Neuroscience Exploring the Brain 5th edition Bear Test Bank

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Chapter: Chapter 01 - Quiz

Multiple Choice

1. Ancient skulls have holes bored in them that appear to have been intentionally created to cure illness. What is this procedure called?
A) Skull release
B) Craniotomy
C) Trepanation
D) Mummification
Ans: C
Complexity: Easy
Ahead: The Origins of Neuroscience
Subject: Chapter 1
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2. Scientists in the 17th and 18th centuries observed that the brain consists of two types of tissue: gray and white matter. Which statement is true about these two tissue types?
A) Gray matter is only found in the cerebellum, while white matter is found throughout the brain.
B) Gray matter contains axons, while white matter contains neuronal dendrites.
C) Gray matter is found in the periphery, while white matter is in the central nervous system.
D) Gray matter contains neuronal cell bodies, while white matter contains nerve fibers.
Ans: D
Complexity: Moderate
Ahead: The Origins of Neuroscience
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3. Galen cut open the brain of a sheep and found fluid in the ventricles. What did he think was the function of the fluid moving in the ventricles?
A) Form memories
B) Register sensations and command the muscles
C) Protect the cerebrum
D) Protect the cerebrum and cerebellum
Ans: B

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Complexity: Moderate
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4. What was understood about the nervous system by the end of the 18th century?
A) Injury to the brain has only temporary consequences.
B) The brain communicates with the body through the ventricles.
C) The brain has several identifiable parts that are similar in each individual, suggesting functional localization in specific regions of the brain.
D) The brain operates like a machine and does not follow the laws of nature.
Ans: C
Complexity: Moderate
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5. What discovery displaced the notion that nerves communicate with the brain by the movement of fluid from the ventricles?
A) Galvani and Bois-Reymond showed that muscles twitch when nerves are stimulated electrically.
B) Descartes's had the view that the mind influences motor responses by controlling the pineal gland.
C) Brain tissue is divided into gray matter and white matter.
D) Charles Darwin published *On the Origin of Species*.
Ans: A
Complexity: Moderate
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6. What is phrenology?
A) The science of dividing the brain into smaller pieces for systematic experimental analysis
B) The approach in which parts of the brain are systematically destroyed to determine their function
C) The science of the fluid–mechanical theory of brain function
D) The belief that the structure of the head correlates with personality traits
Ans: D
Complexity: Moderate
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7. What inference was derived by Darwin about the nervous system based on the similarity in behavioral reactions across species?
A) Darwin noted that rats show clear signs of addiction if they are given the chance to self-administer cocaine repeatedly.
B) Behavior is among the heritable traits that can evolve. Brain mechanisms that underlie the fear reaction may be similar, if not identical, across the species that evolved from a common ancestor.
C) Brain mechanisms that underlie all emotions must be specifically different across species.

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D) Darwin developed the notion of the animal model for human research.
Ans: B
Complexity: Moderate
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8. Alzheimer's disease, which affects nearly 6.5 million Americans over the age of 65, leads to dementia. What are the symptoms of dementia?
A) Difficulty initiating and controlling voluntary movement of the body
B) Loss of the ability to learn new information and recall earlier known information
C) Periodic disturbances of brain electrical activity and seizures
D) Loss of brain function caused by disruption of the blood supply
Ans: B
Complexity: Moderate
Ahead: Neuroscience Today
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9. Which of the following is a question asked by scientists at the cellular neuroscience level?
A) How does activity of the brain create the mind?
B) How do neural systems work together to produce integrated behaviors?
C) How do neurons become "wired together" during fetal development?
D) How do different neural circuits analyze sensory information, form perceptions of the external world, make decisions, and execute movements?
Ans: C
Complexity: Moderate
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10. What is the final step in the scientific process that indicates whether the observation is robust enough to be reproduced?
A) Replication
B) Verification
C) Observation
D) Interpretation
Ans: B
Complexity: Moderate
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11. Which of the following factors determines the choice of an appropriate animal model for experimental studies in neuroscience?
A) The age and lifespan of the animal used in the experiment
B) The relative size of the animal brain compared to the human brain

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C) The extent to which the knowledge gained can be related to humans
D) The level of responsiveness of the animal to sensory stimuli
Ans: C
Complexity: Moderate
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12. The bumps called *gyri* and the grooves called *sulci* on the surface of the brain help parceling of the cerebrum into specific portions. What are these parceled portions called?
A) Ventricles
B) Cerebrum
C) Lobes
D) Cerebellum
Ans: C
Complexity: Moderate
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13. What is meant by the experimental ablation method of studying the brain?
A) The approach in which identical experiments are conducted on numerous animals simultaneously
B) The approach in which experiments are conducted on animal species to understand the function of the human brain
C) The approach in which the brain is preserved with fixatives such as formaldehyde, sliced thin, and then studied with a microscope
D) The approach in which parts of the brain are systematically destroyed to determine their function
Ans: D
Complexity: Moderate
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14. When neuroscientists submit research proposals for government or private funding, who evaluates adherence to the ethical treatment of animal subjects?
A) Institutional Animal Care and Use Committee (IACUC)
B) National animal welfare societies
C) A committee of veterinarians
D) Neuropathologists
Ans: A
Complexity: Moderate
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15. Schizophrenia is a severe personality disorder characterized by delusions, hallucinations, and bizarre behavior. At what age does schizophrenia typically strike, and what is its usual duration?

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A) Schizophrenia temporarily affects the middle-aged population.
B) Schizophrenia often strikes in adolescence or early adulthood and can persist for life.
C) Schizophrenia typically strikes in early childhood in children with epilepsy and is lifelong.
D) Like dementia, schizophrenia affects 50% of people over age 85.
Ans: B
Complexity: Moderate
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16. What evidence did German physiologists Gustav Fritsch and Eduard Hitzig provide in 1870 that supported the theory of localization of function within the brain?
A) Muscle paralysis corresponded to a decrease in brain activity in a discrete cerebral area.
B) Global stimulation of a dog's brain with electrical current produced uncontrollable movements.
C) Focal stimulation of a dog's brain with electrical current produced discrete movements.
D) Experimental ablation of the cerebellum in monkeys impaired sensory function.
Ans: C
Complexity: Difficult
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17. Galen's study of sheep brains was the basis for a theory of brain function that prevailed for almost 1500 years. Which of the following represents this theory?
A) The heart as the center of intellect and the brain as the cooling system
B) Localization of distinct brain functions in the cerebrum and cerebellum
C) The existence of the mind within the physical brain
D) Size and shape of the skull predicts personality
Ans: B
Complexity: Moderate
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18. What is the "mind–brain problem"?
A) Human mental capacity exists in the mind, which is outside the brain.
B) The mind is the same as the brain.
C) Both animals and people possess intellect and a God-given soul.
D) The pineal gland controls the function of the mind but not the brain.
Ans: A
Complexity: Moderate
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19. What notion was displaced by the concept of nerves being described as wires?
A) Nerves are channels that communicate with the brain by the movement of fluids.

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B) Muscles can be twitched when nerves are stimulated electrically, and the brain itself may generate electricity.
C) Signals to the muscles causing movement use the same wires as those that register sensations from the skin.
D) Nerves conduct electrical signals to and from the brain.
Ans: A
Complexity: Moderate
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20. What fundamental fact did the combined work of Bell and Magendie reveal?
A) Spinal nerves are myelinated.
B) Spinal nerves are bundles of sensory and motor nerves, and in each sensory and motor nerve fiber, transmission is strictly one-way.
C) Spinal nerves are not hollow tubes carrying fluid.
D) Both humans and animals have spinal nerves.
Ans: B
Complexity: Moderate
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21. For what purpose did Franz Joseph Gall study the dimensions of the human head?
A) To understand the propensity for certain personality traits
B) To demonstrate equal participation of all regions of the brain in all cerebral functions
C) To show that nerves conduct electrical signals to and from the brain
D) To show that unique human mental capabilities exist outside the brain
Ans: A
Complexity: Moderate
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22. On what basis did Broca defend functional localization of the brain?
A) By establishing a relationship between speech comprehension and the right frontal lobe
B) By establishing a relationship between speech comprehension and the occipital lobe
C) By establishing a relationship between the production of speech and the left frontal lobe
D) By establishing a relationship between the production of speech and the cerebellum
Ans: C
Complexity: Moderate
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23. To whom can we attribute the theory that behavior is among those traits that can be heritable?
A) Marie-Jean-Pierre Flourens

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B) Charles Darwin
C) Gustav Fritsch and Edward Hitzig
D) Franz Joseph Gall
Ans: B
Complexity: Easy
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24. Which of the following is a correct explanation of a disorder that affects the nervous system?
A) Cerebral palsy is a motor disorder caused by damage to the cerebrum before, during, or soon after birth.
B) Epilepsy is a progressive disease that affects nerve conduction, characterized by episodes of weakness, lack of coordination, and speech disturbance.
C) Stroke involves a loss of feeling and movement caused by traumatic damage to the spinal cord.
D) Alzheimer's disease is a severe psychotic illness characterized by delusions, hallucinations, and bizarre behavior.
Ans: A
Complexity: Moderate
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25. A neuroscientist is investigating how different neural circuits in the brain analyze sensory information, form perceptions of the external world, make decisions, and execute movements. At what level of analysis is this research conducted?
A) Molecular neuroscience
B) Cellular neuroscience
C) Systems neuroscience
D) Cognitive neuroscience
Ans: C
Complexity: Moderate
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26. What is the rationale behind the use of animal models to understand the human brain?
A) Animal brains are identical to human brains but only smaller in size.
B) Brain mechanisms that motivate any reaction are identical in animal and human brains.
C) The nervous systems of different species of animals and humans share many common mechanisms.
D) Animal brains are easier to obtain than human brains.
Ans: C
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27. How do neuroscientists identify the parts of the brain that are specialized for different behavioral functions related to the niche a species normally occupies?
A) By studying the similarities in fear responses in different species
B) By comparing the specializations of the brains of different species
C) By comparing neuron locations within the brains of different species
D) By systematically destroying each part of the brain and studying its effect on behavior
Ans: B
Complexity: Moderate
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28. At which level of analysis do neuroscientists study the different types of neurons and their functions?
A) Cellular neuroscience
B) Cognitive neuroscience
C) Molecular neuroscience
D) Behavioral neuroscience
Ans: A
Complexity: Moderate
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29. What is the difference between replication and verification?
A) Replication tests a hypothesis, whereas verification rechecks the hypothesis.
B) Replication can only be done once, whereas verification can be done many times.
C) Replication is repeating the experiment in other subjects to rule out the possibility of chance. In verification, the experiment is repeated, and the same observations are obtained by any scientist following the same protocol as the original observer.
D) Replication and verification are not essentially different.
Ans: C
Complexity: Moderate
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30. Which of the following is a criterion used by modern neuroscientists to ensure that they are responsibly using animal models in their research?
A) There is no exploration of alternative approaches.
B) Pain and distress are minimized for the animals.
C) All research models must be a rodent species.
D) Only animals that can be cheaply housed are used.
Ans: B
Complexity: Moderate
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31. Which of the following statements is true about interpretations made by scientists based on observations from experiments designed to test a hypothesis?
A) Interpretations must always agree with the original hypothesis.
B) Interpretations must have the support of the scientific community.
C) Interpretations are not likely to change as additional information is gathered.
D) Interpretations are made based on the state of knowledge at the time.
Ans: D
Complexity: Moderate
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32. What was the prevailing theory of the 1800s about connections between neurons, which was later proved to be incorrect?
A) Individual neurons fuse their processes together to create an interconnected nerve net.
B) All neurons span the entire length of the nervous system and do not need to be connected.
C) Individual neurons only make connections with other neurons in their local environment.
D) Connections between neurons are made and facilitated by glial support cells.
Ans: A
Complexity: Moderate
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33. What is the medical specialty concerned with diagnosing and treating disorders of mood and behavior?
A) Neurology
B) Neurosurgery
C) Psychiatry
D) Neuropathology
Ans: C
Complexity: Easy
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34. What does a neuroethologist study?
A) The neural basis of species-specific animal behaviors
B) The development and maturation of the brain
C) The effects of drugs on nervous system function
D) The electrical activity of the nervous system
Ans: A
Complexity: Moderate
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35. A portion of the rat sensory cortex is organized into “barrels,” each of which receives sensory input from a single whisker, allowing them to have a highly evolved sense of touch on their face. What is this an example of?
A) An evolutionary disadvantage
B) Rodents having simpler brains than humans
C) A behavior that is unrelated to brain structure
D) A species-specific brain specialization
Ans: D
Complexity: Moderate
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