central nervous system?

- a. autonomic
- b. sympathetic
- c. somatic
- d. parasympathetic

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

19. The somatic nervous system carries signals from the \_\_\_\_ and is part of the \_\_\_\_.

- a. senses; central nervous system
- b. organs; autonomic nervous system
- c. organs; sympathetic nervous system
- d. senses; peripheral nervous system

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

20. Which division of the nervous system consists of neurons that control the heart, intestines, and other organs?

- a. internal
- b. afferent
- c. somatic
- d. autonomic

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

21. Which plane shows brain structures as they would be seen from the front?

- a. coronal
- b. sagittal

- c. horizontal
- d. transverse

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.01 - Define the terms used to describe brain anatomy.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

22. Which plane shows brain structures as they would be seen from above?

- a. coronal
- b. sagittal
- c. horizontal
- d. commuter

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.01 - Define the terms used to describe brain anatomy.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

23. If one structure is on the left side of the body and another is on the right, they are said to be \_\_\_\_ to each other.

- a. medial
- b. lateral
- c. ipsilateral
- d. contralateral

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Terminology to Describe the Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.01 - Define the terms used to describe brain anatomy.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

24. The basal ganglia are a related cluster of cell bodies that are lateral to the.

- a. meninges
- b. hippocampus
- c. hypothalamus
- d. thalamus

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

25. The spinal cord communicates with \_\_\_\_.

- a. sense organs and muscles below the level of the head
- b. all sense organs and muscles in the human body
- c. the dorsal root ganglia only
- d. the ventral root ganglia only

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

26. The cell bodies of sensory neurons that are in clusters of neurons outside the spinal cord are called \_\_\_\_.

- a. sensory nuclei
- b. sensory clusters
- c. ventral root ganglia
- d. dorsal root ganglia

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

27. After damage to the dorsal roots of the spinal cord, an individual will suffer what kind of loss?

- a. sensation from the affected body area
- b. control of the peripheral muscles in the affected body area
- c. control of organs in the affected body area
- d. sensation of the muscles on the opposite side of the body

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

28. After damage to the ventral roots of the spinal cord, an individual will suffer what kind of loss?

- a. sensation from the affected body area
- b. control of the peripheral muscles in the affected body area
- c. control of organs in the affected body area
- d. sensation of the muscles on the opposite side of the body

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

29. Cell bodies of sensory neurons are located in the \_\_\_\_.

- a. spinal cord
- b. dorsal root ganglia
- c. white matter
- d. ventral roots

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

30. Cell bodies of motor neurons would most likely be found in \_\_\_\_.

- a. gray matter
- b. white matter
- c. the dorsal roots
- d. the tracts

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

31. Where would you find the dorsal root ganglia?

- a. at the base of the brain
- b. in the gray matter of the spinal cord
- c. in the white matter of the spinal cord
- d. outside, but near, the spinal cord

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

32. A cross section of the spinal cord indicates that gray matter is \_\_\_\_.

- a. densely packed with myelinated axons
- b. composed mostly of unmyelinated axons
- c. densely packed with cell bodies and dendrites
- d. composed only of dendrites

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Spinal Cord

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

33. Which part of the nervous system prepares the body for "fight or flight" activities?

- a. sympathetic
- b. somatic
- c. parasympathetic
- d. peripheral

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Autonomic Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

34. The sweat glands, adrenal glands, and muscles that constrict blood vessels have input from only the \_\_\_\_ nervous system.

- a. sympathetic
- b. parasympathetic
- c. central
- d. dorsal root

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Autonomic Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

35. You are walking after dark. A sudden noise frightens you. Your heart pounds, your pulse races, and your breathing rate increases. These responses are due to your \_\_\_\_.

- a. parasympathetic nervous system
- b. sympathetic nervous system
- c. somatic nervous system
- d. immune system

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Autonomic Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

36. Sympathetic ganglia \_\_\_\_.

- a. are located inside the spinal cord
- b. act more independently than do parasympathetic ganglia
- c. are closely linked and often act as a single system
- d. have short postganglionic fibers extending to internal organs

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Autonomic Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

37. Sympathetic is to \_\_\_\_ as parasympathetic is to \_\_\_\_.

- a. the central nervous system; the peripheral nervous system
- b. voluntary behavior; involuntary behavior
- c. arousal; relaxation
- d. neurotransmitters; hormones

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Autonomic Nervous System

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

38. The parasympathetic nervous system has \_\_\_\_.

- a. long preganglionic and long postganglionic axons
- b. long preganglionic and short postganglionic axons

c. short preganglionic and short postganglionic axons  
 d. short preganglionic and long postganglionic axons  
 ANSWER: b  
 DIFFICULTY: Bloom's: Understand  
 REFERENCES: The Autonomic Nervous System  
 LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.  
 TOPICS: 3.1 Structure of the Vertebrate Nervous System

39. Which neurotransmitter is primarily used by the parasympathetic nervous system?

a. dopamine  
 b. serotonin  
 c. acetylcholine  
 d. norepinephrine  
 ANSWER: c  
 DIFFICULTY: Bloom's: Understand  
 REFERENCES: The Autonomic Nervous System  
 LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.  
 TOPICS: 3.1 Structure of the Vertebrate Nervous System

40. Acetylcholine is the only neurotransmitter released by \_\_\_\_.

a. the sympathetic nervous system's postganglionic synapses  
 b. the parasympathetic nervous system's postganglionic axons  
 c. intrinsic neurons in the spinal cord  
 d. intrinsic neurons of the hippocampus  
 ANSWER: b  
 DIFFICULTY: Bloom's: Understand  
 REFERENCES: The Autonomic Nervous System  
 LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.  
 TOPICS: 3.1 Structure of the Vertebrate Nervous System

41. Sympathetic is to \_\_\_\_ as parasympathetic is to \_\_\_\_.

a. serotonin; dopamine  
 b. dopamine; serotonin  
 c. acetylcholine; norepinephrine  
 d. norepinephrine; acetylcholine  
 ANSWER: d  
 DIFFICULTY: Bloom's: Understand  
 REFERENCES: The Autonomic Nervous System



LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

42. Which structure consists of the medulla, the pons, and the cerebellum?

- a. hindbrain
- b. reticular formation
- c. midbrain
- d. forebrain

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

43. The term rhombencephalon refers to the \_\_\_\_.

- a. brainstem
- b. hindbrain
- c. midbrain
- d. forebrain

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

44. What structure is composed of the medulla, pons, the midbrain, and certain central structures of the forebrain?

- a. limbic system
- b. thalamus
- c. brain stem
- d. cerebellum

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

45. The medulla is considered part of the brain rather than the spinal cord because it \_\_\_\_.

- a. developed later in evolution
- b. is contained in the skull
- c. develops from a separate group of neurons
- d. is composed only of interneurons

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

46. Breathing, heart rate, vomiting, salivation, coughing, and sneezing are all controlled by which structure?

- a. medulla
- b. thalamus
- c. cerebellum
- d. pons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

47. As axons from the spinal cord enter the skull, which structure do they enter?

- a. midbrain
- b. forebrain
- c. medulla
- d. cerebellum

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

48. The medulla controls a number of reflexes through \_\_\_\_.

- a. the midbrain
- b. the forebrain
- c. cranial nerves
- d. skeletal nerves

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

49. How many pairs of cranial nerves do humans have?

- a. 8
- b. 10
- c. 12
- d. 16

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

50. The nuclei for most of the cranial nerves are located in the \_\_\_\_.

- a. cerebral cortex
- b. hypothalamus
- c. midbrain
- d. pons and medulla

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

51. The nuclei for cranial nerves I through IV are located in the \_\_\_\_.

- a. midbrain and forebrain
- b. hindbrain
- c. pons and medulla
- d. spinal cord

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

52. Vision is to \_\_\_\_ as hearing is to \_\_\_\_.

- a. cranial nerve I; cranial nerve X
- b. cranial nerve II; cranial nerve VIII
- c. cranial nerve II; cranial nerve V
- d. cranial nerve IV; cranial nerve VIII

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

53. The reticular formation is contained within the \_\_\_\_.

- a. brain stem
- b. spinal cord
- c. raphe system
- d. cerebellum

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

54. The ascending portion of the reticular formation \_\_\_\_.

- a. controls the motor areas of the spinal cord
- b. is responsible for the eye muscles
- c. controls the motor areas of the brain
- d. increases arousal and attention

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

55. Which structure receives input from the hypothalamus and basal ganglia and sends axons that release acetylcholine to widespread areas in the cerebral cortex?

- a. nucleus basalis
- b. reticular formation
- c. spinal cord
- d. amygdala

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

56. The cerebellum contributes to the control of what function?

- a. hunger
- b. temperature
- c. olfaction
- d. movement

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

57. Research indicates that the behavioral effects of the cerebellum may be due to its role in \_\_\_\_.

- a. coordinating information from left and right hemispheres
- b. focusing attention and organizing sensory inputs
- c. interpreting visual stimuli
- d. coordinating the release of hormones

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

58. In addition to problems with balance and coordination, a person with damage to the cerebellum will likely have problems with \_\_\_\_.

- a. reflexive changes in heart rate
- b. shifting attention between auditory and visual stimuli
- c. amnesia
- d. rational decision-making

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

59. In which area of the brain would one find the tectum, tegmentum, superior and inferior colliculi, and substantia nigra?

- a. midbrain
- b. hindbrain
- c. reticular formation
- d. forebrain

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Midbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

60. Superior colliculus is to \_\_\_\_ as inferior colliculus is to \_\_\_\_.

- a. vision; hearing
- b. taste; smell
- c. vision; touch
- d. touch; hearing

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Midbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

61. What type of pathway in the substantia nigra deteriorates in Parkinson's disease?

- a. dopamine
- b. serotonin
- c. norepinephrine
- d. acetylcholine

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Midbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

62. A group of forebrain structures is important for motivated and emotional behavior. What term refers to this group of structures?

- a. limbic system
- b. reticular formation
- c. tegmentum
- d. basal ganglia

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

63. The limbic system is most related to \_\_\_\_.

- a. emotional behaviors
- b. motor coordination
- c. coordination between the eyes and ears
- d. perception of three-dimensional objects

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

64. One function of the thalamus is to \_\_\_\_.

- a. relay sensory information to the cerebral cortex
- b. regulate sleep cycles
- c. direct the secretions of the hypothalamus
- d. moderate emotional outbursts

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

65. Which structure provides the main source of input to the cerebral cortex?

- a. limbic system
- b. medulla
- c. thalamus
- d. hypothalamus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

66. Olfactory information is processed by the \_\_\_\_.

- a. thalamus via the olfactory bulbs
- b. cortex via the olfactory bulbs
- c. spinal cord
- d. medulla

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

67. An impairment of eating, drinking, temperature regulation, or sexual behavior suggests possible damage to which brain structure?

- a. midbrain
- b. hippocampus
- c. hypothalamus
- d. cerebellum

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

68. The hindbrain consists of the \_\_\_\_.

- a. tectum, tegmentum, and reticular formation
- b. thalamus and hypothalamus
- c. spinal cord and cranial nerves
- d. medulla, pons, and cerebellum

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Hindbrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System



69. By both neural and hormonal pathways, the hypothalamus regulates activity of the \_\_\_\_.

- a. pituitary gland
- b. thalamus
- c. retina
- d. ventricles

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

70. Secretions from which gland will also affect the secretion of hormones from the thyroid gland, adrenal gland, and ovaries or testes?

- a. thymus gland
- b. pineal gland
- c. pineal gland
- d. pituitary gland

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

71. The pituitary gland synthesizes and releases hormones \_\_\_\_.

- a. to the outside of the body
- b. to the thalamus
- c. into the bloodstream
- d. to the hypothalamus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

72. Which structure is likely to be damaged in Parkinson's disease, Huntington's disease, and other conditions that impair movement?

- a. thalamus
- b. basal ganglia
- c. limbic system

- d. reticular formation

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

73. Damage to the basal ganglia would most likely result in \_\_\_\_.

- a. a movement disorder
- b. problems with visual perception
- c. problems with auditory perception
- d. a loss of pain sensation

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

74. The nucleus basalis is a key part of the brain's system for \_\_\_\_.

- a. emotional response
- b. attention
- c. visual perception
- d. auditory perception

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

75. The hippocampus plays a major role in \_\_\_\_.

- a. innate sexual behavior
- b. temperature regulation
- c. memory
- d. secretion of hormones

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

76. An individual has difficulty remembering certain things after brain damage, but all memories stored before the damage are intact. The brain area most likely damaged is the \_\_\_\_.

- a. fornix
- b. hypothalamus
- c. hippocampus
- d. nucleus basalis

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Forebrain

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

77. The ventricles, central canal, and subarachnoid space are all \_\_\_\_.

- a. part of the forebrain
- b. filled with cerebrospinal fluid
- c. involved in cognitive functioning
- d. filled with blood

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventricles

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

78. The choroid plexus \_\_\_\_.

- a. cushions the brain
- b. protects the brain from infection
- c. is another name for the ventricles
- d. forms the cerebrospinal fluid

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventricles

LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

79. Meningitis is an inflammation of the \_\_\_\_.

- a. cerebrospinal fluid
- b. glia

c. membranes surrounding the brain  
d. medulla oblongata  
ANSWER: c  
DIFFICULTY: Bloom's: Understand  
REFERENCES: The Ventricles  
LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.  
TOPICS: 3.1 Structure of the Vertebrate Nervous System

80. Membranes that surround the brain and spinal cord are called \_\_\_\_.

a. CSF  
b. ventricles  
c. meninges  
d. hydrocephali  
ANSWER: c  
DIFFICULTY: Bloom's: Understand  
REFERENCES: The Ventricles  
LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.  
TOPICS: 3.1 Structure of the Vertebrate Nervous System

81. A function of the cerebrospinal fluid is to \_\_\_\_.

a. cushion the brain  
b. hold blood in reserve for emergencies  
c. maintain the blood-brain barrier  
d. synthesize neurotransmitters  
ANSWER: a  
DIFFICULTY: Bloom's: Understand  
REFERENCES: The Ventricles  
LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.  
TOPICS: 3.1 Structure of the Vertebrate Nervous System

82. What causes hydrocephalus?

a. poorly developed skull bones in an infant  
b. interruption of blood flow to the brain around the time of birth  
c. obstruction in the flow of cerebrospinal fluid  
d. damage to one of the cranial nerves  
ANSWER: c  
DIFFICULTY: Bloom's: Understand  
REFERENCES: The Ventricles  
LEARNING OBJECTIVES: KALA.BIOP.16.03.02 - Describe the principal functions of certain brain areas.

TOPICS: 3.1 Structure of the Vertebrate Nervous System

83. Each hemisphere of the cerebral cortex receives most of its input from the \_\_\_\_ side of the body and controls the muscles on the \_\_\_\_ side.

- a. contralateral; ipsilateral
- b. ipsilateral; contralateral
- c. ipsilateral; ipsilateral
- d. contralateral; contralateral

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Organization of the Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

84. What do the corpus callosum and anterior commissure have in common?

- a. They both produce CSF.
- b. They both connect the two hemispheres.
- c. They are made up of gray matter.
- d. They each have six laminae.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Organization of the Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

85. Which statement is TRUE about laminae in the cerebral cortex?

- a. All cortical areas contain six layers.
- b. Odd numbered laminae contain only neurons; even numbered laminae contain only glia.
- c. The laminae vary in thickness in different areas.
- d. Each layer corresponds to a different sensory modality.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Organization of the Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

86. If you could selectively damage the individual laminae of the cortex, damage to which layer would most likely affect visual sensation?

- a. Layer IV of the temporal cortex
- b. Layer V of the occipital cortex
- c. Layer IV of the occipital cortex
- d. Layer II of the frontal cortex

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Organization of the Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

87. Which lobe of the cerebral cortex is most important for visual information?

- a. occipital
- b. parietal
- c. temporal
- d. frontal

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Occipital Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

88. Cortical blindness may result from the destruction of \_\_\_\_.

- a. any part of the cortex
- b. the occipital cortex
- c. the parietal cortex
- d. the central sulcus

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Occipital Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

89. Which part of the cerebral cortex is most important for the sense of touch?

- a. occipital lobe
- b. parietal lobe
- c. temporal lobe
- d. frontal lobe

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Parietal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

90. The \_\_\_\_ monitors all the information about eye, head, and body positions and passes it on to brain areas that control movement.

- a. parietal lobe
- b. occipital lobe
- c. central sulcus
- d. precentral gyrus

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Parietal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

91. What is the primary target area in the cortex for information regarding muscle-stretch and joint receptors?

- a. primary somatosensory cortex
- b. occipital lobe
- c. central sulcus
- d. precentral gyrus

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Parietal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

92. Someone who suddenly loses the ability to identify objects by feeling them has probably suffered damage to what area of the cerebral cortex?

- a. parietal lobe
- b. temporal lobe
- c. frontal lobe
- d. corpus callosum

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Parietal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

93. What is the primary area of the cerebral cortex for auditory sensations?

- a. occipital
- b. parietal
- c. temporal
- d. frontal

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Temporal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

94. Which lobe seems to be especially involved in the comprehension of spoken language in humans?

- a. occipital
- b. parietal
- c. frontal
- d. temporal

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Temporal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

95. Which lobe contributes most to the perception of movement and recognition of faces?

- a. occipital lobe
- b. parietal lobe
- c. temporal lobe
- d. frontal lobe

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Temporal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

96. The precentral gyrus is essential for the \_\_\_\_.

- a. control of fine movements
- b. coordination between vision and hearing
- c. regulation of emotions



- d. attention to hunger and thirst

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Frontal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

97. The only area of the cerebral cortex known to receive input from ALL sensory modalities is the \_\_\_\_.

- a. thalamus
- b. prefrontal cortex
- c. striate cortex
- d. parietal lobe

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Frontal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

98. Neurons in the prefrontal cortex \_\_\_\_ than neurons in other cortical areas.

- a. are larger in size
- b. have more dendritic spines
- c. have greater velocities of action potentials
- d. are more sensitive to light

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Frontal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

99. Prefrontal lobotomies were conducted in the United States in an attempt to \_\_\_\_.

- a. restore memory
- b. restrain prisoners
- c. treat severe obesity
- d. treat severe psychiatric disorders

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Frontal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

100. The prefrontal cortex is important for \_\_\_\_.
- a. the processing of visual information
  - b. working memory
  - c. language acquisition
  - d. recognizing faces

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Frontal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

101. If the prefrontal cortex is damaged, an individual may \_\_\_\_.
- a. have difficulty remembering where s/he just placed the keys
  - b. sleep 18-22 hours per day
  - c. have impaired vision
  - d. lose all memory of faces for at least six months

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Frontal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

102. The "binding problem" is the issue of how we \_\_\_\_.
- a. convert sensory information into a pattern that produces movement
  - b. perceive visual, auditory and other aspects of a stimulus as a single object
  - c. transfer information between the left and right hemispheres
  - d. communicate between word comprehension and word production

areas of the brain

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: How Do the Parts Work Together?

LEARNING OBJECTIVES: KALA.BIOP.16.03.04 - Describe the binding problem and explain its theoretical importance.

TOPICS: 3.2 The Cerebral Cortex

103. The large-scale integration problem is the difficulty of \_\_\_\_.

- a. getting the different parts of the brain to physically connect during development
- b. understanding how neurons work
- c. knowing how the areas of your brain work together to create a combined perception
- d. how more than one person can perceive the same object at the same time

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: How Do the Parts Work Together?

LEARNING OBJECTIVES: KALA.BIOP.16.03.04 - Describe the binding problem and explain its theoretical importance.

TOPICS: 3.2 The Cerebral Cortex

104. Which statement is TRUE of the cortical areas that are sometimes known as "association areas"?

- a. They have primary control over processes of thinking and reasoning.
- b. They are best described as additional sensory areas.
- c. They form associations between touch and hearing.
- d. They integrate information from more than one sensory system.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: How Do the Parts Work Together?

LEARNING OBJECTIVES: KALA.BIOP.16.03.05 - Cite examples of several methods for studying the relationship between brain activity and behavior.

TOPICS: 3.2 The Cerebral Cortex

105. People with damage of the parietal cortex tend to have trouble \_\_\_\_

- a. hearing sounds
- b. locating objects in space
- c. remembering past events
- d. speaking

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Parietal Lobe

LEARNING OBJECTIVES: KALA.BIOP.16.03.03 - List the four lobes of the cerebral cortex and name their principal functions.

TOPICS: 3.2 The Cerebral Cortex

106. Computerized axial tomography creates an image from \_\_\_\_.

- a. microwaves
- b. infrared rays
- c. x-rays

d. gamma rays  
 ANSWER: c  
 DIFFICULTY: Bloom's: Understand  
 REFERENCES: Correlating Brain Anatomy with Behavior  
 LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.  
 TOPICS: 3.3 Research Methods

107. Suppose you are interested in determining if the volume of the hippocampus is associated with the amount of stress a person was experiencing. Which method would be the best choice?

a. CAT  
 b. fMRI  
 c. PET  
 d. rCBF  
 ANSWER: a  
 DIFFICULTY: Bloom's: Analyze  
 REFERENCES: Correlating Brain Anatomy with Behavior  
 LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.  
 TOPICS: 3.3 Research Methods

108. An electroencephalograph measures \_\_\_\_.

a. action potentials in an individual neuron  
 b. the electrical resistance of hair  
 c. the rate of glucose uptake in active regions of the brain  
 d. the average activity of the cells in a given region of the brain  
 ANSWER: d  
 DIFFICULTY: Bloom's: Understand  
 REFERENCES: Recording Brain Activity  
 LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.  
 TOPICS: 3.3 Research Methods

109. Evoked potentials in the brain are most likely to be detected by a(n) \_\_\_\_.

a. CAT scan  
 b. MRI  
 c. EEG  
 d. PET scan  
 ANSWER: c  
 DIFFICULTY: Bloom's: Understand  
 REFERENCES: Recording Brain Activity

LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.

TOPICS: 3.3 Research Methods

110. Which method is dependent upon injecting a radioactive chemical into the blood to measure blood flow?

- a. fMRI
- b. PET
- c. CAT
- d. magnetic stimulation

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Recording Brain Activity

LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.

TOPICS: 3.3 Research Methods

111. Which technique is dependent upon the release of oxygen from hemoglobin molecules?

- a. PET
- b. rCBF
- c. MRI
- d. fMRI

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Recording Brain Activity

LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.

TOPICS: 3.3 Research Methods

112. A stereotaxic instrument would most likely be used for \_\_\_\_.

- a. placing an electrode in the brain
- b. assessing regional blood flow
- c. testing reflexes
- d. measuring blood pressure

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Effects of Brain Stimulation

LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.

TOPICS: 3.3 Research Methods

113. How does the method of transcranial magnetic stimulation of brain areas differ from magnetic inactivation?

- a. Brain activation results from long, intense magnetic stimulation.
- b. Brain inactivation results from mild, brief magnetic stimulation.
- c. Brain inactivation results as the magnets are simply reversed.
- d. Brain activation results from mild, brief magnetic stimulation.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Effects of Brain Stimulation

LEARNING OBJECTIVES: KALA.BIOP.16.03.0 5 - Cite examples of several methods for studying the relationship between brain activity and behavior.

TOPICS: 3.3 Research Methods

114. Thus far, it appears that the brain feature most strongly correlated with IQ in humans is the \_\_\_\_.

- a. volume of the hippocampus
- b. brain-to-body ratio
- c. brain weight
- d. amount of gray matter

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Size and Intelligence

LEARNING OBJECTIVES: KALA.BIOP.16.03.06 - Discuss why it is so difficult to draw any firm conclusion about the relationship between brain size and intelligence.

TOPICS: 3.3 Research Methods

115. Women on the average have a greater density of neurons in part of the \_\_\_\_.

- a. hippocampus
- b. temporal lobe
- c. frontal lobe
- d. gray matter

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Size and Intelligence

LEARNING OBJECTIVES: KALA.BIOP.16.03.06 - Discuss why it is so difficult to draw any firm conclusion about the relationship between brain size and intelligence.

TOPICS: 3.3 Research Methods

True / False

1. The fluid-filled cavity within the neural tube becomes the central canal of the spinal cord and the four ventricles of the brain.

- a. True

- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

2. Axons are usually formed before the dendrites.

- a. True

- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

3. After cells have differentiated as neurons or glia, they migrate.

- a. True

- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

4. Myelination of the brain and spinal cord is complete by the time of birth.

- a. True

- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

5. Synaptogenesis is a process that begins before birth and continues throughout life.

- a. True

- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

6. Recent evidence suggests that adult vertebrate brains generate new neurons.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

7. Apoptosis is distinct from necrosis, which is death caused by an injury or a toxic substance.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

8. The developing infant brain is highly resistant to damage.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Vulnerable Developing Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.2 Development of the Brain

9. The most common cause of brain damage in children is closed head injury.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand



REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

10. The damaging effects of a stroke can be limited if treated within a short period of time.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

11. Diaschisis refers to the decreased activity of surviving neurons after damage to other neurons.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

12. Recent evidence suggests that phantom limb pain is caused by sensations coming from the stump of the amputated limb.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.010 - Explain how remodeling in the cerebral cortex produces the phantom limb experience.

TOPICS: 4.3 Plasticity after Brain Damage

13. Sex-linked genes are usually found on the Y chromosome.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

14. To determine the contributions of heredity and environment, researchers rely mainly on studies of monozygotic and dizygotic twins.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Heredity and Environment

LEARNING OBJECTIVES: KALA.BIOP.16.04.02 - Describe the types of evidence researchers use to infer heritability.

TOPICS: 4.1 Genetics and Evolution of Behavior

15. Genes become more prevalent in a population if they contribute to reproductive success.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

### Multiple Choice

16. The ability of the brain to change its anatomy over time, within limits, is known as \_\_\_\_.

- a. plasticity
- b. regression
- c. connectivity
- d. long term potentiation

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Introduction

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

17. The fluid-filled cavity of the developing neural tube becomes the \_\_\_\_.

- a. forebrain
- b. midbrain
- c. spinal cord
- d. ventricular system

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

18. Early in development, the nervous system begins as a \_\_\_\_.

- a. tube surrounding a fluid-filled cavity
- b. spherical structure in the center of the embryo
- c. diffuse system of cells scattered throughout the body
- d. single layer of cells covering the heart and other internal organs

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

19. Proliferation is the \_\_\_\_.

- a. production of new cells
- b. movement of primitive neurons and glia
- c. formation of dendrites and an axon
- d. insulation process that occurs on some axons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

20. After cells have differentiated as neurons or glia, they \_\_\_\_.

- a. differentiate
- b. proliferate
- c. myelinate
- d. migrate

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

21. Chemicals known as \_\_\_\_ and \_\_\_\_ guide neuron migration.

- a. immunoglobulins; sodium
- b. glia; neurotrophins
- c. immunoglobulins; chemokines
- d. chemokines; neurotrophins

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

22. Which of the following best characterizes how axons arrive at the correct target cells?

- a. They follow electrical gradients.
- b. They follow chemical gradients from the target cell.
- c. Axons send out chemicals to the target cells.
- d. Target cells send out branches for the axons to follow.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Pathfinding by Axons

LEARNING OBJECTIVES: KALA.BIOP.16.04.05 - Describe the evidence showing that axons seek specific targets.

TOPICS: 4.2 Development of the Brain

23. Migration requires \_\_\_\_.

- a. a precise chemical environment
- b. cells which are myelinated
- c. mature neurons
- d. neurons with fully developed dendrites

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

24. What is the process called when a primitive neuron begins to develop dendrites and an axon?

- a. Differentiation
- b. Migration
- c. Myelination
- d. Proliferation

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

25. After the migrating neuron reaches its destination, \_\_\_\_ begin to form.

- a. dendrites
- b. axons
- c. nuclei
- d. ganglions

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

26. Myelination in the human brain \_\_\_\_.

- a. is complete upon birth
- b. is complete around the second birthday
- c. is complete sometime shortly after adolescence
- d. continues well into the adult years

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

27. The formation of new synapses is called \_\_\_\_.

- a. synaptogenesis
- b. differentiation
- c. migration
- d. fusion

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

28. Brain cells that are neither neurons nor glia, but which are capable of dividing and then differentiating into neurons or glia, are called \_\_\_\_.

- a. parallel fibers
- b. intrinsic cells
- c. stem cells
- d. glomeruli

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Maturation of the Vertebrate Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.04 - Discuss the formation of new neurons in a mature brain.

TOPICS: 4.2 Development of the Brain

29. Chemicals in the amphibian tectum guide the growth of axons from the retina to their correct location in the tectum by \_\_\_\_.

- a. having dozens of different growth factors
- b. using an electrical gradient
- c. using a chemical gradient
- d. glial cell transportation

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Pathfinding by Axons

LEARNING OBJECTIVES: KALA.BIOP.16.04.05 - Describe the evidence showing that axons seek specific targets.

TOPICS: 4.2 Development of the Brain

30. Roger Sperry cut a newt's optic nerve and rotated the eye. Axons from what used to be the dorsal part of the retina (now located on the ventral side) grew back to the target areas \_\_\_\_.

- a. that ordinarily get input from the dorsal retina
- b. that ordinarily get input from the ventral retina
- c. that ordinarily get input from the center of the retina
- d. equally and diffusely

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Pathfinding by Axons

LEARNING OBJECTIVES: KALA.BIOP.16.04.05 - Describe the evidence showing that axons seek specific targets.

TOPICS: 4.2 Development of the Brain

31. Which of the following best describes the process by which developing axons find their general target areas?

- a. completely random growth
- b. shape attraction
- c. electrical attraction
- d. chemical attraction

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Pathfinding by Axons

LEARNING OBJECTIVES: KALA.BIOP.16.04.05 - Describe the evidence showing that axons seek specific targets.

TOPICS: 4.2 Development of the Brain

32. Which of the following are selective as axons form synapses with target cells?

- a. axons, but not target cells
- b. target cells, but not axons
- c. both axons and target cells
- d. neither axons nor target cells

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pathfinding by Axons

LEARNING OBJECTIVES: KALA.BIOP.16.04.05 - Describe the evidence showing that axons seek specific targets.

TOPICS: 4.2 Development of the Brain

33. The concept that neurons refine their many connections based on which ones are most successful is known as \_\_\_\_.

- a. natural selection
- b. evolution
- c. survival of the fittest
- d. neural Darwinism

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Pathfinding by Axons

LEARNING OBJECTIVES: KALA.BIOP.16.04.05 - Describe the evidence showing that axons seek specific targets.

TOPICS: 4.2 Development of the Brain

34. \_\_\_\_ steer new axonal branches and synapses in the right direction.

- a. Chemokines
- b. Immunoglobulin
- c. Glia
- d. Neurotrophins

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Pathfinding by Axons

LEARNING OBJECTIVES: KALA.BIOP.16.04.05 - Describe the evidence showing that axons seek specific targets.

TOPICS: 4.2 Development of the Brain

35. Why is it that every axon in an adult mammal has a target cell (muscle cell or other neuron) with which it makes synaptic contact?

- a. Each target cell causes the growth of a neuron and its axon.
- b. After formation, axons release a chemical that causes a target cell to form.
- c. Axons that fail to find a target cell die.
- d. An axon will make contact with any kind of cell and adjust its function as necessary.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

36. What is signaled by nerve growth factor (NGF)?

- a. That a target cell has "accepted" an axon
- b. Which target cell a growing axon should connect with
- c. That axons should elongate as the body grows bigger
- d. The need for new neurons to form in brain areas that are lacking in neurons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

37. Nerve growth factor (NGF) \_\_\_\_.

- a. promotes the survival and growth of the axon
- b. is a fuel metabolized by neurons



- c. promotes programmed cell death
- d. is a hormone first released at puberty

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

38. Necrosis \_\_\_\_.

- a. is a programmed mechanism of cell death
- b. is cell death caused by an injury or a toxic substance
- c. promotes the survival and growth of dendrites
- d. promotes the activity of neurons

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

39. Apoptosis \_\_\_\_.

- a. is a programmed mechanism of cell death
- b. promotes the survival and growth of the axon
- c. promotes the survival and growth of dendrites
- d. promotes the activity of neurons

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

40. The function of neurotrophins is to \_\_\_\_.

- a. inhibit proliferation
- b. promote survival of axons
- c. be used as fuel
- d. signal that an axon has been "rejected."

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

41. An axon that does not receive enough neurotrophins from a target cell will \_\_\_\_.

- a. branch out and form other synapses on other cells
- b. manufacture its own neurotrophins
- c. degenerate and die
- d. fail to reabsorb transmitters that have already been released

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

42. In development, neurotrophins \_\_\_\_\_. During adulthood, they \_\_\_\_\_.

- a. preserve neurons; produce apoptosis
- b. produce apoptosis; increase neuronal branching
- c. facilitate differentiation; facilitate migration
- d. preserve neurons; increase neuronal branching

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

43. In response to nervous system injury, neurotrophins \_\_\_\_\_.

- a. cause the neuron's death
- b. reduce inflammation due to this injury
- c. increase regrowth of damaged axons
- d. promote apoptosis

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

44. After maturity, the apoptotic mechanisms become:

- a. hyperactive
- b. extinct
- c. dormant

- d. very complex

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 4.2 Development of the Brain

45. What modern day practice helps prevent an inadequate production of thyroid hormones?

- a. fluoride in drinking water
- b. processed sugar
- c. iodized salt
- d. artificial sweeteners

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Vulnerable Developing Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

46. The mechanism of fetal alcohol syndrome probably relates to \_\_\_\_.

- a. overexcited neurons
- b. apoptosis
- c. decreases apoptosis
- d. necrosis

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Vulnerable Developing Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

47. Alcohol suppresses the release of \_\_\_\_, the brain's main excitatory transmitter.

- a. 5-HT
- b. DA
- c. GABA
- d. glutamate

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Vulnerable Developing Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

48. How much alcohol, if any, can a pregnant woman drink without worrying about the negative effects on her child?

- a. The equivalent of two cocktails a day
- b. The equivalent of one beer a day
- c. Anything less than what causes her to appear drunk
- d. Unknown, and therefore abstention is recommended

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Vulnerable Developing Brain

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

49. Immature neurons experimentally transplanted from one part of the developing cortex to another \_\_\_\_.

- a. develop the properties characteristic of their new location
- b. maintain the properties of their original location
- c. become dysfunctional, with properties of both the original and new locations
- d. die

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Differentiation of the Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

50. The areas of the cortex used by expert video game players are most likely to \_\_\_\_ than the same cortical areas of those who do not play video games.

- a. be thicker
- b. have smaller, but a greater number of neurons
- c. have faster action potentials
- d. be more resistant to transcortical stimulation

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Fine-Tuning by Experience

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

51. Which factor appears to be particularly important for branching of neurons during brain development?

- a. engaging in physical activity
- b. playing logic games
- c. having good teachers
- d. having a sterile environment

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Fine-Tuning by Experience

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

52. An MEG study of professional musicians listening to pure tones showed that professional musicians had \_\_\_\_.

- a. brain responses that were twice as strong as non-musicians
- b. slightly less brain responses as non-musicians
- c. drastically less brain responses as non-musicians
- d. brain responses five times as strong as non-musicians

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Fine-Tuning by Experience

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

53. Focal hand dystonia, sometimes called "musician's cramp", is caused by \_\_\_\_.

- a. extreme overlap of cortical representation of the fingers
- b. deterioration of muscles in the hand
- c. demyelination of neurons in the fingers
- d. buildup of excess GABA in the temporal cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Fine-Tuning by Experience

LEARNING OBJECTIVES: KALA.BIOP.16.04.07 - Cite examples of how experiences alter brain anatomy and function.

TOPICS: 4.2 Development of the Brain

54. Closed head injury is \_\_\_\_.

- a. the most common cause of brain damage in young adults
- b. usually fatal
- c. the most common cause of Korsakoff's syndrome
- d. related to Alzheimer's disease

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

55. Closed head injury results in damage partially because of \_\_\_\_.

- a. increased production of myelin
- b. excessive deficit of neurotrophins
- c. rotational forces that push the brain against the inside of the skull
- d. infection

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

56. Which event is the most common cause of a stroke?

- a. lack of glucose
- b. ischemia from an obstruction of an artery
- c. hemorrhage of an artery
- d. blow to the head

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

57. Ischemia is to \_\_\_\_ as hemorrhage is to \_\_\_\_.

- a. older individuals; younger individuals
- b. proximal; distal
- c. obstruction; rupture
- d. barely noticeable; lethal

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

58. \_\_\_\_ cells proliferate after a stroke.

- a. Penumbra
- b. Microglia
- c. Ischemia
- d. Cancer

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

59. Damage due to stroke caused by ischemia can be minimized by administering a drug that \_\_\_\_.

- a. breaks up blood clots
- b. overstimulates neurons in and around the damaged area
- c. increases the release of glutamate
- d. slows down the sodium-potassium pump

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

60. Research on laboratory animals indicates that cannabinoids are most effective if taken \_\_\_\_.

- a. as soon as the stroke occurs
- b. within 20 minutes of the stroke
- c. steadily for one month
- d. shortly before the stroke

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Damage and Short-Term Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

61. Diaschisis refers to the \_\_\_\_.

- a. increase in activity of neurons surrounding a damaged area
- b. decreased activity of surviving neurons after other neurons are damaged

- c. increased activity in the cerebral cortex after damage to any part of the brain
- d. increased activity in the hypothalamus after damage to any part of the brain

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

62. Which treatment would be most likely to help a patient starting it several days after a stroke?

- a. injecting a drug to block dopamine
- b. administering tranquilizers
- c. extensive bed rest
- d. giving stimulant drugs combined with physical therapy

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

63. What is one impediment to the regeneration of axons in the mammalian central nervous system?

- a. Inhibitory chemicals secreted by the damaged portion of the axon
- b. Bacterial infections caused by the decaying tissue
- c. Glia releasing chemicals that inhibit axon growth
- d. Inhibitory messages sent from the cell nucleus when an axon is

damaged

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

64. If some of the axons innervating a given cell are destroyed or if they become inactive, what compensatory process takes place in the remaining presynaptic cells?

- a. activation of previously silent synapses
- b. removal of toxins
- c. denervation supersensitivity



- d. collateral sprouting

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

65. After damage to a set of axons, neurotrophins induce nearby \_\_\_\_.

- a. injured axons to form new branches
- b. injured dendrites to form new branches
- c. uninjured axons to form new branches
- d. uninjured dendrites to form new branches

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

66. Heightened sensitivity to a neurotransmitter after the destruction of an incoming axon is known as \_\_\_\_.

- a. axon supersensitivity
- b. disuse supersensitivity
- c. enervation supersensitivity
- d. denervation supersensitivity

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

67. If most of the axons that transmit dopamine to some brain area die or become inactive, the remaining dopamine synapses become \_\_\_\_.

- a. less responsive
- b. less easily stimulated
- c. more resistant
- d. more responsive

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

68. After learning strengthens one set of synapses, other synapses \_\_\_\_.

- a. weaken
- b. die
- c. get stronger
- d. become aroused

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.09 - List several possible mechanisms of recovery after brain damage.

TOPICS: 4.3 Plasticity after Brain Damage

69. A cortical cell originally responded to stimulation of the middle finger. After amputation of that finger, it begins responding to the second and fourth fingers. Which action most likely accounts for this?

- a. synaptic reorganization
- b. growth of completely new axons
- c. altered pattern of blood vessels in the brain
- d. a psychotic reaction

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.010 - Explain how remodeling in the cerebral cortex produces the phantom limb experience.

TOPICS: 4.3 Plasticity after Brain Damage

70. A continuing sensation of an amputated body part is called \_\_\_\_.

- a. phantom limb
- b. ghost limb
- c. neuralgia
- d. tingling limb

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.010 - Explain how remodeling in the cerebral cortex produces the phantom limb experience.

TOPICS: 4.3 Plasticity after Brain Damage

71. One way to relieve the pain associated with a phantom limb is to \_\_\_\_.
- remove more of the amputated limb
  - have the amputee learn to use an artificial limb
  - stimulate the relevant part of the cortex
  - convince the patient that there is no neural basis for these sensations

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Later Mechanisms of Recovery

LEARNING OBJECTIVES: KALA.BIOP.16.04.010 - Explain how remodeling in the cerebral cortex produces the phantom limb experience.

TOPICS: 4.3 Plasticity after Brain Damage

72. The results of several studies of facial expressions in people who were born blind suggest \_\_\_\_.

- a minor role for genetics in the control of facial expressions
- a major role for genetics as well as environment in the control of facial expressions
- no role of genetics in the control of facial expressions
- no role of genetics, but a major role of environment in the control of facial expressions

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

73. Units of heredity that maintain their structural identity from one generation to another are known as \_\_\_\_.

- enzymes
- mutations
- nucleic acids
- genes

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

74. Chromosomes consist of large, double-stranded molecules of \_\_\_\_.

- deoxyribonucleic acid
- ribonucleic acid

- c. autosomal genes
- d. recombination genes

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

75. A strand of DNA serves as a template (model) for the synthesis of \_\_\_\_.

- a. chromosomes
- b. RNA
- c. Proteins
- d. Carbohydrates

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

76. Enzymes serve as \_\_\_\_.

- a. genetic templates
- b. physiological markers of chemical reactions in the body
- c. biological catalysts that regulate chemical reactions in the body
- d. catalysts for the synthesis of protein molecules

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

77. Chemically, what is the route from genes to their expression?

- a. DNA to proteins to RNA
- b. DNA to RNA to proteins
- c. proteins to DNA to RNA
- d. RNA to DNA to proteins

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

78. A person with two recessive genes is considered to be \_\_\_\_ for that trait.

- a. homozygous
- b. heterozygous
- c. unitary
- d. marginal

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

79. Suppose "A" is a dominant gene for the ability to taste phenylthiocarbamide and "a" is a recessive gene for the inability to taste it. Which couples could possibly have both a child who tastes it and a child who does not?

- a. father AA, mother aa
- b. father Aa, mother AA
- c. father Aa, mother Aa
- d. father AA, mother AA

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

80. A trait not expressed when combined with a dominant trait is called a(n) \_\_\_\_ trait.

- a. nurture
- b. recessive
- c. dominant
- d. homozygous

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

81. Suppose that adopted children are more similar to their biological parents than their adoptive parents in their preferences for a flavor of ice cream. Which statement is true in this circumstance?

- a. Heritability of this trait is high.
- b. Preferences for ice cream are determined solely by the environment.
- c. Flavors of ice cream are naturally selected.
- d. Heritability of this trait is low.

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

82. An autosomal gene is a gene \_\_\_\_.

- a. on the X chromosome
- b. on the Y chromosome
- c. on any chromosome other than the X or Y chromosome
- d. that shows no evidence of crossing over

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

83. Which pair of sex chromosomes is found in a normal male mammal?

- a. XX
- b. XY
- c. YY
- d. YZ

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

84. In general, biologists who speak of sex-linked genes are typically referring to genes on \_\_\_\_.

- a. autosomal chromosomes
- b. more than one chromosome
- c. the X chromosome

- d. the Y chromosome

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

85. An example of a sex-linked trait is \_\_\_\_.

- a. eye color
- b. color vision deficiency
- c. temperament
- d. intelligence

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

86. Sex-limited genes are found on \_\_\_\_.

- a. X chromosomes only
- b. Y chromosomes only
- c. X and Y chromosomes
- d. any chromosomes

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

87. A gene is found that controls the age at which a man grows bald, if at all. That gene seldom affects women, even if they have the gene. What kind of gene is this MOST likely to be?

- a. an X-linked gene
- b. a sex-limited gene
- c. a sex-linked dominant gene
- d. a sex-linked recessive gene

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

88. Which statement best explains why males can grow breasts under certain hormonal conditions?

- a. Sex-linked genes become activated.
- b. The Y chromosome becomes activated.
- c. Sex-limited genes become activated.
- d. Breast growth is linked to color vision deficiency.

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

89. On a given trait, high heritability suggests that \_\_\_\_.

- a. adopted children will closely resemble their biological parents
- b. adopted children will closely resemble their adoptive parents
- c. identical twins will be less similar to each other than adopted siblings
- d. fraternal twins will be more similar to each other than identical twins

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.02 - Describe the types of evidence researchers use to infer heritability.

TOPICS: 4.1 Genetics and Evolution of Behavior

90. If a trait has high heritability, \_\_\_\_.

- a. hereditary differences will not account for any observed variations in that trait
- b. the environment cannot influence that trait
- c. the environment may possibly influence that trait
- d. heredity does not influence that trait

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Heredity and Environment

LEARNING OBJECTIVES: KALA.BIOP.16.04.02 - Describe the types of evidence researchers use to infer heritability.

TOPICS: 4.1 Genetics and Evolution of Behavior



91. Any estimate of the heritability of a particular trait is specific to \_\_\_\_.

- a. a given population
- b. the parents
- c. the trait
- d. the strength of the trait

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Heredity and Environment

LEARNING OBJECTIVES: KALA.BIOP.16.04.02 - Describe the types of evidence researchers use to infer heritability.

TOPICS: 4.1 Genetics and Evolution of Behavior

92. Individuals afflicted with PKU need to avoid \_\_\_\_.

- a. foods high in phenylalanine
- b. foods high in vitamin K
- c. alcohol
- d. sunlight

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Heredity and Environment

LEARNING OBJECTIVES: KALA.BIOP.16.04.02 - Describe the types of evidence researchers use to infer heritability.

TOPICS: 4.1 Genetics and Evolution of Behavior

93. Why do children with PKU develop intellectual disabilities?

- a. Unmetabolized amino acids accumulate and affect the brain.
- b. Essential axons lack myelin sheaths.
- c. Dendrites and synapses fail to form in associative areas of the cortex.
- d. Their immune systems do not fight off brain infections.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Heredity and Environment

LEARNING OBJECTIVES: KALA.BIOP.16.04.02 - Describe the types of evidence researchers use to infer heritability.

TOPICS: 4.1 Genetics and Evolution of Behavior

94. How is it possible to prevent the intellectual disabilities that are generally associated with PKU?

- a. through exercise
- b. through diet
- c. through drugs
- d. through exposure to bright light

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Heredity and Environment

LEARNING OBJECTIVES: KALA.BIOP.16.04.02 - Describe the types of evidence researchers use to infer heritability.

TOPICS: 4.1 Genetics and Evolution of Behavior

95. Changes in single genes are called \_\_\_\_.

- a. alterations
- b. mutations
- c. mendelians
- d. enzymes

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Mendelian Genetics

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

96. For natural selection to generate evolutionary change in a population \_\_\_\_.

- a. there need not be any differences in the traits of individuals in that population
- b. the change in gene frequencies must help the species in the long run
- c. the differences must have a hereditary basis
- d. the change in gene frequencies will probably be harmful to the species

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

97. Which statement is TRUE with respect to evolution?

- a. "If you don't use it, you lose it."
- b. Evolutionary success is assessed by the number of one's offspring surviving to reproduce.
- c. Evolution benefits the species, in the long run.
- d. Evolution benefits the individual.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

98. Breeding some animals selectively because they possess some desirable characteristic is called \_\_\_\_.

- a. evolution
- b. natural selection
- c. artificial selection
- d. artificial insemination

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

99. Which of the following represents Lamarckian evolution?

- a. "Survival of the fittest"
- b. "Reproduction of the fittest"
- c. "If you don't use it, you lose it"
- d. "Look out for number one"

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

100. Evolution improves the fitness of the population, which is defined as \_\_\_\_.

- a. the number of copies of one's genes that endure in later generations
- b. survival of the individual
- c. ability to adapt to a variety of environments
- d. overall health and well-being

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

101. An evolutionary psychologist would likely be most interested in studying \_\_\_\_.

- a. altruistic behavior of meerkats
- b. cardiovascular function across species
- c. anatomy of the rat brain

- d. neurotransmitters in primates

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

102. What is TRUE about altruistic behavior?

- a. It is evident in every animal species.
- b. It can be completely explained in terms of genetic contributions.
- c. It is difficult to explain from an evolutionary/genetic point of view.
- d. It has a genetic component only in humans.

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

103. Why is a genetic explanation for altruism problematic?

- a. Only non-human animals exhibit altruistic behaviors.
- b. Altruistic behaviors rarely benefit the individual performing them.
- c. Altruism is more common among the young than among adults.
- d. No behavior has been linked to any genes.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

104. Which action BEST illustrates altruistic behavior?

- a. Bullying other kids in the lunch line
- b. Spreading rumors about your boss
- c. Picking up your room
- d. Helping an elderly person across the street

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

105. Organisms that help those they recognize as capable of returning the favor are displaying \_\_\_\_.

- a. kin selection
- b. group selection
- c. reciprocal altruism
- d. sociobiology

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

106. Kin selection as an explanation for altruistic behavior would argue that \_\_\_\_.

- a. individuals help others who help them
- b. individuals pick their mates based on how altruistic they are
- c. individuals spread their genes by helping their relatives
- d. society benefits as a whole when individuals help each other

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

107. Group selection as an explanation for altruistic behavior would argue that \_\_\_\_.

- a. individuals are more likely to reproduce when stress is low
- b. individuals pick their groups based on how altruistic they are
- c. cooperative groups thrive better than do uncooperative groups
- d. society benefits as a whole when individuals help each other

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

108. Group selection works well as an explanation for human behavior because humans \_\_\_\_.

- a. can expel uncooperative individuals from groups
- b. are a highly social species who emphasize groups

- c. can make rational choices about mate selection
- d. benefit from living in groups

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.03 - Give examples of evolutionary explanations in psychology.

TOPICS: 4.1 Genetics and Evolution of Behavior

109. Humans may have been able to evolve such big brains without sacrificing other functions because of \_\_\_\_.

- a. exercise
- b. mutations
- c. deletions
- d. diet

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

110. Proteins called \_\_\_\_ bind DNA into a shape that is more like string wound around a ball.

- a. enzymes
- b. histones
- c. esters
- d. acetyl groups

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

111. The field of epigenetics deals with how \_\_\_\_.

- a. reproductive fitness can be altered
- b. spontaneous mutations occur
- c. genes determine behavior
- d. experiences can turn genes on or off

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

112. Removal of \_\_\_\_ turns genes off.

- a. enzymes
- b. histones
- c. esters
- d. acetyl groups

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Evolution of Behavior

LEARNING OBJECTIVES: KALA.BIOP.16.04.01 - Distinguish between genetic and epigenetic influences on development.

TOPICS: 4.1 Genetics and Evolution of Behavior

113. At later stages of the neuron's development, neurotrophins \_\_\_\_.

- a. increase the branching of axons
- b. cause the neuron's death
- c. become converted into myelin
- d. connect the axon to axons of adjoining cells

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 5.1 Development of the Brain

114. Which statement most accurately describes embryonic development of the nervous system in humans?

- a. The majority of cells remain as primitive neurons until birth.
- b. All synapses that are formed are permanent.
- c. Neurons form before birth; synapses form after birth.
- d. Far more neurons are produced than will ultimately survive.

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 5.1 Development of the Brain

115. Why is it that all neurons in a healthy adult brain have made appropriate connections?

- a. Chemical messages from our muscles tell our brain how many neurons to form.
- b. If an axon does not make the appropriate connections by a certain age, it dies.
- c. We are born with all connections formed.
- d. Connections form rapidly, but we learn to use whatever connections have formed.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Determinants of Neuronal Survival

LEARNING OBJECTIVES: KALA.BIOP.16.04.06 - Define apoptosis and explain how neurotrophins prevent it.

TOPICS: 5.1 Development of the Brain

116. Following release from the presynaptic cell, neuropeptides

- a. cannot be deactivated by enzymes, whereas small-molecule transmitters diffuse away or are deactivated by reuptake.
- b. are deactivated by reuptake, whereas small-molecule transmitters diffuse away or are deactivated by enzymes.
- c. can diffuse away from synapses, whereas small-molecule transmitters are deactivated by reuptake.
- d. and small-molecule transmitters can be deactivated by diffusion, enzymes, or reuptake.

ANSWER: c

DIFFICULTY: Difficult

TOPICS: Factual

117. Given the characteristics of small-molecule transmitters and neuropeptides, we can conclude that small-molecule transmitters

- a. are well-suited to roles as neurotransmitters, whereas neuropeptides are well-suited to roles as neuromodulators.
- b. are well-suited to roles as neuromodulators, whereas neuropeptides are well-suited to roles as neurotransmitters.
- c. and neuropeptides are equally well-suited to be either neurotransmitters or neuromodulators.
- d. and neuropeptides frequently act as neuromodulators and neurohormones, but rarely function as neurotransmitters.

ANSWER: a

DIFFICULTY: Difficult

118. Acetylcholine (ACh) is synthesized from



- a. acetyl coenzyme A, usually found in dietary fats, and choline, a substance formed by the actions of mitochondria within cells.
- b. choline from dietary fats and acetyl coenzyme A, both of which are acted on by choline acetyltransferase.
- c. the amino acid tyrosine, synthesized from the phenylalanine found in foods.
- d. tryptophans, amino acids found in chocolate, milk, and poultry.

ANSWER: b

DIFFICULTY: Difficult

True / False

1. Johannes Müller held that whatever excites a particular nerve establishes a special kind of energy unique to that nerve.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: General Principles of Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.01 - Remember that we see because light strikes the retina, sending a message to the brain.

TOPICS: 5.1 Visual Coding

2. The coding of visual information in your brain results in an exact duplicate of the object's shape on the surface of the cortex.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: General Principles of Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.01 - Remember that we see because light strikes the retina, sending a message to the brain.

TOPICS: 5.1 Visual Coding

3. The cornea is an adjustable structure in the eye that focuses light.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

4. Amacrine cells refine the input to ganglion cells, enabling them to respond specifically to shapes, movement, or other visual features.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

5. Shapes are more easily identified with peripheral vision than foveal vision.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

6. Photopigments are stable in the dark.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

7. According to the trichromatic theory, we can perceive only three colors.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

8. The retinex theory accounts for the principle of color constancy.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

9. An object's location, color, and movement are all processed in the same part of the visual cortex.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

10. Lateral inhibition is the reduction of activity in one neuron by activity in neighboring neurons.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Processing in the Retina

LEARNING OBJECTIVES: KALA.BIOP.16.05.05 - Explain lateral inhibition in terms of the connections among neurons in the retina.

TOPICS: 5.2 How the Brain Processes Visual Information

11. Parvocellular cells respond strongly to moving stimuli and large overall patterns.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

12. The ventral stream of visual processing is important for identifying movement.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventral and Dorsal Paths

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

13. Simple cells are found exclusively in the primary visual cortex.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

14. A complex cell responds to a pattern of light in a particular orientation.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

15. Infants are born with the ability to control their visual attention.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Detailed Analysis of Shape

LEARNING OBJECTIVES: KALA.BIOP.16.05.07 - Describe research on how experiences alter development of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

Multiple Choice

16. The law of specific nerve energies states that \_\_\_\_.
- a. perception of a repeated stimulus fades
  - b. every stimulation of the optic nerve is perceived as light
  - c. the speed of action potentials varies depending on the strength of the stimulus
  - d. any stimulation above the threshold produces an action potential

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: General Principles of Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.01 - Remember that we see because light strikes the retina, sending a message to the brain.

TOPICS: 5.1 Visual Coding

17. According to the law of specific nerve energies, the brain tells the difference between one sensory modality and another by \_\_\_\_.
- a. which neurotransmitter is released
  - b. which neurons are active
  - c. the velocity of the action potentials
  - d. the amplitude of the action potentials

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: General Principles of Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.01 - Remember that we see because light strikes the retina, sending a message to the brain.

TOPICS: 5.1 Visual Coding

18. In the human retina, messages go from receptors at the back of the eye to \_\_\_\_.
- a. retina cells
  - b. bipolar cells
  - c. ganglion cells
  - d. spiny cells

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

19. Light enters the eye through an opening in the center of the iris called the \_\_\_\_.
- a. retina
  - b. cornea
  - c. pupil

- d. macula

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

20. Bipolar cells send their messages to \_\_\_\_, which are located close to the center of the eye.

- a. spiny cells
- b. cornea cells
- c. bipolar cells
- d. ganglion cells

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

21. Light from the right half of the world strikes which part of the retina?

- a. the left half
- b. the right half
- c. the whole retina equally
- d. It depends of the wavelength.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

22. In what order does visual information pass through the retina?

- a. receptor cells, ganglion cells, bipolar cells
- b. ganglion cells, bipolar cells, receptor cells
- c. receptor cells, bipolar cells, ganglion cells
- d. bipolar cells, receptor cells, ganglion cells

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

23. Various types of \_\_\_\_ cells refine the input to ganglion cells, enabling them to respond specifically to shapes, movement, or other visual features.

- a. receptors
- b. geniculate cells
- c. amacrine cells
- d. optic nerves

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

24. The optic nerve is composed of axons from which kind of cell?

- a. rods and cones
- b. bipolar cells
- c. horizontal cells
- d. ganglion cells

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

25. The name of the point at which the optic nerve leaves the retina is called the \_\_\_\_.

- a. blind spot
- b. fovea
- c. optic chiasm
- d. ganglion

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

26. Which statement characterizes the fovea?

- a. It has the greatest perception of detail.
- b. It surrounds the point of exit of the optic nerve.

- c. It falls in the shadow cast by the pupil.
- d. It has more rods than cones.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

27. If you want to see something in fine detail, you should focus the light on which part of your retina?

- a. the optic nerve
- b. the fovea
- c. an area containing mostly rods
- d. the cornea

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

28. The retinas of predatory birds such as hawks \_\_\_\_.

- a. have no discernible fovea
- b. have a greater density of receptors than do humans on the top half of the retina
- c. have a greater density of receptors than do humans on the bottom half of the retina
- d. are virtually indistinguishable from the retinas of humans

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

29. In vertebrate retinas, receptors send their messages \_\_\_\_.

- a. straight to the brain
- b. immediately to ganglion cells within the retina
- c. to bipolar cells within the retina
- d. to the periphery of the retina first, ganglion cells next, and bipolar cells last

ANSWER: c



DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.1 Visual Coding

30. Why does the fovea provide the clearest, most detailed visual information?

- a. It is closest to the pupil.
- b. It surrounds the optic nerve.
- c. It has tightly packed receptors.
- d. It contains many blood vessels for supplying energy.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

31. Which statement is TRUE with regard to peripheral vision?

- a. It is very sensitive to detail.
- b. It is easier to recognize single objects in the periphery that are not surrounded by other objects.
- c. It is not very sensitive to light.
- d. It is most sensitive to color, which helps to differentiate multiple objects clearly.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

32. In comparison to the rods, cones are more \_\_\_\_.

- a. common toward the periphery of the retina
- b. sensitive to detail
- c. sensitive to dim light
- d. common in rodents and other nocturnal animals

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

33. \_\_\_\_ are chemicals that release energy when struck by light.

- a. Phototransmitters
- b. Photosins
- c. Photopigments
- d. Photoions

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

34. Light energy converts 11-cis-retinal to \_\_\_\_.

- a. opsins
- b. unstable proteins
- c. all-trans-retinal
- d. sodium

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

35. Chemicals that release energy when struck by light are called \_\_\_\_.

- a. photo-optics
- b. photopigments
- c. opsins
- d. kestrels

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

36. In comparison to cones, rods \_\_\_\_.

- a. are more common toward the center of the retina
- b. are more sensitive to detail
- c. are more sensitive to dim light
- d. reach their peak firing levels slowly

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

37. Rods are to \_\_\_\_ as cones are to \_\_\_\_.

- a. the periphery; the fovea
- b. red; blue
- c. vertebrates; invertebrates
- d. reading text; reading road signs

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

38. \_\_\_\_ modify the \_\_\_\_ sensitivity to different wavelengths of light.

- a. Retinol; photopigments
- b. Opsins; retinol
- c. Photopigments; opsins
- d. Opsins; photopigments

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

39. Peripheral vision mainly depends upon \_\_\_\_.

- a. the fovea
- b. cones
- c. rods
- d. just a few receptors

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

40. Night-active species are more likely than day-active species to have \_\_\_\_.

- a. better peripheral vision
- b. larger blind spots
- c. a greater rod to cone ratio
- d. a greater cone to rod ratio

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Visual Receptors: Rods and Cones

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

41. Why do humans perceive faint light better in the periphery of the eye?

- a. Receptors in the periphery are closer to the pupil.
- b. The fovea is closer to the retina's blind spot than peripheral receptors.
- c. More receptors in the periphery than in the fovea funnel input to each ganglion cell.
- d. Ganglion cells in the periphery transmit their information to a larger brain area.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Eye and Its Connections to the Brain

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

42. Which receptors are responsible for the perception of color?

- a. cones only
- b. rods only
- c. both rods and cones
- d. horizontal and amacrine cells

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.02 - List the properties of cones and rods.

TOPICS: 5.1 Visual Coding

43. According to the trichromatic theory of color vision \_\_\_\_.

- a. there are only three rods and three cones in each eye
- b. there are only three colors of light in the world
- c. rods are important for perception of light colors

d. our perception of color depends on the relative activity of three types of cones

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

44. According to the Young-Helmholtz theory, what is the basis for color vision?

- a. a different receptor for each color
- b. three kinds of cones
- c. a single receptor that produces different responses for each color
- d. the combined influences of rods and cones

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

45. According to the trichromatic theory of color vision, the most important factor in determining the color we see is the \_\_\_\_.

- a. velocity of the action potential
- b. absolute activity of a single cone
- c. difference between cone and rod activity
- d. relative activity of short, medium, and long wavelengths

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

46. The fact that all colors on older televisions were created by combining only three different colors of light supports the \_\_\_\_ theory of color vision.

- a. CRT
- b. opponent process
- c. retinex
- d. trichromatic

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

47. At the level of rods and cones, the \_\_\_\_ theory seems to fit best, while at the level of the bipolar cells, the \_\_\_\_ theory seems to fit best.

- a. opponent process; volley
- b. volley; trichromatic
- c. opponent process; trichromatic
- d. trichromatic; opponent process

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

48. After you stare at a bright green object for a minute and look away, you see red. Which theory attempts to explain this finding?

- a. Young-Helmholtz theory
- b. trichromatic theory
- c. opponent-process theory
- d. color-constancy theory

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

49. Which theory of color vision is best able to explain negative color afterimages?

- a. retinex theory
- b. opponent-process theory
- c. trichromatic theory
- d. kodak theory

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

50. Color constancy is the ability to \_\_\_\_.

- a. perceive all wavelengths as the same color
- b. see color, even in very faint light
- c. differentiate among many colors and hues
- d. recognize the color of an object despite changes in lighting

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

51. Color and brightness constancy are best explained by the \_\_\_\_ theory of color vision.

- a. trichromatic
- b. opponent-process
- c. retinex
- d. constancy

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

52. According to the retinex theory, we perceive color by \_\_\_\_.

- a. the relative activity of three kinds of cones
- b. contrasting the activity in one area of the visual field with that of the others
- c. a red vs. green system and a yellow vs. blue system
- d. detecting the velocity of action potentials from the eye

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

53. Which theory can best explain why people that are wearing yellow-colored glasses can still identify the color of a green apple?

- a. trichromatic theory
- b. retinex theory
- c. opponent-process theory

d. kodak theory

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

54. Difficulty distinguishing between \_\_\_\_ and \_\_\_\_ is the most common form of color vision deficiency.

- a. blue; yellow
- b. green; blue
- c. red; green
- d. red; blue

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

55. The ability of some women to detect slightly finer discriminations of color than other women is most likely due to having \_\_\_\_.

- a. two types of long-wavelength cones
- b. more short-wavelength cones
- c. shorter optic nerves
- d. a larger cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision

LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

56. The most common form of color vision deficiency is due to \_\_\_\_.

- a. poor eyesight
- b. malformation of area V4 in the brain
- c. complete absence of one of the types of cones
- d. long- and medium-wavelength cones making the same photopigment

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Vision



LEARNING OBJECTIVES: KALA.BIOP.16.05.03 - Explain the main features of color vision.

TOPICS: 5.1 Visual Coding

57. \_\_\_\_ cells axons make up the optic nerve.

- a. Horizontal
- b. Amacrine
- c. Bipolar
- d. Ganglion

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

58. In foveal vision, \_\_\_\_.

- a. each ganglion cell excited by many receptors
- b. ganglion cells respond poorly to color vision
- c. ganglion cells respond well to dim light
- d. each ganglion cell is excited by a single cone

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

59. The optic nerves from the right and left eye initially meet at the \_\_\_\_.

- a. optic chiasm
- b. lateral geniculate nucleus
- c. hypothalamus
- d. cerebral cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

60. Where does the optic nerve send most of its information?

- a. directly to the cerebral cortex

- b. to the lateral geniculate
- c. to the superior colliculus
- d. directly to the occipital lobe

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

61. The lateral geniculate nucleus is part of the \_\_\_\_.

- a. cerebral cortex
- b. superior colliculus
- c. inferior colliculus
- d. thalamus

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

62. Branches of the optic nerve go directly to what areas of the brain?

- a. lateral geniculate and cerebral cortex
- b. superior colliculus and cerebral cortex
- c. lateral geniculate and superior colliculus
- d. prefrontal cortex and occipital lobe

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

63. In the visual system, the \_\_\_\_ and \_\_\_\_ constantly feed information back and forth.

- a. thalamus; cortex
- b. thalamus; inferior geniculate
- c. inferior colliculus; thalamus
- d. thalamus; lateral colliculus

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

64. Cutting the left optic nerve in front of the optic chiasm would result in blindness in the \_\_\_\_.

- a. right eye
- b. left eye
- c. peripheral vision of both eyes
- d. left visual field

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: An Overview of the Mammalian Visual System

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

65. The enhancement of contrast at the edge of an object is the result of \_\_\_\_.

- a. lateral inhibition in the retina
- b. the diffraction of light from the edge's surface
- c. fatigue of the rods and cones
- d. the color of the object

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Processing in the Retina

LEARNING OBJECTIVES: KALA.BIOP.16.05.05 - Explain lateral inhibition in terms of the connections among neurons in the retina.

TOPICS: 5.2 How the Brain Processes Visual Information

66. In the vertebrate retina, which cells are responsible for lateral inhibition?

- a. horizontal cells
- b. ganglion cells
- c. bipolar cells
- d. glial cells

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Processing in the Retina

LEARNING OBJECTIVES: KALA.BIOP.16.05.05 - Explain lateral inhibition in terms of the connections among neurons in the retina.

TOPICS: 5.2 How the Brain Processes Visual Information

67. Horizontal cells receive their input from \_\_\_\_, and they send output to \_\_\_\_.

- a. rods and cones; ganglion cells
- b. rods and cones; bipolar cells
- c. bipolar cells; ganglion cells
- d. cones; rods

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Processing in the Retina

LEARNING OBJECTIVES: KALA.BIOP.16.05.05 - Explain lateral inhibition in terms of the connections among neurons in the retina.

TOPICS: 5.2 How the Brain Processes Visual Information

68. Suppose someone has a genetic defect that prevents the formation of horizontal cells in the retina. Which visual phenomenon is most likely to be impaired?

- a. lateral inhibition
- b. movement perception
- c. dark adaptation
- d. size constancy

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Processing in the Retina

LEARNING OBJECTIVES: KALA.BIOP.16.05.05 - Explain lateral inhibition in terms of the connections among neurons in the retina.

TOPICS: 5.2 How the Brain Processes Visual Information

69. What is responsible for sharpening contrast at visual borders?

- a. receptive fields
- b. lateral inhibition
- c. retinal disparity
- d. the direction in which the light shines

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Processing in the Retina

LEARNING OBJECTIVES: KALA.BIOP.16.05.05 - Explain lateral inhibition in terms of the connections among neurons in the retina.

TOPICS: 5.2 How the Brain Processes Visual Information

70. The receptive field of a receptor is the \_\_\_\_.

- a. point at which the optic nerve exits the retina
- b. axon hillock
- c. point in space from which light strikes the receptor
- d. point where light shines on, and excites, the visual cortex

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

71. The point in space from which light strikes the receptor is called the \_\_\_\_.

- a. stimulus field
- b. convergence field
- c. receptive field
- d. bipolar area

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

72. The \_\_\_\_ of any neuron in the visual system is the area of the visual field that excites or inhibits it.

- a. stimulus field
- b. convergence field
- c. receptive field
- d. bipolar field

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

73. The ability to detect movement better than color in our peripheral vision is largely due to \_\_\_\_.

- a. magnocellular neurons in the periphery
- b. parvocellular neurons tightly packed in the periphery
- c. no cones in the periphery
- d. the strength of the eye muscles

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

74. Parvocellular neurons most likely receive input from \_\_\_\_.

- a. magnocellular neurons
- b. rods
- c. bipolar cells that receive input from cones
- d. the periphery of the retina

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

75. Being able to detect fine details of a color painting would depend most on which type of ganglion cells?

- a. parvocellular
- b. magnocellular
- c. koniocellular
- d. kodacellular

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

76. Axons from the lateral geniculate extend to which area of the cerebral cortex?

- a. precentral gyrus
- b. postcentral gyrus
- c. prefrontal cortex
- d. occipital lobe

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

77. The primary visual cortex sends its information \_\_\_\_.

- a. to the lateral geniculate nucleus
- b. to area V1
- c. to area V2
- d. back to the retina

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

78. Cortical area \_\_\_\_ appears to be where conscious visual perception occurs.

- a. V4
- b. V3
- c. V2
- d. V1

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

79. The primary visual cortex is also known as the \_\_\_\_.

- a. lateral geniculate nucleus
- b. striate cortex
- c. area V2
- d. parvocellular area

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

80. Visual information from the lateral geniculate area goes to the \_\_\_\_.

- a. retina
- b. primary visual cortex
- c. thalamus
- d. hypothalamus

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

81. Blindsight refers to \_\_\_\_.

- a. the ability to localize visual objects within an apparently blind visual field
- b. the ability to merge together information from both eyes even though they do not see the exact same picture
- c. improved hearing and touch in blind people
- d. the inability to see flashing light

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

82. Once information is sent to the secondary visual cortex, it \_\_\_\_.

- a. has reached its final processing destination
- b. may return to the primary visual cortex
- c. goes mostly to the primary motor cortex
- d. is sent back to the retina

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

83. Once within the cerebral cortex, the magnocellular pathway continues, with a ventral branch sensitive to \_\_\_\_.

- a. details of shape
- b. facial features
- c. movement
- d. brightness

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

84. Once within the cerebral cortex, the magnocellular pathway continues, with a dorsal branch important for \_\_\_\_.



- a. details of shape
- b. color and brightness
- c. movement
- d. integrating vision with action

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

85. Once within the cerebral cortex, a mixed pathway of magnocellular and parvocellular cells is important for \_\_\_\_.

- a. brightness and color
- b. integrating vision with action
- c. details of shape
- d. distinguishing facial features

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Further Processing

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

86. The visual paths in the temporal cortex collectively are referred to as the \_\_\_\_.

- a. ventral stream
- b. dorsal stream
- c. lateral stream
- d. magnoparvocellular pathway

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventral and Dorsal Paths

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: KALA.BIOP.16.05.04

87. The visual path in the parietal cortex is referred to as the \_\_\_\_.

- a. ventral stream
- b. dorsal stream
- c. parvocellular pathway
- d. magnocellular pathway

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventral and Dorsal Paths

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

88. Damage to the ventral stream may interfere with \_\_\_\_.

- a. the ability to describe the shape or size of an object
- b. walking toward something seen
- c. reaching to grasp an object
- d. perceiving whether the lights are on or off

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventral and Dorsal Paths

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

89. Damage to the dorsal stream may interfere with \_\_\_\_.

- a. describing what is seen
- b. perceiving the movement of an object
- c. remembering something seen at a previous time
- d. reaching out to grasp an object

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Ventral and Dorsal Paths

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

90. What is the shape of the receptive field to which a simple cell in the primary visual cortex responds?

- a. circle of a particular radius
- b. circle with a hole in the middle
- c. bar in a particular orientation
- d. bar of a particular length

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

91. What type of cell responds to a pattern of light in a particular orientation anywhere within its large receptive field, regardless of the exact location of the stimulus?

- a. simple
- b. complex
- c. bipolar
- d. ganglion

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

92. Which cell responds most strongly to a stimulus moving perpendicular to its axis?

- a. simple
- b. complex
- c. lateral geniculate
- d. ganglion

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

93. What is one way to determine whether a given cell in the primary visual cortex is "simple" or "complex"?

- a. the shape of its receptive field
- b. whether its receptive field is monocular or binocular
- c. whether it can respond equally to lines in more than one location
- d. whether it is sensitive to the orientation of the stimulus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

94. The one additional feature that hypercomplex cells have that complex cells do not is that hypercomplex cells \_\_\_\_.

- a. respond to their receptive field faster
- b. have a strong inhibitory area at one end of its receptive field
- c. have receptive fields that are triangular
- d. respond to bars of light in more than one orientation

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

95. \_\_\_\_ respond to a particular feature of a stimulus.

- a. Hypercomplex cells
- b. Magnocellular cells
- c. Feature detectors
- d. Shape detectors

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

96. V1 neurons would be most strongly activated by viewing \_\_\_\_.

- a. the letter T
- b. a circle
- c. repeating stripes on a flag
- d. a single bar of light

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

97. Which structure has the largest receptive fields and the greatest preferential sensitivity to highly complex visual patterns, such as faces?

- a. inferior temporal cortex
- b. superior colliculus
- c. lateral geniculate
- d. striate cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

98. Cells in the inferior temporal cortex that are sensitive to a particular shape are also likely to respond to the shape's \_\_\_\_.

- a. figure-ground reversal
- b. color
- c. motion
- d. mirror-reversal

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Primary Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.06 - Define and give examples of receptive fields.

TOPICS: 5.2 How the Brain Processes Visual Information

99. An inability to recognize objects despite otherwise satisfactory vision is called \_\_\_\_.

- a. visual agnosia
- b. blindsight
- c. prosopagnosia
- d. hemianopsia

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Detailed Analysis of Shape

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

100. To what does "shape constancy" refer?

- a. All neurons within a single column have the same shape of dendritic tree.
- b. We can recognize objects even at different orientations.
- c. Objects described from memory appear more symmetrical than in reality.
- d. We see certain shapes the same way throughout our lives regardless of age.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Detailed Analysis of Shape

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

101. A person with visual agnosia is unable to \_\_\_\_.

- a. perceive colors
- b. point to objects
- c. recognize visual objects
- d. see

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Detailed Analysis of Shape

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

102. Someone with prosopagnosia has difficulty with \_\_\_\_.

- a. focusing on colored objects
- b. seeing items located in the left visual field
- c. recognizing faces
- d. processing information from more than one sensory modality at a

time

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Detailed Analysis of Shape

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

103. In addition to having difficulty recognizing faces, people with prosopagnosia may have difficulty \_\_\_\_.

- a. reading
- b. with all types of memory
- c. recognizing colors
- d. recognizing different kinds of plants and animals

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Detailed Analysis of Shape

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

104. Area \_\_\_\_ is particularly important for color constancy.

- a. V1
- b. V2
- c. V3
- d. V4

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Color Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

105. When cells in the middle temporal cortex respond to visual stimuli, their response depends mostly on the \_\_\_\_.

- a. speed and direction of movement
- b. exact shape of the object
- c. color and brightness of the object
- d. exact location of the object in visual space

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Motion Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

106. Damage to the magnocellular pathway would most likely lead to the loss of \_\_\_\_.

- a. color vision
- b. shape perception
- c. color constancy
- d. motion perception

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Motion Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

107. Which of the following would be easiest for someone who is motion blind?

- a. dressing themselves
- b. driving a car
- c. taking the dog for a walk
- d. filling a pitcher with water

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Motion Perception

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

108. Human newborns come into the world predisposed to pay more attention to \_\_\_\_ than any other stationary displays.

- a. toys
- b. balloons
- c. faces
- d. dogs

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Detailed Analysis of Shape

LEARNING OBJECTIVES: KALA.BIOP.16.05.07 - Describe research on how experiences alter development of the visual cortex.

TOPICS: 5.3 Parallel Processing in the Visual Cortex

109. Cortical neurons in the visual cortex of a kitten or a cat will lose the ability to respond to stimuli in one eye if the eye is sutured shut for \_\_\_\_.

- a. the first week after birth
- b. the first month of life
- c. any two month period in adult life
- d. the third and fourth months of life

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Development of the Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.07 - Describe research on how experiences alter development of the visual cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

110. Stereoscopic depth perception requires the brain to detect \_\_\_\_.

- a. amblyopia
- b. retinal disparity



- c. strabismus
- d. contrasting imagery

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Development of the Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

111. In depth perception, different views are received by each eye, depending on the distance of the object being viewed. What is this called?

- a. retinal disparity
- b. amblyopic differential
- c. astigmatic contrast
- d. contrasting imagery

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Development of the Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.04 - Trace the route of visual information from the retina to the cerebral cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

112. What is strabismus?

- a. a failure of the two eyes to focus on the same thing at the same time
- b. a blurring of vision caused by asymmetrical curvature of the eye
- c. stereoscopic depth perception
- d. the ability to perceive a flashing light as if it were a moving object

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Development of the Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

113. Astigmatism refers to the \_\_\_\_.

- a. sensitive period for development of vision
- b. ability to see horizontal and vertical lines
- c. asymmetric curvature of eyes
- d. inability to detect motion

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Development of the Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.08 - Discuss specific deficits, such as impaired facial recognition or impaired motion perception, that can occur after damage to parts of the visual cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

114. Infants with cataracts need to have surgical repair \_\_\_\_.

- a. as early as possible
- b. before they begin school
- c. if it does not fix itself
- d. when they are old enough to recover from surgery

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Development of the Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.07 - Describe research on how experiences alter development of the visual cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

115. What would be the likely outcome of a person who was blind at birth, and had vision restored later in life by the removal of cataracts (clouded lenses)?

- a. quick development of normal vision
- b. trouble describing the shapes of objects
- c. trouble identifying the location of light
- d. inability to use touch and sound cues to maneuver around in a building

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Development of the Visual Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.05.07 - Describe research on how experiences alter development of the visual cortex.

TOPICS: 5.2 How the Brain Processes Visual Information

True / False

1. The amplitude of a sound wave is its intensity.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

2. The pinna helps us identify the location of a sound.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

3. According to the place theory, the basilar membrane resembles the strings of a piano in that each area along the membrane is tuned to a specific frequency.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

4. The structures within the ear amplify the sound waves coming into the ear.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

5. Amusia refers to impaired detection of frequency changes.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

6. Surrounding the primary auditory cortex are additional auditory areas, in which cells respond more to changes in sounds than to any prolonged sound.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

7. Phase differences are useful for detecting localization of low frequency sounds.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound Localization

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

8. Conductive deafness is primarily a problem with the auditory nerve.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Hearing Loss

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

9. The vestibular organ consists of the saccule, utricle, and three semicircular canals.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Vestibular Sensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

10. Following exposure to painful stimuli, brain activation is limited to the somatosensory cortex.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

11. The Pacinian corpuscle detects sudden displacements or high-frequency vibrations on the skin.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Vestibular Sensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

12. Itching appears to be a type of pain message.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Itch

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

13. There are hundreds of different types of olfactory receptors.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Olfaction

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

14. Taste receptors are continually being replaced.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

15. Adaptation occurs quickly to pheromones.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Pheromones

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

### Multiple Choice

16. What is the intensity of a sound wave called?

- a. frequency
- b. loudness
- c. amplitude
- d. tone

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

17. The \_\_\_\_ of a sound is the number of compressions per second.

- a. pitch
- b. frequency
- c. amplitude
- d. loudness

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

18. What is the perception of the intensity of a sound wave called?

- a. pitch
- b. frequency
- c. amplitude
- d. loudness

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

19. Pitch is a perception related to which aspect of sound?

- a. amplitude
- b. frequency
- c. intensity
- d. across-fiber pattern coding

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

20. What occurs to a tone as the frequency increases?

- a. Pitch gets higher.
- b. Pitch gets lower.
- c. Loudness increases.
- d. Loudness decreases.

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

21. Loudness is to \_\_\_\_ as pitch is to \_\_\_\_.

- a. frequency; intensity

- b. amplitude; frequency
- c. pitch; tone
- d. amplitude; intensity

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

22. The structure that we commonly refer to as the ear (on the outside of the head) is formally known as the \_\_\_\_.

- a. tympanic membrane
- b. stapes
- c. pinna
- d. malleus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

23. The eardrum is also known as the \_\_\_\_.

- a. pinna
- b. ossicle
- c. tympanic membrane
- d. cochlea

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

24. The eardrum vibrates at \_\_\_\_.

- a. a much higher frequency than the sound waves that hit it
- b. half the frequency of the sound waves that hit it
- c. the same frequency as the sound waves that hit it
- d. a constant frequency regardless of the frequency of the sound

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear



LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

25. The tympanic membrane connects to three tiny bones that transmit the vibrations to the \_\_\_\_.

- a. cochlea
- b. pinna
- c. oval window
- d. hair cells

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

26. Vibrations in the fluid of the cochlea causes \_\_\_\_.

- a. movement of the pinna
- b. hair cells to displace
- c. vibrations of the eardrum
- d. vestibular input

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

27. Three small bones connect the tympanic membrane to the oval window. What is the function of these bones?

- a. They hold the tympanic membrane in place.
- b. They convert airwaves into waves of greater pressure.
- c. They spread out the air waves over an area of larger diameter.
- d. They change the frequency of air waves into lower frequencies that

can be heard.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

28. Why is it important for sound vibrations to be amplified as they pass through the ear?

- a. The inner membrane gets less sensitive with age.
- b. More force is needed to create waves in fluid.
- c. Much of the vibration is lost in the eardrum.
- d. Too much is lost through friction.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

29. The scala vestibuli makes up part of the \_\_\_\_.

- a. tympanic membrane
- b. cochlea
- c. middle ear
- d. ossicles

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

30. The scala media makes up part of the \_\_\_\_.

- a. tympanic membrane
- b. middle ear
- c. cochlea
- d. ossicles

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

31. In the auditory system, hair cells are specialized receptors that respond to \_\_\_\_.

- a. mechanical displacement
- b. electromagnetic energy
- c. chemicals
- d. vestibular input

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

32. Where are the auditory receptor cells located?

- a. in the semicircular canal
- b. on the tympanic membrane
- c. on the basilar membrane
- d. in the malleus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

33. How do sound waves ultimately result in the production of receptor potentials?

- a. The tectorial membrane squeezes the auditory nerve.
- b. The basilar membrane releases neurotransmitters.
- c. Hair cells in the cochlea vibrate, causing ion channels to open in their membrane.
- d. The scala vestibuli has receptors that create action potentials.

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Sound and the Ear

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

34. According to the frequency theory, the \_\_\_\_.

- a. tectorial membrane vibrates in synchrony with the auditory nerve
- b. auditory nerve is responsible for perception of sound but not loudness
- c. basilar membrane vibrates in synchrony with a sound, producing action potentials at the same frequency
- d. basilar membrane is tuned to a specific frequency and vibrates whenever that frequency is present

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

35. Perception of a low tone is to \_\_\_\_ as perception of a high tone is to \_\_\_\_.

- a. volley principle; frequency theory
- b. frequency theory; place theory
- c. place theory; volley principle
- d. gate theory; frequency theory

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

36. What is the major problem for the frequency theory of sound perception?

- a. It cannot account for perception of low pitch sounds.
- b. It cannot account for perception of low amplitude sounds.
- c. It requires the cochlea to vibrate, and it does not.
- d. It requires that neurons respond as quickly than they are able to do.

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

37. The fact that the refractory period limits the firing rate of a neuron is problematic for which of the following?

- a. frequency theory only
- b. place theory only
- c. volley theory only
- d. both the frequency theory and the place theory

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

38. The fact that the various parts of the basilar membrane are tightly bound together is problematic for which of the following?

- a. frequency theory only
- b. place theory only
- c. volley theory only
- d. both the frequency theory and the place theory

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

39. The current view of how we perceive sounds less than 100 Hz is based on \_\_\_\_.

- a. the frequency of action potentials
- b. the area along the basilar membrane that responds most strongly
- c. volleys of responses
- d. the asymmetrical positioning of an individual's ears

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

40. The current view of how we perceive high frequencies is based on \_\_\_\_.

- a. the frequency of responses by each auditory neuron
- b. volleys of responses by many auditory neurons
- c. where along the basilar membrane neurons fire most rapidly
- d. the ratio of firing among three types of receptors

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

41. The ability to hear a note and identify it perfectly is called \_\_\_\_.

- a. ultimate pitch
- b. sharp pitch
- c. tonal pitch
- d. absolute pitch

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Pitch Perception

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

42. Most auditory information is sent to which hemisphere of the brain?

- a. the ipsilateral side
- b. the contralateral side
- c. the left hemisphere
- d. It depends on whether the individual is dominant for audition in the right or the left hemisphere

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

43. To what lobe of the cerebral cortex is auditory information sent?

- a. occipital
- b. temporal
- c. parietal
- d. frontal

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

44. A tonotopic map refers to a(n) \_\_\_\_.

- a. auditory cortex map of sounds
- b. diagram of which kinds of sounds are most common in different parts of the world
- c. diagram comparing the different tones to which different species are sensitive
- d. map showing connections between the auditory cortex and the visual cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

45. Damage to the primary auditory cortex results in \_\_\_\_.

- a. difficulty in responding to sequences of sounds
- b. complete deafness
- c. tone deafness
- d. inability to hear sounds other than one's own voice

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

46. Patients with damage in area MT have problems with perception of \_\_\_\_.

- a. location of sounds
- b. location of objects
- c. movement of objects and sounds
- d. high frequency sounds

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

47. Visual imagery is to \_\_\_\_ as auditory imagery is to \_\_\_\_.

- a. A1; A1
- b. V1; V1
- c. area MT; A1
- d. V1; A1

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

48. Areas bordering the primary auditory cortex are important for \_\_\_\_.

- a. detecting loudness of sounds

- b. analyzing the meaning of sounds
- c. determining location of sounds
- d. detecting pitch of sounds

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

49. Conductive deafness is also known as \_\_\_\_.

- a. nerve deafness
- b. middle ear deafness
- c. inner ear deafness
- d. outer ear deafness

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Hearing Loss

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

50. What kind of deafness is the result of damage to the cochlea or the hair cells?

- a. conductive
- b. nerve
- c. temporary
- d. hysterical

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Hearing Loss

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

51. Damage to V1 produces \_\_\_\_ and damage to A1 produces \_\_\_\_.

- a. blindness; complete deafness
- b. complete deafness; blindness
- c. blindness; deafness to complex sounds
- d. blindness; ringing in the ears

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Auditory Cortex



LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

52. Which of the following is true for nerve deafness?

- a. It is usually temporary.
- b. It often can be corrected by surgery.
- c. It will involve a normal cochlea and auditory nerve.
- d. It can result from damage to the cochlea.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Hearing Loss

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

53. Tinnitus may be \_\_\_\_.

- a. suffered by those with conductive deafness
- b. seen in the very young
- c. due to a phenomenon like the phantom limb
- d. due to differential loudness

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Hearing Loss

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.1 Audition

54. What sound characteristics can be compared between the two ears to locate the source of the sound?

- a. sound shadows and frequency
- b. frequency and amplitude
- c. loudness and timing
- d. timbre and rhythm

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound Localization

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

55. Humans localize low frequencies by \_\_\_\_ differences and high frequencies by \_\_\_\_ differences.

- a. timing; phase
- b. loudness; phase
- c. phase; timing
- d. phase; loudness

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound Localization

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

56. Timing differences can be used most accurately for localizing \_\_\_\_.

- a. sudden-onset sounds
- b. gradual-onset sounds
- c. loud sounds
- d. bird alarm calls

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound Localization

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

57. A sound shadow refers to \_\_\_\_.

- a. out of phase sound waves
- b. in phase sound waves
- c. the time it takes sound waves to reach the ears
- d. how much louder a high-frequency sound is for the ear closest to the sound

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Sound Localization

LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.

TOPICS: 7.1 Audition

58. In terms of sound localization, low frequencies are to \_\_\_\_ differences, as high frequencies are to \_\_\_\_ differences.

- a. timing; phase
- b. loudness; phase
- c. phase; timing

d. phase; loudness  
ANSWER: d  
DIFFICULTY: Bloom's: Understand  
REFERENCES: Sound Localization  
LEARNING OBJECTIVES: KALA.BIOP.16.06.02 - Explain the mechanisms of pitch perception and sound localization.  
TOPICS: 7.1 Audition

59. What does the vestibular system detect?

- a. the degree of stretch of muscles
  - b. vibrations on the skin
  - c. the location of sounds
  - d. movement of the head
- ANSWER: d

DIFFICULTY: Bloom's: Understand  
REFERENCES: Vestibular Sensation  
LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.  
TOPICS: 7.2 The Mechanical Senses

60. Which ability would be most impaired with damage to the vestibular senses?

- a. writing
  - b. hearing
  - c. visually tracking an object while dancing
  - d. discriminating salt from sugar
- ANSWER: c

DIFFICULTY: Bloom's: Analyze  
REFERENCES: Vestibular Sensation  
LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.  
TOPICS: 7.2 The Mechanical Senses

61. In the otolith organs, the otoliths are calcium carbonate particles that \_\_\_\_.

- a. push against hair cells when moved
  - b. vibrate with different frequencies
  - c. stabilize the semicircular canals
  - d. enhance sound localization
- ANSWER: a

DIFFICULTY: Bloom's: Understand  
REFERENCES: Vestibular Sensation  
LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.  
TOPICS: 7.2 The Mechanical Senses

62. An acceleration of the head at any angle causes \_\_\_\_.

- a. the jelly-like substance in one of the semicircular canals to move to another canal
- b. the jelly-like substance in one of the semicircular canals to push against hair cells
- c. fluid to spill out from the otolith organs into the semicircular canals
- d. hair cells to become stiff and straight

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Vestibular Sensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

63. Which two structures provide information about vestibular sensation?

- a. cochlea and otolith organs
- b. semicircular canals and cochlea
- c. semicircular canals and otolith organs
- d. cerebellum and sinuses

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Vestibular Sensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

64. The eighth cranial nerve contains both a(n) \_\_\_\_ component and a \_\_\_\_ component.

- a. vestibular; somatosensory
- b. visual; vestibular
- c. auditory; taste
- d. auditory; vestibular

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Vestibular Sensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

65. What kind of receptors detect pain, warmth, and cold?

- a. cranial

- b. semicircular
- c. vestibular
- d. somatosensory

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

66. The somatosensory system involves sensation of \_\_\_\_.

- a. sight and sound
- b. sound and touch
- c. the body and its movements
- d. the head and movements of the eyes

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

67. Meissner's corpuscles are \_\_\_\_.

- a. elaborate neuron endings for touch
- b. simple, bare neuron endings
- c. bare endings surrounded by non-neural cells
- d. important components of the blood

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

68. Ruffini's endings are \_\_\_\_.

- a. elaborate neuron endings for touch
- b. simple, bare neuron endings
- c. bare endings surrounded by non-neural cells
- d. important components of the blood

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

69. Pain receptors of the skin are \_\_\_\_.

- a. elaborate neuron endings
- b. also known as Ruffini endings
- c. simple, bare neuron endings
- d. also known as Meissner's corpuscles

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

70. Pacinian corpuscles respond best to \_\_\_\_.

- a. rapid mechanical pressure
- b. low frequency sounds
- c. horizontal head movements
- d. slow mechanical movements

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

71. Stimulation of a touch receptor opens \_\_\_\_ channels in the axon.

- a. choline
- b. potassium
- c. sodium
- d. calcium

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

72. When mechanical pressure bends the membrane of a Pacinian corpuscle, \_\_\_\_.

- a. the membrane's resistance to the flow of sodium ions increases

- b. the membrane's resistance to the flow of sodium ions decreases
- c. the membrane becomes hyperpolarized
- d. there is a sustained, long-term response to this pressure

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

73. What is a dermatome?

- a. an area of the skin innervated by a given spinal nerve
- b. an instrument used to record impulses in the spinal cord
- c. the point at which sensory nerves make contact with motor nerves
- d. an area of the skin that has no touch receptors

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

74. Each spinal nerve has \_\_\_\_.

- a. either a sensory or a motor component
- b. both a sensory and a motor component
- c. connections to most parts of the body
- d. connections to each of the major internal organs

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

75. Somatosensory information travels from the thalamus to which area of the cortex?

- a. parietal lobe
- b. frontal lobe
- c. hippocampus
- d. limbic cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

76. Along each strip of somatosensory cortex, different sub-areas respond to \_\_\_\_.

- a. different types of receptors
- b. different areas of the body
- c. different parts of the cortex
- d. different types of transmitters

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

77. An individual with damage to the primary somatosensory cortex would most have problems with \_\_\_\_.

- a. memory
- b. hearing
- c. ability to locate where they are being touched
- d. balance

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

78. Which statement is TRUE of various types of somatosensation?

- a. They are produced by varied responses by a single type of receptor.
- b. They involve different receptors, but the spinal cord integrates the information
- c. They remain separate through the spinal cord, but are interpreted by a single set of cortical neurons.
- d. They are at least partly distinct all the way from the receptors to the cerebral cortex.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Somatosensation

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses



79. What neurotransmitter is released by axons that carry pain information to the brain?

- a. dopamine
- b. serotonin
- c. substance P
- d. enkephalin

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

80. The \_\_\_\_ nucleus of the thalamus is associated with pain perception of the body.

- a. anterior
- b. posterior
- c. ventral posterior
- d. ventral lateral

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

81. A mild degree of pain releases the neurotransmitter \_\_\_\_\_. A more intense pain also releases \_\_\_\_\_.

- a. glutamate; substance P
- b. GABA; substance P
- c. glutamate; dopamine
- d. GABA; dopamine

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

82. A mild pain stimulus is associated with a release of \_\_\_\_\_.

- a. substance P
- b. substance P and glutamate

- c. glutamate
- d. neuromodulators

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

83. The sensory aspect of pain activates the \_\_\_\_ cortex, whereas the emotional aspect activates the \_\_\_\_ cortex.

- a. cingulate; somatosensory
- b. somatosensory; cingulate
- c. fusiform; premotor
- d. premotor; fusiform

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.03 - Compare physical and emotional pain.

TOPICS: 7.2 The Mechanical Senses

84. The brain chemicals known as endorphins produce effects similar to which substance?

- a. vitamin B-1 (thiamine)
- b. substance P
- c. opiates
- d. amphetamines

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.04 - Describe methods of relieving pain.

TOPICS: 7.2 The Mechanical Senses

85. Morphine and other opiate drugs decrease sensitivity to pain by \_\_\_\_.

- a. depleting substance P from parts of the nervous system
- b. mimicking the effects of endorphins at the synapses
- c. preventing sodium from crossing the membrane
- d. altering blood flow to various parts of the nervous system

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.04 - Describe methods of relieving pain.

TOPICS: 7.2 The Mechanical Senses

86. What process is predicted by the gate theory of pain?

- a. Pain information grows more intense as it passes each synapse on its way to the brain.
- b. Non-pain information can inhibit pain information.
- c. Intense pain can shut out all other sensory information.
- d. The intensity of pain experience depends entirely on the excitability of pain receptors.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.04 - Describe methods of relieving pain.

TOPICS: 7.2 The Mechanical Senses

87. Morphine is effective in relieving \_\_\_\_.

- a. pain on the skin
- b. sharp pain
- c. slow, dull pain
- d. pain in the interior of the body

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.04 - Describe methods of relieving pain.

TOPICS: 7.2 The Mechanical Senses

88. Studies with placebos and studies using hypnotism suggest that much of the reduction in pain is the result of decreased activation in the \_\_\_\_.

- a. emotion areas of the brain
- b. hypothalamus
- c. spinal cord
- d. somatosensory areas of the cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.04 - Describe methods of relieving pain.

TOPICS: 7.2 The Mechanical Senses

89. Large-diameter pain axons \_\_\_\_.
- a. carry sharp pain information
  - b. carry dull pain information
  - c. readily respond to endorphins
  - d. are associated with small cell bodies

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

90. Anti-inflammatory drugs, such as ibuprofen, relieve pain by \_\_\_\_.
- a. reducing the release of chemicals from damaged tissues
  - b. dulling the pain information
  - c. blocking synapses
  - d. numbing the damaged tissue

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Pain

LEARNING OBJECTIVES: KALA.BIOP.16.06.04 - Describe methods of relieving pain.

TOPICS: 7.2 The Mechanical Senses

91. Itching is primarily the result of \_\_\_\_.
- a. bad circulation
  - b. baby powder
  - c. histamine release
  - d. substance P release

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Itch

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

92. Most theorists believe that the first sensory system was \_\_\_\_.
- a. vision
  - b. vestibular
  - c. pain
  - d. chemical

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Introduction

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

93. A distinctive feature of itch is that it relies on \_\_\_\_.

- a. axons that go directly from the skin to the cerebral cortex
- b. axons that make several synapses before reaching the spinal cord
- c. unusually fast axons
- d. unusually slow axons

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Itch

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.2 The Mechanical Senses

94. One difference between labeled-line coding and across-fiber pattern coding is that labeled-line is \_\_\_\_.

- a. only found in vertebrates
- b. less versatile
- c. more complicated
- d. slower

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Chemical Coding

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

95. Each receptor responds to a wide range of stimuli and contributes to the perception of each of them. This type of coding is referred to as \_\_\_\_.

- a. across-fiber
- b. labeled-line
- c. hierarchical
- d. reciprocal-excitatory

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Chemical Coding

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

96. Each receptor responds to a limited range of stimuli and sends a direct line to the brain. This type of coding is referred to as \_\_\_\_.

- a. across-fiber
- b. labeled-line
- c. vestibular
- d. hierarchical

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Chemical Coding

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

97. Taste and smell axons converge onto many of the same cells in an area called the \_\_\_\_.

- a. frontal cortex
- b. striate cortex
- c. insular cortex
- d. endopiriform cortex

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

98. The receptors for taste are \_\_\_\_.

- a. true neurons
- b. covered in myelin
- c. modified skin cells
- d. modified blood cells

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

99. In adult humans, the taste buds are \_\_\_\_.

- a. evenly distributed across the front half of the tongue
- b. evenly distributed across the whole tongue

- c. concentrated near the center of the tongue
- d. concentrated along the outside edge of the tongue

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

100. Reduced response to one taste after exposure to another is referred to as \_\_\_\_.

- a. adaptation
- b. cross-adaptation
- c. umami
- d. PTC

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

101. Taste perception in the brain depends on \_\_\_\_.

- a. relative activity of different taste neurons
- b. absolute frequency of action potentials
- c. only taste receptors on the anterior part of the tongue
- d. the angular gyrus

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

102. Chemicals that prevent sodium from crossing the membrane \_\_\_\_.

- a. intensify the salty taste
- b. do not affect taste
- c. reduce the intensity of salty tastes
- d. cause an increase in sensitivity to other primary tastes

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

103. We can identify a wide variety of bitter substances because \_\_\_\_.

- a. we have many different bitter receptors
- b. we have only one bitter receptor that responds to all bitter substances
- c. we can combine the activity of the sour and salty receptors
- d. even Pacinian corpuscles respond to bitter substances

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

104. The taste nerves initially project to the \_\_\_\_.

- a. nucleus of the tractus solitarius
- b. cerebral cortex
- c. hypothalamus
- d. orbital prefrontal cortex

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

105. If you are a supertaster, then \_\_\_\_.

- a. you require high concentrations of a particular taste to be able to identify it
- b. you have more fungiform papillae in the center of your tongue
- c. you are more sensitive than the average person to nearly all tastes
- d. your ability to taste makes up for your lack of ability to identify odors by smell

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Taste

LEARNING OBJECTIVES: KALA.BIOP.16.06.05 - Discuss individual differences in taste and olfaction.

TOPICS: 7.3 The Chemical Senses

106. Olfaction also plays a subtle role in \_\_\_\_.

- a. sleeping



- b. social behavior
- c. touch sensation
- d. vestibular sensation

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Olfaction

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

107. How many kinds of olfactory receptors do we have?

- a. two or three
- b. seven
- c. twenty
- d. hundreds

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Olfaction

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

108. Olfactory information is coded in receptor cells through \_\_\_\_.

- a. a different ratio of firing across three types of olfactory cells
- b. a different ratio of firing across six types of olfactory cells
- c. hundreds of types of receptor molecules, each responsive to a different chemical
- d. chemicals in the air that are transported to the olfactory cortex

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Olfaction

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

109. Olfactory receptors carry their message to the \_\_\_\_.

- a. cochlea
- b. NTS.
- c. insular cortex
- d. olfactory bulb

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Olfaction

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

110. The vomeronasal organ (VNO) is a set of receptors located \_\_\_\_.

- a. in the inner ear
- b. near, but separate from, the olfactory receptors
- c. in the throat
- d. behind the cerebral ventricles

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Pheromones

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

111. What is unusual about olfactory receptors compared to most other mature mammalian neurons?

- a. They have more than one axon each.
- b. They have no axons.
- c. They are replaceable when old neurons die.
- d. They use more than one neurotransmitter.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Olfaction

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

112. Many women living in a college dormitory will gradually begin to synchronize their menstrual cycles. The research indicates that this is, at least in part, based on \_\_\_\_.

- a. sound
- b. sight
- c. pheromones
- d. other daily rituals

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Pheromones

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

113. Repeated exposure to male pheromones may be associated with \_\_\_\_ in young women who are not sexually active.

- a. more regular menstrual cycles
- b. sweating
- c. increased olfactory capabilities
- d. increased appetite

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Pheromones

LEARNING OBJECTIVES: KALA.BIOP.16.06.01 - Describe the receptors for hearing, vestibular sensation, the somatic senses, and the chemical senses.

TOPICS: 7.3 The Chemical Senses

114. One hypothesis of synesthesia is that \_\_\_\_.

- a. all of the axons from one cortical area have more branches into that cortical area.
- b. all of the axons from one cortical area have branches into another cortical area.
- c. some of the axons from one cortical area have branches into another cortical area.
- d. some of the axons from one cortical area have more branches into that cortical area.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Synesthesia

LEARNING OBJECTIVES: KALA.BIOP.16.06.06 - Define and describe synesthesia.

TOPICS: 7.3 The Chemical Senses

115. A person who "sees" spoken language or music may be experiencing \_\_\_\_.

- a. synesthesia
- b. amnesia
- c. anesthesia
- d. aphasia

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Synesthesia

LEARNING OBJECTIVES: KALA.BIOP.16.06.06 - Define and describe synesthesia.

TOPICS: 7.3 The Chemical Senses

Chapter 7  
True / False

1. A striated muscle controls movement of the body in relation to the environment.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movements

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

2. In skeletal muscles, every axon releases dopamine.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movements

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

3. Taking a drug that blocks acetylcholine receptors would be helpful for a person with myasthenia gravis.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movements

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

4. Activation of the Golgi tendon organs results in contraction of the muscle.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movements

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

5. Infants have several reflexes not seen in adults.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

6. Most types of movement can be clearly classified as voluntary or involuntary.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

7. Central pattern generators are most likely to be found in the spinal cord.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

8. A fixed sequence of movements is called a motor program.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

9. The motor cortex can become active when imagining movement.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

10. People with severe spinal cord injury continue to produce normal activity in the motor cortex when they want to move.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

11. The prefrontal cortex plans movements according to their probable outcomes.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

12. The supplementary motor cortex is mainly active when preparing for an organized sequence of movements.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

13. Mirror neurons are active both during preparation for a movement and while watching someone else perform the same or a similar movement.

- a. True
- b. False

ANSWER: True

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

14. Brain transplants for Parkinson's patients have generally been very successful.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

15. In Huntington's disease, earlier onset is associated with slower deterioration over time.

- a. True
- b. False

ANSWER: False

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

### Multiple Choice

16. What type of muscle controls movements of the heart?

- a. smooth
- b. striated
- c. cardiac
- d. antagonistic

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

17. What type of muscle controls movements of internal organs?

- a. smooth
- b. striated
- c. cardiac
- d. antagonistic

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them

TOPICS: 7.1 The Control of Movement

18. What type of muscle is responsible for the movement of your body through the environment?

- a. smooth
- b. striated
- c. cardiac
- d. syncarpous

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

19. What is the relationship between the motor neuron axons and muscle fibers?

- a. Each axon innervates only one muscle fiber.
- b. The more muscle fibers a single axon innervates, the more precise the movements.
- c. The more axons which innervate a single muscle fiber, the more precise the movements.
- d. The fewer muscle fibers a single axon innervates, the more precise the movements.

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement



20. The eye muscles can be moved with greater precision than the biceps muscles because \_\_\_\_.

- a. biceps have only slow-twitch muscles
- b. biceps have only fast-twitch muscles
- c. biceps are opposed by an antagonistic muscle; the eye muscles are not
- d. eye muscles have a lower ratio of muscle fibers to axons

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

21. What is the name given to the synapse where a motor neuron's axon meets a muscle fiber?

- a. neuromuscular junction
- b. polar junction
- c. muscle spindle
- d. neurofiber synapse

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

22. Moving a leg or arm back and forth requires opposing sets of muscles called \_\_\_\_.

- a. extensor muscles
- b. flexor muscles
- c. cardiac muscles
- d. antagonistic muscles

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

23. The absence of acetylcholine will cause a muscle to \_\_\_\_.

- a. relax
- b. contract

- c. fatigue
- d. stretch

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

24. Which muscle is "antagonistic" to a flexor muscle in the right arm?

- a. a flexor muscle in the right arm
- b. an extensor muscle in the left arm
- c. an extensor muscle in the right arm
- d. another flexor muscle in the right arm

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

25. The eye muscles have a ratio of about \_\_\_\_ axon(s) per \_\_\_\_ muscle fiber(s).

- a. two; three
- b. one; three
- c. three; two
- d. three; one

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

26. The biceps muscles of the arm have a ratio of \_\_\_\_ to more than a hundred fibers.

- a. four
- b. three
- c. one
- d. two

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

27. In movement, the \_\_\_\_ muscle straightens the arm.

- a. flexor
- b. striated
- c. extensor
- d. skeletal

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

28. A fish will adjust to lower water temperatures by \_\_\_\_.

- a. activating more action potentials
- b. increasing the amplitude of its action potentials
- c. recruiting different muscle fibers
- d. returning to its basal metabolic rate

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

29. Which muscles are especially important when running up a flight of stairs at full speed?

fast-twitch muscles

- a. fast-twitch muscles
- b. slow-twitch muscles
- c. smooth muscles
- d. intermediate muscles

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

30. If a new species were found with legs composed almost completely of fast-twitch muscles, what could we infer about its behavior?

- a. It could chase prey over long distances.
- b. It could chase prey only over short distances.
- c. It probably travels constantly.
- d. It probably moves slowly and grazes on vegetation.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

31. During aerobic exercises such as dancing, as glucose is used by the muscles, \_\_\_\_.
- a. fast-twitch fibers absorb more glucose
  - b. slow-twitch muscles produce glucose anaerobically
  - c. glucose use increases
  - d. glucose use decreases

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

32. Exercising at a high altitude where there is less oxygen is most likely to affect \_\_\_\_.

- a. intermediate fibers
- b. anaerobic contraction
- c. fast-twitch fibers
- d. slow-twitch fibers

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

33. Vigorous use of fast-twitch fibers results in fatigue because the process is \_\_\_\_.

- a. aerobic
- b. anaerobic
- c. anabolic
- d. abolic

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

34. A proprioceptor is sensitive to the \_\_\_\_.

- a. degree of relaxation or contraction of smooth muscle tissue
- b. position and movement of a part of the body
- c. percentage of fibers that are contracting within a muscle bundle
- d. degree of fatigue in a muscle

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

35. The stretch reflex \_\_\_\_.

- a. results in a stretch
- b. is caused by a stretch
- c. inhibits motor neurons
- d. sends a message for a muscle to relax

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

36. A boxer's ability to sense the position of his arm and hand before planning a punch is dependent on the sense of \_\_\_\_.

- a. proprioception
- b. somatosensation
- c. pain
- d. vision

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

37. A muscle spindle responds to the \_\_\_\_.

- a. oxygen level in the muscle
- b. acetylcholine concentration at the nerve-muscle junction
- c. fatigue of the muscle
- d. stretch of the muscle

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

38. A sudden stretch of a muscle excites a feedback system that opposes the stretch. This message starts in the \_\_\_\_.

- a. dorsal root ganglion
- b. cerebellum
- c. Pacinian corpuscles
- d. muscle spindles

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

39. A Golgi tendon organ responds to \_\_\_\_.

- a. increases in muscle tension
- b. decreases in muscle tension
- c. increases in muscle spindles
- d. decreases in muscle spindles

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

40. The role of the Golgi tendon organs is to \_\_\_\_.

- a. prevent extreme muscle contractions
- b. guard against fatigue of muscles
- c. produce rapid repetitive movements such as finger tapping
- d. regulate blood flow to the tendons and muscles

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

41. Muscle spindles respond to changes in muscle \_\_\_\_; Golgi tendon organs respond to changes in muscle \_\_\_\_.

- a. tension; fatigue
- b. fatigue; tension
- c. stretch; tension
- d. tension; stretch

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

42. Activity of a muscle spindle is to \_\_\_\_ as activity of the Golgi tendon organ is to \_\_\_\_.

- a. contraction; inhibition of contraction
- b. inhibition of contraction; contraction
- c. inhibition of contraction; inhibition of contraction
- d. contraction; contraction

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

43. What experience is similar to losing proprioception?

- a. losing your sense of equilibrium
- b. walking on a leg that has "fallen asleep"
- c. having a phantom limb
- d. teeth chattering in the cold

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

44. A physician who asks you to cross your legs and then taps just below the knee is testing your \_\_\_\_ reflexes.

- a. constriction
- b. slow
- c. stretch
- d. fast

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Muscles and Their Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

45. A ballistic movement \_\_\_\_.

- a. is a rhythmic alternation between two movements
- b. is guided by feedback during the course of the movement
- c. proceeds automatically once it has been triggered
- d. tends to overcorrect itself

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

46. Central pattern generators \_\_\_\_.

- a. contribute to rhythmic patterns of movement
- b. generate movement which is unresponsive to environmental stimulation
- c. constrict the pupils in response to bright light
- d. control all reflexes in adult humans

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

47. A motor program is a \_\_\_\_.

- a. mechanism that guides movement on the basis of sensory feedback
- b. mechanism that produces an alternation between two movements



- c. plan for training a brain-damaged person to walk
- d. movement that, once triggered, continues automatically until its completion

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

48. Which action is an example of a motor program in chickens with featherless wings?

- a. flapping wings if suddenly dropped
- b. learning to fly
- c. stretching its wings but not flapping them
- d. flapping its wings while eating

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

49. Which behavior is most likely to result from the activity of central pattern generators?

- a. a dog shaking itself to dry off
- b. a child catching a baseball
- c. a child playing the piano
- d. an adult yawning

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

50. Which activity is an example of a motor program in a human?

- a. yawning
- b. making a list
- c. taking your first steps
- d. learning how to drive

ANSWER: a

DIFFICULTY: Bloom's: Analyze

REFERENCES: Units of Movement

LEARNING OBJECTIVES: KALA.BIOP.16.07.01 - List the types of muscles and the proprioceptors that control them.

TOPICS: 7.1 The Control of Movement

51. In order to elicit movement, the motor cortex \_\_\_\_.

- a. has direct connections to the muscles
- b. sends axons to the brainstem and spinal cord
- c. controls isolated movement in a single muscle
- d. relies on feedback from individual muscle fibers

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

52. The posterior parietal cortex \_\_\_\_.

- a. is the main area for touch and other body information
- b. keeps track of the position of the body relative to the world
- c. is active during preparations for a movement and less active during movement itself
- d. responds to lights, noises, and other signals for a movement.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

53. People with posterior parietal damage \_\_\_\_.

- a. can see an object, but are unable to describe it
- b. have good hand-eye coordination only if they close one eye
- c. have difficulty accurately locating and approaching a sound
- d. will not step over an obstacle, although they can accurately describe it

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

54. People with posterior parietal damage \_\_\_\_.

- a. cannot walk toward something they hear
- b. have trouble converting vision into action
- c. can walk toward something they see but cannot reach out to grasp it
- d. cannot accurately describe what they see.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 8.2 Brain Mechanisms of Movement

55. The prefrontal cortex \_\_\_\_.

- a. is the main area for touch and other body information
- b. keeps track of the position of the body relative to the world
- c. is active during preparations for a movement and less active during movement itself
- d. responds to lights, noises, and other signals for a movement.

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

56. The premotor cortex \_\_\_\_.

- a. is the main area for touch and other body information
- b. keeps track of the position of the body relative to the world
- c. is active during preparations for a movement and less active during movement itself
- d. responds to lights, noises, and other signals for a movement

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

57. Damage to the prefrontal cortex is most likely to result in \_\_\_\_.

- a. an inability to move
- b. the loss of somatosensory experiences
- c. poorly planned movements
- d. no effect on movement

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

58. The part of the cortex that is most active during preparations for a movement and less active during the movement itself is the \_\_\_\_.

- a. premotor cortex
- b. somatosensory cortex
- c. inferior temporal cortex
- d. tabes dorsalis

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 8.2 Brain Mechanisms of Movement

59. In contrast to people with posterior parietal damage, people with damage to certain parts of the occipital cortex outside the primary visual cortex \_\_\_\_.

- a. cannot locate the source of sounds
- b. lose their ability to see everything
- c. can accurately describe what they see but cannot reach out to grasp it
- d. cannot accurately describe what they see but can reach out to grasp it

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

60. When are the cells in the premotor cortex (in contrast to the primary motor cortex) most active?

- a. in preparation for movements
- b. during movements
- c. at or after the end of movements
- d. during inhibition of movements

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 8.2 Brain Mechanisms of Movement

61. The part of the cortex that responds mostly to the sensory signals that lead to a movement is the \_\_\_\_.

- a. premotor cortex
- b. prefrontal cortex
- c. supplementary motor cortex
- d. tabes dorsalis

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 8.2 Brain Mechanisms of Movement

62. Cells in the prefrontal cortex, premotor cortex, and \_\_\_\_ prepare for a movement, sending messages to the primary motor cortex.

- a. posterior parietal cortex
- b. secondary motor cortex
- c. somatosensory cortex
- d. supplementary motor cortex

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 8.2 Brain Mechanisms of Movement

63. The supplementary motor cortex becomes active \_\_\_\_.

- a. during the second or two after a movement
- b. during the second or two prior to a movement
- c. only during a movement
- d. only after a movement

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

64. Damage to the \_\_\_\_ impairs the ability to organize smooth sequences of activities.

- a. premotor cortex
- b. prefrontal cortex
- c. supplementary motor cortex
- d. tabes dorsalis

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

65. Just thinking about the intention to put your arm around your attractive date would activate which motor areas?

- a. posterior parietal lobe
- b. primary motor cortex
- c. premotor cortex
- d. supplementary motor cortex

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 8.2 Brain Mechanisms of Movement

66. Watching another person shoot a basketball is most likely to activate \_\_\_\_ neurons in the brain of the person who is watching.

- a. primary motor cortex
- b. spinal cord
- c. mirror
- d. observational

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

67. Mirror neurons are active when \_\_\_\_.

- a. viewing mirror images
- b. watching others perform movements
- c. identifying ourselves in the mirror
- d. playing the piano

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

68. The motor cortex produces a kind of activity called a(n) \_\_\_\_ before any voluntary movement.

- a. readiness potential
- b. action potential
- c. evoked potential
- d. motor potential

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.02 - Describe the cortical mechanisms that control movement and its inhibition.

TOPICS: 7.2 Brain Mechanisms of Movement

69. Studies on conscious decisions regarding voluntary movements suggest that \_\_\_\_.

- a. we are conscious of our decision before brain activity is generated for movement
- b. voluntary movements are the result of free will
- c. brain activity for the movement begins before we are conscious of our decision
- d. we are unable to judge when we make conscious decisions

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.05 - Evaluate the evidence regarding the role of consciousness in planning a movement.

TOPICS: 7.2 Brain Mechanisms of Movement

70. People with damage to the parietal cortex appear to lack \_\_\_\_ related to voluntary movements. a feelings of intention

- a. feelings of intention
- b. the ability to make conscious decisions
- c. a sense of timing
- d. muscle strength

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 7.2 Brain Mechanisms of Movement

71. Paths from the cerebral cortex to the spinal cord are called the \_\_\_\_.

- a. pyramidal spinal tracts
- b. horizontal spinal tracts
- c. dorsospinal tracts
- d. corticospinal tracts

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 7.2 Brain Mechanisms of Movement

72. Axons of the lateral corticospinal tract extend to what area?

- a. cerebellum
- b. cerebral cortex
- c. spinal cord
- d. thalamus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 7.2 Brain Mechanisms of Movement

73. The lateral tract cross over point is in the \_\_\_\_.

- a. pyramids of the medulla
- b. spinal cord
- c. reticular formation
- d. vestibular nucleus

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 7.2 Brain Mechanisms of Movement

74. Lateral tract axons are responsible for movements in the \_\_\_\_.

- a. arms, hands, and toes



- b. trunk
- c. face and head
- d. internal organs

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 7.2 Brain Mechanisms of Movement

75. Most of the axons of the medial tract go to which side of the body?

- a. contralateral
- b. ipsilateral
- c. bilateral
- d. dorsolateral

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 8.2 Brain Mechanisms of Movement

76. Movements near the midline of the body, such as bending and turning of the trunk, are controlled by which motor system?

- a. dorsolateral tract
- b. medial tract
- c. supplementary
- d. hippocampal

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 7.2 Brain Mechanisms of Movement

77. What is the relationship between the lateral tract and the medial tract?

- a. Most movements are controlled by one or the other, but not both.
- b. Most movements rely on both, which work in a cooperative fashion.
- c. Most movements that are initiated by one are terminated by the other.
- d. One is excitatory while the other is inhibitory.

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebral Cortex

LEARNING OBJECTIVES: KALA.BIOP.16.07.03 - Contrast the anatomy and functions of the lateral and medial corticospinal tracts.

TOPICS: 8.2 Brain Mechanisms of Movement

78. If you have trouble with rapid, ballistic movement sequences that require accurate timing, you probably have suffered damage to the \_\_\_\_.

- a. reticular formation
- b. cerebellum
- c. hippocampus
- d. hypothalamus

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 8.2 Brain Mechanisms of Movement

79. Speaking, piano playing, athletic skills, and other rapid movements would be most impaired by damage to which structure?

- a. reticular formation
- b. cerebellum
- c. ventromedial hypothalamus
- d. parasympathetic nervous system

ANSWER: b

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 8.2 Brain Mechanisms of Movement

80. Damage to the cerebellum is most likely to interfere with \_\_\_\_.

- a. lifting weights
- b. the ability to remember a series of events
- c. rapid movements that require timing
- d. chewing and swallowing

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

81. What is the name of the rapid eye movement occurring when a person moves his or her eyes from one focus point to another?

- a. gyration
- b. sclerosis
- c. slide
- d. saccade

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

82. A saccade is initiated by impulses from the \_\_\_\_.

- a. spinal cord
- b. hypothalamus
- c. cerebellum
- d. hippocampus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 8.2 Brain Mechanisms of Movement

83. After damage to the cerebellar cortex, an individual has trouble with which part of the finger-to-nose test?

- a. The initial rapid movement to the nose
- b. The second step involving the hold function
- c. The third step which involves the finger moving to the nose by a slow movement
- d. Both the second and third steps

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 8.2 Brain Mechanisms of Movement

84. The nuclei of the cerebellum (as opposed to the cerebellar cortex) are most important in \_\_\_\_.

- a. moving a finger rapidly toward a target
- b. holding a finger in a steady position

- c. using the hands to lift heavy weights
- d. coordinating the left hand with the right hand

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

85. The cerebellum is most important for any process that requires \_\_\_\_.

- a. precise timing
- b. control of muscle strength
- c. comparison between the left and right hemispheres
- d. detecting the intensity of a stimulus

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

86. Purkinje cells are \_\_\_\_.

- a. proprioceptors
- b. flat cells in sequential planes
- c. nuclei in the central cerebellum
- d. axons parallel to one another

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

87. How do parallel fibers in the cerebellum control the duration of a response?

- a. By determining the number of Purkinje cells that fire in sequence
- b. By altering the velocity of action potentials from Purkinje cells
- c. By determining which one of all the available Purkinje cells becomes active
- d. By passing information back and forth between one Purkinje cell and another

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

88. Which widely branching cells are responsible for all of the output from the cerebellar cortex to the nuclei of the cerebellum?

- a. parallel fibers
- b. Purkinje cells
- c. putamen cells
- d. saccade cells

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

89. The greater the number of Purkinje cells activated, the \_\_\_\_.

- a. less the collective duration of the response
- b. greater the collective duration of the response
- c. greater the strength of the response
- d. less the strength of the response

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: The Cerebellum

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

90. The structure composed of the caudate nucleus, putamen, and globus pallidus is the \_\_\_\_.

- a. basal ganglia
- b. limbic system
- c. cerebellum
- d. sympathetic nervous system

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: The Basal Ganglia

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

91. Most of the output from the globus pallidus to the thalamus releases \_\_\_\_.

- a. glutamate
- b. ACh.
- c. dopamine
- d. GABA

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: The Basal Ganglia

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

92. Which basal ganglia structure(s) is/are important for receiving input from sensory areas of the thalamus and the cerebral cortex?

- a. globus pallidus and putamen
- b. globus pallidus and caudate nucleus
- c. caudate nucleus and putamen
- d. globus pallidus

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: The Basal Ganglia

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

93. The basal ganglia are most critical for learning \_\_\_\_.

- a. motor habits that are difficult to describe in words
- b. repetitive motor behaviors like cutting with a knife
- c. motor skills that include an element of balance
- d. fine motor skills such as sewing

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Brain Areas and Motor learning

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

94. Cerebellum is to \_\_\_\_ as basal ganglia are to \_\_\_\_.

- a. clumsy; paralysis
- b. initiation; stopping
- c. gross muscle function; fine motor coordination
- d. timing; voluntary movements

ANSWER: d

DIFFICULTY: Bloom's: Analyze

REFERENCES: The Basal Ganglia

LEARNING OBJECTIVES: KALA.BIOP.16.07.04 - Describe the functions of the cerebellum and basal ganglia

TOPICS: 7.2 Brain Mechanisms of Movement

95. What is one of the main symptoms of Parkinson's disease?

- a. rapid fatigue of the muscles
- b. loss of saccadic eye movements
- c. difficulty initiating movements
- d. inability to coordinate speech with movements

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

96. Parkinson's disease is caused by degeneration of a pathway of neurons that releases which neurotransmitter?

- a. acetylcholine
- b. substance P
- c. serotonin
- d. dopamine

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

97. In Parkinson's disease, which pathway in the brain degenerates?

- a. basal ganglia to cerebellum
- b. substantia nigra to caudate nucleus and putamen
- c. cerebellum to spinal cord
- d. cerebral cortex to spinal cord

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

98. The role of heredity in late-onset Parkinson's disease \_\_\_\_.

- a. equals that of early onset Parkinson's disease
- b. is probably not as great as with early onset Parkinson's disease
- c. is greater for DZ twins than MZ twins
- d. is greater for females than males

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

99. Genetic factors have their greatest impact on Parkinson's disease in cases that involve \_\_\_\_.

- a. early onset of the disease
- b. late onset of the disease
- c. first-born children
- d. children with older brothers and sisters

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

100. What is the effect of MPTP?

- a. It kills the neurons that release dopamine.
- b. It suppresses activity of the immune system.
- c. It is converted in the brain to dopamine.
- d. It inhibits the enzyme acetylcholinesterase.

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

101. It is believed that exposure to herbicides and pesticides is \_\_\_\_.

- a. the primary cause of Parkinson's disease
- b. a contributing factor in some cases of Huntington's disease
- c. the primary cause of myasthenia gravis
- d. a contributing factor in some cases of Parkinson's disease



ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

102. What is the most common drug in the treatment for Parkinson's disease?

- a. haloperidol
- b. physostigmine
- c. Dilantin
- d. L-dopa

ANSWER: d

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

103. A dopamine pill is ineffective for treating Parkinson's disease because it \_\_\_\_.

- a. is already present in too large an amount
- b. does not cross the blood-brain barrier
- c. would have to be the size of a baseball to be effective
- d. is too expensive

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

104. What is a limitation of using L-dopa for Parkinson's disease?

- a. It only helps those who are in the later stages.
- b. It does not cross the blood-brain barrier.
- c. It can contribute to a greater loss of dopamine neurons.
- d. It blocks glutamate receptors.

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

105. L-Dopa, a common treatment for Parkinson's disease, is a drug that \_\_\_\_.

- a. inhibits activity of the immune system
- b. increases the brain's production of dopamine
- c. blocks the enzyme acetylcholinesterase
- d. facilitates the passage of sodium across neuron membranes

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

106. As an option for treating Parkinson's patients, transplantation of stem cells appears to be \_\_\_\_.

- a. the most effective technique
- b. more effective in late stages of the disease
- c. modestly effective, as with other treatments
- d. not at all effective

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Parkinson's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

107. Early symptoms of Huntington's disease usually include \_\_\_\_.

- a. paralysis
- b. jerky arm movements and body tremors
- c. rapid fatigue
- d. difficulty coordinating the left hand with the right hand

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

108. What is a common symptom of Huntington's disease?

- a. rapid fatigue of the muscles
- b. loss of both sensation and motor control in certain limbs
- c. twitches, tremors, and writhing that interfere with voluntary movement

movement

d. impairment of saccadic eye movements and rapid alternating movements

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

109. Which parts of the brain deteriorate most strongly in Huntington's disease?

- a. Pathways of neurons containing the neurotransmitter dopamine
- b. The cerebellum and medulla
- c. The caudate nucleus, putamen, and globus pallidus
- d. The hippocampus and amygdala

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

110. The psychological disorders that accompany Huntington's disease could be mistaken for which of the following?

- a. schizophrenia
- b. dissociative identity disorder
- c. antisocial personality disorder
- d. bipolar disorder

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

111. What is the usual age of onset for Huntington's disease?

- a. 5-7 years old
- b. 12-20 years old
- c. 30-50 years old
- d. 65 years or older

ANSWER: c

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

112. What is the relationship of genetics to Huntington's disease?

- a. It is caused by a dominant gene on the X chromosome.
- b. It is caused by a dominant gene on chromosome 4.
- c. It is caused by a recessive gene on one of the autosomal chromosomes.
- d. There is no evidence linking Huntington's disease to any gene.

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

113. In its normal form, part of the gene that controls Huntington's disease repeats its sequence of bases \_\_\_\_.

- a. under ten times
- b. between approximately 11-24 times
- c. at least 36 times
- d. approximately 75 or 80 times

ANSWER: b

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

114. The presymptomatic test for Huntington's disease enables one to predict not only who will get the disease but also \_\_\_\_.

- a. the approximate age of onset
- b. what other diseases the person will contract
- c. which drugs will best alleviate the disease
- d. which symptoms will become prominent first, and which ones later

ANSWER: a

DIFFICULTY: Bloom's: Understand

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders

115. Which of the following would be the most promising treatment for Huntington's disease?

- a. enhancing formation of glutamine chains
- b. increasing production of huntingtin
- c. blocking formation of glutamine chain clustering
- d. decreasing production of BDNF

ANSWER: c

DIFFICULTY: Bloom's: Analyze

REFERENCES: Huntington's Disease

LEARNING OBJECTIVES: KALA.BIOP.16.07.06 - Discuss the causes of Parkinson's disease and Huntington's disease.

TOPICS: 7.3 Movement Disorders