

## Biological Bases of Behavior

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Your friend is taking her first psychology class. She comes to you saying, "I don't understand why we are studying the brain; I thought this was a psychology class." Because of your background in psychology, your best response should be
- "It's been known since Aristotle's time that the brain is the center of intelligence and thought."
  - "Phrenologists established the importance of studying the physical brain to understand mental abilities."
  - "Science has demonstrated that Plato's belief in the heart as the origin of emotion is correct."
  - "Everything psychological is simultaneously biological."
  - "Being able to name the parts of the brain helps us understand the basis of behavior."
- \_\_\_\_\_ 2. An axon is
- a cell that serves as the basic building block of the nervous system.
  - a layer of fatty tissue that encases the fibers of many neurons.
  - an antagonist molecule that blocks neurotransmitter receptor sites.
  - the extension of a neuron that carries messages away from the cell body.
  - a junction between a sending and receiving neuron.
- \_\_\_\_\_ 3. In transmitting sensory information to the brain, an electrical signal travels from the \_\_\_\_\_ of a single neuron.
- cell body to the axon to the dendrites
  - dendrites to the axon to the cell body
  - axon to the cell body to the dendrites
  - dendrites to the cell body to the axon
  - axon to the dendrites to the cell body
- \_\_\_\_\_ 4. A brief electrical charge that travels down the axon of a neuron is called the
- synapse.
  - agonist.
  - action potential.
  - myelin sheath.
  - refractory period.

- \_\_\_\_\_ 5. A synapse is a(n)
- chemical messenger that triggers muscle contractions.
  - automatic response to sensory input.
  - neural network.
  - junction between a sending neuron and a receiving neuron.
  - neural cable containing many axons.
- \_\_\_\_\_ 6. The chemical messengers released into the spatial junctions between neurons are called
- hormones.
  - neurotransmitters.
  - synapses.
  - sensory neurons.
  - motor neurons.
- \_\_\_\_\_ 7. Reuptake refers to the
- movement of neurotransmitter molecules across a synaptic gap.
  - release of hormones into the bloodstream.
  - inflow of positively charged ions through an axon membrane.
  - reabsorption of excess neurotransmitter molecules by a sending neuron.
  - the ending of the refractory period.
- \_\_\_\_\_ 8. The tremors of Parkinson's disease result from the death of nerve cells that produce the neurotransmitter
- serotonin.
  - ACh.
  - GABA.
  - dopamine.
  - acetylcholine.
- \_\_\_\_\_ 9. Nerves are neural cables containing many
- hormones.
  - endorphins.
  - interneurons.
  - axons.
  - lesions.
- \_\_\_\_\_ 10. For you to be able to run, \_\_\_\_\_ must relay messages from your central nervous system to your leg muscles.
- interneurons
  - agonists
  - motor neurons
  - sensory neurons
  - the autonomic nervous system

- \_\_\_\_\_ 11. The somatic nervous system is a component of the \_\_\_\_\_ nervous system.
- peripheral
  - autonomic
  - central
  - sympathetic
  - parasympathetic
- \_\_\_\_\_ 12. When Mr. Valdez thought his 1-year-old daughter had fallen down the stairs, his heartbeat accelerated, his blood pressure rose, and he began to perspire heavily. Mr. Valdez's state of arousal was activated by his \_\_\_\_\_ nervous system.
- parasympathetic
  - sympathetic
  - somatic
  - sensorimotor
  - central
- \_\_\_\_\_ 13. An accelerated heartbeat is to a slowed heartbeat as the \_\_\_\_\_ nervous system is to the \_\_\_\_\_ nervous system.
- somatic; autonomic
  - autonomic; somatic
  - central; peripheral
  - sympathetic; parasympathetic
  - parasympathetic; sympathetic
- \_\_\_\_\_ 14. Hormones are the chemical messengers of the \_\_\_\_\_.
- action potential.
  - autonomic nervous system.
  - endocrine system.
  - peripheral nervous system.
  - central nervous system.
- \_\_\_\_\_ 15. Endocrine glands secrete hormones directly into \_\_\_\_\_.
- synaptic gaps.
  - the bloodstream.
  - dendrites.
  - sensory neurons.
  - interneurons.
- \_\_\_\_\_ 16. The master gland of the endocrine system is the \_\_\_\_\_.
- thyroid gland.
  - adrenal gland.
  - pituitary gland.
  - pancreas.
  - hypothalamus.

- \_\_\_\_\_ 17. Surgical destruction of brain tissue is called a(n)
- endorphin.
  - EEG.
  - synapse.
  - lesion.
  - MRI.
- \_\_\_\_\_ 18. The concentration of glucose in active regions of the brain underlies the usefulness of a(n)
- MRI.
  - brain lesion.
  - EEG.
  - PET scan.
  - hemispherectomy.
- \_\_\_\_\_ 19. Your life would be most immediately threatened if you suffered destruction of the
- amygdala.
  - hippocampus.
  - angular gyrus.
  - corpus callosum.
  - medulla.
- \_\_\_\_\_ 20. The medulla is to the control of \_\_\_\_\_ as the cerebellum is to the control of \_\_\_\_\_.
- eating; sleeping
  - breathing; walking
  - emotion; motivation
  - memory; attention
  - hearing; seeing
- \_\_\_\_\_ 21. Severing a cat's reticular formation from higher brain regions causes the cat to
- become violently aggressive.
  - cower in fear.
  - experience convulsive seizures.
  - lapse into a coma.
  - become sexually preoccupied.
- \_\_\_\_\_ 22. Your ability to experience physical sensations is most likely to be disrupted by damage to your
- corpus callosum.
  - angular gyrus.
  - hippocampus.
  - amygdala.
  - thalamus.

- \_\_\_\_\_ 23. Ellen volunteers during her AP psychology class to try to balance a yardstick on her two fingers. While her eyes are open, she finds the task quite easy. However, when she closes her eyes, she finds the same task almost impossible. Which brain region relies on visual information in coordinating our voluntary movements?
- hypothalamus
  - reticular formation
  - thalamus
  - amygdala
  - cerebellum
- \_\_\_\_\_ 24. Which of the following is the component of the limbic system that plays an essential role in the processing of new memories?
- hypothalamus
  - thalamus
  - hippocampus
  - medulla
  - cerebellum
- \_\_\_\_\_ 25. Which neural center in the limbic system plays a central role in emotions such as aggression and fear?
- amygdala
  - thalamus
  - cerebellum
  - medulla
  - dendrite
- \_\_\_\_\_ 26. The thin surface layer of interconnected neural cells that covers the cerebrum is called the
- cerebellum.
  - corpus callosum.
  - reticular formation.
  - cerebral cortex.
  - sensory cortex.
- \_\_\_\_\_ 27. Your conscious awareness of your own name and self-identity depends primarily on the normal functioning of your
- cerebellum.
  - amygdala.
  - hypothalamus.
  - sympathetic nervous system.
  - cerebral cortex.

- \_\_\_\_\_ 28. The surgical removal of a large tumor from Dane's occipital lobe resulted in extensive loss of brain tissue. Dane is most likely to suffer some loss of
- muscular coordination.
  - language comprehension.
  - visual perception.
  - speaking ability.
  - pain sensations.
- \_\_\_\_\_ 29. The occipital lobes are to \_\_\_\_\_ as the temporal lobes are to \_\_\_\_\_.
- hearing; sensing movement
  - seeing; sensing touch
  - sensing pleasure; sensing pain
  - seeing; hearing
  - speaking; hearing
- \_\_\_\_\_ 30. Which lobes of the brain receive the input that enables you to feel someone scratching your back?
- parietal
  - temporal
  - occipital
  - frontal
  - cerebral.
- \_\_\_\_\_ 31. In 1848, Phineas Gage, a railroad construction foreman, survived when an explosion drove an iron rod through his head. The once friendly, soft-spoken Gage became irritable and dishonest. Gage's case provided evidence that which region of the brain plays a role in personality and behavior?
- temporal lobes
  - sensory cortex
  - frontal lobes
  - parietal lobes
  - Broca's area
- \_\_\_\_\_ 32. An area at the rear of the frontal lobes that controls voluntary movements is called the
- angular gyrus.
  - hypothalamus.
  - motor cortex.
  - reticular formation.
  - frontal association area.
- \_\_\_\_\_ 33. Our lips are more sensitive than our knees to sensations of touch due to which of the following?
- More neurotransmitters are released when the lips are touched.
  - A larger area of the sensory cortex is associated with our lips.
  - The dendrites connected to the lips are especially sensitive.
  - The medulla routes impulses from the lips directly to our brainstem.
  - Our lips are directly connected to the sensory cortex, but our knees are not.

- \_\_\_\_\_ 34. The auditory hallucinations experienced by people with schizophrenia are most closely linked with the activation of areas in which brain area?
- motor cortex
  - amygdala
  - temporal lobes
  - hypothalamus
  - sensory cortex
- \_\_\_\_\_ 35. The most extensive regions of the cerebral cortex, which enable learning and memory, are called the
- reticular formation.
  - medulla.
  - sensory areas.
  - cerebellum.
  - association areas.
- \_\_\_\_\_ 36. Which brain area is primarily involved with controlling speech?
- sensory cortex
  - angular gyrus
  - association areas
  - Broca's area
  - hypothalamus
- \_\_\_\_\_ 37. If a blind person uses one finger to read Braille, the brain area dedicated to that finger expands as the sense of touch invades the visual cortex. This is an example of
- brain plasticity.
  - hemispheric specialization.
  - neural prosthetics.
  - integrated association areas.
  - aphasia.
- \_\_\_\_\_ 38. The benefits of brain plasticity are most clearly demonstrated in
- children who have had a cerebral hemisphere surgically removed.
  - people paralyzed by a severed spinal cord.
  - individuals with Alzheimer's disease.
  - adults with aphasia.
  - people free of any disease or brain damage.
- \_\_\_\_\_ 39. The ability to recognize faces with the right hemisphere but not with the left hemisphere best illustrates
- Parkinson's disease.
  - neurogenesis.
  - plasticity.
  - lateralization.
  - aphasia.

Name: \_\_\_\_\_

ID: A

- \_\_\_\_\_ 40. Neurosurgeons have severed the corpus callosum in human patients in order to reduce
- a. aphasia.
  - b. epileptic seizures.
  - c. depression.
  - d. neural plasticity.
  - e. reward deficiency syndrome.



## Biological Bases of Behavior Answer Section

### MULTIPLE CHOICE

- |                                  |        |                             |                      |
|----------------------------------|--------|-----------------------------|----------------------|
| 1. ANS: D                        | PTS: 1 | DIF: Easy                   | OBJ: Unit III   9-1  |
| TOP: Biology, behavior, and mind |        | SKL: Conceptual/Application |                      |
| 2. ANS: D                        | PTS: 1 | DIF: Easy                   | OBJ: Unit III   9-2  |
| TOP: Neural communication        |        | SKL: Factual/Definitional   |                      |
| 3. ANS: D                        | PTS: 1 | DIF: Medium                 | OBJ: Unit III   9-2  |
| TOP: Neural communication        |        | SKL: Factual/Definitional   |                      |
| 4. ANS: C                        | PTS: 1 | DIF: Easy                   | OBJ: Unit III   9-2  |
| TOP: Neural communication        |        | SKL: Factual/Definitional   |                      |
| 5. ANS: D                        | PTS: 1 | DIF: Easy                   | OBJ: Unit III   9-3  |
| TOP: Neural communication        |        | SKL: Factual/Definitional   |                      |
| 6. ANS: B                        | PTS: 1 | DIF: Easy                   | OBJ: Unit III   9-3  |
| TOP: Neural communication        |        | SKL: Factual/Definitional   |                      |
| 7. ANS: D                        | PTS: 1 | DIF: Medium                 | OBJ: Unit III   9-3  |
| TOP: Neural communication        |        | SKL: Factual/Definitional   |                      |
| 8. ANS: D                        | PTS: 1 | DIF: Medium                 | OBJ: Unit III   9-4  |
| TOP: Neural communication        |        | SKL: Factual/Definitional   |                      |
| 9. ANS: D                        | PTS: 1 | DIF: Easy                   | OBJ: Unit III   10-1 |
| TOP: The nervous system          |        | SKL: Factual/Definitional   |                      |
| 10. ANS: C                       | PTS: 1 | DIF: Medium                 | OBJ: Unit III   10-1 |
| TOP: The nervous system          |        | SKL: Conceptual/Application |                      |
| 11. ANS: A                       | PTS: 1 | DIF: Medium                 | OBJ: Unit III   10-1 |
| TOP: The nervous system          |        | SKL: Factual/Definitional   |                      |
| 12. ANS: B                       | PTS: 1 | DIF: Medium                 | OBJ: Unit III   10-1 |
| TOP: The nervous system          |        | SKL: Conceptual/Application |                      |
| 13. ANS: D                       | PTS: 1 | DIF: Difficult              | OBJ: Unit III   10-1 |
| TOP: The nervous system          |        | SKL: Conceptual             |                      |
| 14. ANS: C                       | PTS: 1 | DIF: Easy                   | OBJ: Unit III   10-2 |
| TOP: The endocrine system        |        | SKL: Factual/Definitional   |                      |
| 15. ANS: B                       | PTS: 1 | DIF: Medium                 | OBJ: Unit III   10-2 |
| TOP: The endocrine system        |        | SKL: Factual/Definitional   |                      |
| 16. ANS: C                       | PTS: 1 | DIF: Easy                   | OBJ: Unit III   10-2 |
| TOP: The endocrine system        |        | SKL: Factual/Definitional   |                      |
| 17. ANS: D                       | PTS: 1 | DIF: Easy                   | OBJ: Unit III   11-1 |
| TOP: The tools of discovery      |        | SKL: Factual/Definitional   |                      |
| 18. ANS: D                       | PTS: 1 | DIF: Difficult              | OBJ: Unit III   11-1 |
| TOP: The tools of discovery      |        | SKL: Factual/Definitional   |                      |
| 19. ANS: E                       | PTS: 1 | DIF: Medium                 | OBJ: Unit III   11-2 |
| TOP: The brainstem               |        | SKL: Conceptual/Application |                      |
| 20. ANS: B                       | PTS: 1 | DIF: Difficult              | OBJ: Unit III   11-2 |
| TOP: The brainstem               |        | SKL: Conceptual             |                      |
| 21. ANS: D                       | PTS: 1 | DIF: Medium                 | OBJ: Unit III   11-2 |
| TOP: The reticular formation     |        | SKL: Factual/Definitional   |                      |

- |                              |        |                             |                      |
|------------------------------|--------|-----------------------------|----------------------|
| 22. ANS: E                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   11-2 |
| TOP: The thalamus            |        | SKL: Conceptual/Application |                      |
| 23. ANS: E                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   11-2 |
| TOP: The cerebellum          |        | SKL: Conceptual/Application |                      |
| 24. ANS: C                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   11-3 |
| TOP: The limbic system       |        | SKL: Factual/Definitional   |                      |
| 25. ANS: A                   | PTS: 1 | DIF: Easy                   | OBJ: Unit III   11-3 |
| TOP: The amygdala            |        | SKL: Factual/Definitional   |                      |
| 26. ANS: D                   | PTS: 1 | DIF: Easy                   | OBJ: Unit III   12-1 |
| TOP: The cerebral cortex     |        | SKL: Factual/Definitional   |                      |
| 27. ANS: E                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-1 |
| TOP: The cerebral cortex     |        | SKL: Conceptual/Application |                      |
| 28. ANS: C                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-1 |
| TOP: Structure of the cortex |        | SKL: Conceptual/Application |                      |
| 29. ANS: D                   | PTS: 1 | DIF: Difficult              | OBJ: Unit III   12-1 |
| TOP: Functions of the cortex |        | SKL: Conceptual             |                      |
| 30. ANS: A                   | PTS: 1 | DIF: Difficult              | OBJ: Unit III   12-1 |
| TOP: Functions of the cortex |        | SKL: Conceptual/Application |                      |
| 31. ANS: C                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-1 |
| TOP: Functions of the cortex |        | SKL: Factual/Definitional   |                      |
| 32. ANS: C                   | PTS: 1 | DIF: Easy                   | OBJ: Unit III   12-1 |
| TOP: Functions of the cortex |        | SKL: Factual/Definitional   |                      |
| 33. ANS: B                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-1 |
| TOP: Functions of the cortex |        | SKL: Factual/Definitional   |                      |
| 34. ANS: C                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-1 |
| TOP: Functions of the cortex |        | SKL: Factual/Definitional   |                      |
| 35. ANS: E                   | PTS: 1 | DIF: Easy                   | OBJ: Unit III   12-1 |
| TOP: Association areas       |        | SKL: Factual/Definitional   |                      |
| 36. ANS: D                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-1 |
| TOP: Association areas       |        | SKL: Conceptual/Application |                      |
| 37. ANS: A                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-2 |
| TOP: The brain's plasticity  |        | SKL: Factual/Definitional   |                      |
| 38. ANS: A                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   12-2 |
| TOP: The brain's plasticity  |        | SKL: Factual/Definitional   |                      |
| 39. ANS: D                   | PTS: 1 | DIF: Difficult              | OBJ: Unit III   13-1 |
| TOP: Splitting the brain     |        | SKL: Conceptual             |                      |
| 40. ANS: B                   | PTS: 1 | DIF: Medium                 | OBJ: Unit III   13-1 |
| TOP: Splitting the brain     |        | SKL: Factual/Definitional   |                      |