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1. Identify the type of glial cells that produce the myelin that envelops axons.
   A) Schwann cells
   B) ependymal cells
   C) astrocytes
   D) microglia

2. The club drug Ecstasy increases the release of serotonin into the synapse. By contrast, the antianxiety drug and sleep aid Trazodone blocks the effects of serotonin at the receptor site. Ecstasy is a serotonin _____, whereas Trazodone is a serotonin _____.
   A) inhibitor; agonist
   B) antagonist; inhibitor
   C) antagonist; agonist
   D) agonist; antagonist

3. An example of an inhibitory neurotransmitter is:
   A) GABA.
   B) dopamine.
   C) glutamate.
   D) acetylcholine.

4. Cocaine sometimes produces extreme alertness and an exaggerated awareness of environmental stimuli. This is because one of its effects is to enhance the activity of the neurotransmitter that helps prepare the body for stressful situations, namely:
   A) serotonin.
   B) endorphins.
   C) acetylcholine.
   D) norepinephrine.

5. Alzheimer's disease is to Parkinson's disease as _____ is to _____.
   A) dopamine; acetylcholine
   B) norepinephrine; dopamine
   C) acetylcholine; dopamine
   D) acetylcholine; serotonin

6. Dr. Talbot prescribes a(n) _____ agonist to help relieve a client's depression.
   A) acetylcholine
   B) glutamate
   C) serotonin
   D) endorphin

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7. Needles frighten Janice. As she awaits a flu shot, Janice's _____ nervous system is probably going into “overdrive.”
   A) somatic
   B) peripheral
   C) parasympathetic
   D) sympathetic

8. The sympathetic nervous system:
   A) constricts pupils and facilitates digestion.
   B) constricts pupils and slows digestion.
   C) dilates pupils and slows digestion.
   D) dilates pupils and enhances digestion.

9. During a stressful round of auditions, anxious actors engage in small talk in the waiting room to calm their nerves and gain reassurance. This behavior exemplifies the _____ response to stress; it is MOST common among _____.
   A) fight-or-flight; men
   B) fight-or-flight; women
   C) tend-and-befriend; men
   D) tend-and-befriend; women

10. The _____ gland is known as the master gland of the endocrine system because it regulates the functions of all the other endocrine glands.
   A) adrenal
   B) pituitary
   C) thyroid
   D) pineal

11. Caffeine consumption makes one feel physically energized because it activates the fight-or-flight response of the _____nervous system.
   A) parasympathetic
   B) central
   C) sympathetic
   D) somatic

12. The body's salt balance is regulated by the _____ gland(s).
   A) pineal
   B) pituitary
   C) thyroid
   D) adrenal

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13. Following a head injury, Enid has trouble making sense of what people say to her. Enid may have suffered damage to the _____ lobe.
    A) right frontal
    B) right temporal
    C) left frontal
    D) left temporal

14. Wernicke's area is to the _____ lobe as Broca's area is to the _____ lobe.
    A) left temporal; right temporal
    B) left temporal; left frontal
    C) right frontal; left frontal
    D) left frontal; left temporal

15. Broca's and Wernicke's areas are primarily involved in:
    A) processing and producing language.
    B) identifying visual stimuli.
    C) reacting to sounds.
    D) taste and touch.

16. Which statement BEST captures the likely relationship between neuroplasticity and neurogenesis?
    A) Neurogenesis supports neuroplasticity.
    B) Neurogenesis is the same thing as neuroplasticity.
    C) Neuroplasticity is only distantly related to neurogenesis.
    D) Neuroplasticity drives neurogenesis.

17. According to the text, the extent of a patient's functional recovery from a hemispherectomy is _____ correlated with his or her age.
    A) not
    B) negatively
    C) positively
    D) equally

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18. The textbook suggests that neurogenesis is especially evident in certain brain areas and that neurogenesis is important for learning and creating new memories. Based on this information and on your knowledge of brain structures, one brain structure where neurogenesis may be especially pronounced is the:
    A) amygdala.
    B) hypothalamus.
    C) hippocampus.
    D) basal ganglia.

19. Identify the brain structure that helps us plan and execute voluntary movements and allows us to move our body.
    A) Wernicke's area
    B) the motor cortex
    C) the somatosensory cortex
    D) Broca's area

20. The tactile sensitivity of a body part is _____ related to the size of the _____ cortex devoted to processing its sensations.
    A) negatively; auditory
    B) negatively; somatosensory
    C) positively; auditory
    D) positively; somatosensory

21. The occipital lobe is to the _____ cortex as the _____ lobe is to the auditory cortex.
    A) motor; temporal
    B) visual; temporal
    C) motor; parietal
    D) visual; parietal

22. The limbic system contains the:
    A) hippocampus and medulla.
    B) cerebellum and hypothalamus.
    C) thalamus and amygdala.
    D) hypothalamus and Wernicke's area.

23. The _____ lobe of the brain is responsible for processing visual information?
    A) frontal
    B) parietal
    C) temporal
    D) occipital

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24. Within the limbic system, sensory information is to emotion as the _____ is to the _____.
    A) thalamus; amygdala
    B) hypothalamus; amygdala
    C) amygdala; thalamus
    D) amygdala; hypothalamus

25. The hypothalamus is responsible for:
    A) forming new memories from experiences.
    B) regulating sleep–wake cycles.
    C) processing basic emotions.
    D) relaying visual information to the visual cortex.

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Answer Key

1. A
2. D
3. A
4. D
5. C
6. C
7. D
8. C
9. D
10. B
11. C
12. D
13. D
14. B
15. A
16. A
17. B
18. C
19. B
20. D
21. B
22. C
23. D
24. A
25. B

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1. Draw a typical neuron, labeling its major parts accurately. In several sentences, briefly identify the functions of the parts labeled on your diagram.

2. Outline in as much detail as you can the sequence of events that occurs at the synapse when a neural message is communicated.

3. Identify three neurotransmitters and describe their roles in thought and behavior. Where possible, use specific examples to illustrate their contributions to your own behavior.

4. Identify how abnormal levels of specific neurotransmitters may be involved in each of these disorders: Alzheimer's disease, depression, Parkinson's disease, and schizophrenia.

5. Mandy visits her doctor for her annual physical checkup. The doctor taps Mandy's knee with a rubber mallet; Mandy's knee jerks immediately. Explain how Mandy's response demonstrates the reflex arc in action.

6. Distinguish between the sympathetic and parasympathetic divisions of the autonomic nervous system. For each division, provide an example of a situation in which the division would become active. Describe the effects of the activity of each division on several bodily processes.

7. Identify several components of the endocrine system. State the hormone(s) each component produce(s). Identify the functions of the hormones you mention.

8. To what extent is the brain capable of continued development during adulthood? Distinguish between neuroplasticity and neurogenesis. Discuss the potential implications of these processes for the treatment of disorders of the nervous system. Identify at least one controversial issue in the application of neuroplasticity to the treatment of disorders.

9. Define the cerebral cortex. Draw a simple diagram of the brain. Label the brain's lobes on your drawing and briefly identify the function of each lobe.

10. Name two structures in the limbic system. For each structure you name, write a brief case study of an individual demonstrating the effects of damage to the structure.

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11. Describe the cerebellum and identify its function. Identify two brainstem structures and describe their functions.

12. Autopsy studies, case studies, and electrical stimulation work in the 19th and 20th centuries helped lay the foundation for the contemporary understanding of brain structure and function. Select three of the following figures and describe their contributions to our knowledge of the brain: (1) Pierre Broca, (2) Karl Wernicke, (3) Wilder Penfield, or (4) Gustav Fritsch and Edvard Hitzig.

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Answer Key

1. The drawing should contain: (a) dendrites, which should appear as clusters of branchlike extensions from the cell body; (b) the cell body, which should appear as a roundish structure in the center of the diagram; (c) the axon, which should appear as a long tube extending from the cell body; (d) terminal buds, which should appear as extensions projecting from the axon; and (e) myelin, which should appear bracketing portions of the axon.
   The following functions should be described. Dendrites—receive information from other neurons. Axon—sends messages to terminal buds. Myelin—insulates one axon from another and speeds neural transmission. Terminal buds—send messages to other neurons.
2. The answer should include the following steps in the sequence: (1) an action potential reaches the end of the axon, or the terminal bud; (2) the potential stimulates the release of neurotransmitter molecules from vesicles within the terminal bud; (3) the neurotransmitter molecules float passively across the gap between the terminal bud of the sending neuron and the dendrites of the receiving neuron; (4) the molecules fit into specialized receptor sites on the dendrites of the receiving neuron; making (5) the receiving neuron either more or less likely to produce its own action potential, depending on the neurotransmitter.
3. The answer should include three of these neurotransmitters. At least one of the functions or domains listed for each of the three neurotransmitters should be mentioned, ideally along with a personalized example.
   Acetylcholine—enables movement; involved in memory. Acetylcholine allows me to move my fingers so that I may text a friend on my phone.
   Glutamate—plays a role in learning and memory. Glutamate helps me learn the material in my textbooks and to remember it for tests.
   GABA—an inhibitory neurotransmitter.
   Norepinephrine—helps prepare the body for stressful situations, such as giving an oral presentation in class.
   Dopamine—involved in movement, attention, learning and reinforcement. Dopamine contributes to the pleasure I take in meeting a friend for lunch or coffee.
   Serotonin—regulates sleep, mood, and eating. Serotonin may help regulate my feelings of hunger throughout a long day on campus.
   Endorphins—the brain's natural painkiller; may produce euphoric feelings. Endorphins lessen the discomfort of working out, allowing me to extend my training.
4. The answer should include:
   Alzheimer's disease—low levels of acetylcholine
   Depression—abnormally low levels of serotonin
   Parkinson's disease—deterioration of neurons that produce dopamine
   Schizophrenia—underactivity of glutamate
5. The reflex arc describes the process whereby a sensory stimulus elicits an automatic response. When the doctor taps Mandy's knee, sensory neurons carry the signal to Mandy's spinal cord. In her spinal cord, the signal from the sensory neurons is received by interneurons. The interneurons immediately activate motor neurons. The motor neurons instruct muscles in Mandy's knee to contract, resulting in the knee jerk.

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6. The answer should contain the following information:
   Sympathetic nervous system—acts to prepare the body for action in stressful situations by mobilizing the organism's resources to "fight" or "flee."
   Parasympathetic nervous system—acts to calm the body once a stressful situation or emergency has ended. Allows the body to store energy.
   The sympathetic nervous system—becomes active in such "fight or flight" situations as spotting a threatening stranger in a desolate parking garage, being involved in a near-accident on the road, and so on.
   The parasympathetic nervous system—becomes active in calm, restful situations such as relaxing after dinner or resting in bed before falling asleep.
   Signs of sympathetic nervous system activity—increased heart rate, inhibited digestion, dilated pupils, shallow breathing.
   Signs of parasympathetic nervous system activity—decreased heart rate, facilitated digestion, constricted pupils, slowed respiration.
7. The answer should mention several of the following items:
   Adrenal gland—involved in responses to stress and in regulating salt balance.
   Pancreas—produces insulin.
   Pituitary gland—the endocrine system's "master" or "chief executive" gland.
   Pineal gland—produces melatonin, which regulates daily rhythms.
   Thyroid gland—produces thyroxin, which regulates metabolism.
   Testes and ovaries—male and female sex hormones.
8. The answer should contain the following elements:
   The brain undergoes substantial development during adulthood. The interconnections between neurons become more complex throughout life, and new neurons are created in certain parts of the brain during adulthood.
   Neuroplasticity—the process whereby the brain continually reorganizes itself.
   Neurogenesis—the creation of new neurons during adulthood.
   Treatment of nervous system disorders—stem cells may be used in the treatment of Parkinson's disease and spinal cord injuries. This work is controversial, however, because the main source of stem cells is human embryos. It is possible, though, that stem cells may be used from adult sources like bone marrow.
9. Cerebral cortex—the wrinkled, outermost layer of the cerebrum, responsible for higher mental functions.
   Usually, the front of the brain will be at the left of the diagram. This portion should be labeled the frontal lobe. The parietal and temporal lobes should be in the center of the brain diagram, with the parietal lobe above the temporal lobe. Finally, the rear portion of the brain should be labeled the occipital lobe.
   Functions:
   Frontal—higher-level cognitive functions, like thinking and planning; personality characteristics.
   Parietal—touch, temperature information.
   Temporal—hearing; language comprehension.
   Occipital—visual processing.
10. Two of these structures should be mentioned: amygdala, hippocampus, thalamus, and hypothalamus.
    Vignettes will vary but should focus on deficits in these functions:

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Amygdala—emotion
Hippocampus—memory
Thalamus—sensory processing
Hypothalamus—homeostasis; regulation of sleep/wake cycles, sexual arousal, and appetite

11. The cerebellum sits behind the brainstem; it looks like a small version of the brain itself. The cerebellum primarily controls body balance and coordinates movement, but it also influences such higher cognitive processes as reasoning and language production.
Two of the following structures should be mentioned and described:
Medulla—regulates breathing and heart rate.
Pons—regulates sleep; coordinates movement between the right and left sides of the body.
Reticular formation—regulates alertness; produces arousal to outside stimulation and filters out distracting background stimuli.

12.

Figure	**Contribution**
Pierre Broca	French surgeon; performed autopsies on two patients who had lost the ability found damage to the left frontal lobe, a speech-production area now called Br area
Karl Wernicke	German doctor; pinpointed role of the left temporal lobe in language comprel area now called Wernicke's area
Wilder Penfield	North American neurosurgeon; used electrical stimulation to create a map sh correspondence between various body parts and points in the somatosensory motor cortices
Gustav Fritsch and Edvard Hitzig	German doctors; used electrical stimulation on dogs to show the involvement rear frontal lobes—the motor cortex—in producing voluntary movements

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1. Which term is NOT a synonym for biological psychology?
   A) neuropsychology
   B) physiological psychology
   C) psychobiology
   D) clinical psychology

2. Which statement concerning the study of the brain and the nervous system is MOST accurate?
   A) The terms "neuroscience" and "biological psychology" both refer to the study of the brain and the nervous system.
   B) The terms "neuroscience" and "biological psychology" both refer to the study of how the nervous system influences behavior.
   C) The term "neuroscience" refers to the study of the brain and the nervous system, whereas the term "biological psychology" refers to the study of how the nervous system influences behavior.
   D) The term "biological psychology" refers to the study of the brain and the nervous system, whereas the term "neuroscience" refers to the study of how the nervous system influences behavior.

3. Alison has developed an interest in how the brain controls the body's voluntary action. You suggest that she become a(n) _____ psychologist.
   A) genetic
   B) biological
   C) cognitive
   D) evolutionary

4. The building blocks of the nervous system are cells called:
   A) neurons.
   B) axons.
   C) synapses.
   D) dendrites.

5. The chemicals that relay signals across the synapses between neurons are called:
   A) action potentials.
   B) neurotransmitters.
   C) agonists.
   D) vesicles.

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6. The branchlike fibers extending in clusters from the neuron's cell body are called:
   A) axons.
   B) glial fibers.
   C) dendrites.
   D) nodes of Ranvier.

7. Compare your forearm, hand, and fingers to a neuron. In such an analogy, the dendrites are your:
   A) forearm.
   B) fingers.
   C) hand.
   D) wrist.

8. An axon is a:
   A) neuron's cell body.
   B) support cell in the nervous system.
   C) branch-like fiber extending in clusters from a neuron's cell body.
   D) long, tube-like structure extending from a neuron's cell body.

9. Compare your forearm, hand, and fingers to a neuron. In such an analogy, the axon is your:
   A) wrist.
   B) fingers.
   C) hand.
   D) forearm.

10. Dendrite is to axon as _____ is to _____.
   A) receiving; sending
   B) sending; receiving
   C) electrical; chemical
   D) action potential; reuptake

11. Which sequence CORRECTLY reflects the route followed by nerve impulses when one neuron communicates with another?
   A) dendrite > axon > cell body
   B) dendrite > cell body > axon
   C) axon > cell body > dendrite
   D) axon > dendrite > cell body

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12. Electrical wires are generally protected by a tube of plastic. A similar insulating function is performed in the nervous system by:
    A) myelin sheath.
    B) glial cells.
    C) terminal buds.
    D) dendrites.

13. Terminal buds are found at the ends of:
    A) cell bodies.
    B) dendrites.
    C) axons.
    D) glial cells.

14. Which sequence CORRECTLY arranges nervous system structures from the largest to the smallest?
    A) neuron > axon > terminal bud
    B) neuron > terminal bud > axon
    C) axon > terminal bud > neuron
    D) axon > neuron > terminal bud

15. The breaks between segments of an axon's myelin sheath are called:
    A) terminal buds.
    B) synapses.
    C) dendritic clefts.
    D) nodes of Ranvier.

16. The nervous system contains not only neurons but also other cells called:
    A) axons.
    B) glial cells.
    C) dendrites.
    D) myelin cells.

17. As compared with neurons, there are _____ glial cells.
    A) fewer
    B) about as many
    C) somewhat more
    D) many more

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18. Which statement does NOT describe one of the functions of glial cells?
    A) They defend the brain against infection.
    B) They conduct action potentials.
    C) They create the myelin that insulates axons.
    D) They have action potentials.

19. Which type of glial cell is CORRECTLY matched with its function?
    A) astrocytes – create myelin sheaths
    B) astrocytes – protect the brain from infection
    C) Schwann cells – restore the blood-brain barrier
    D) Schwann cells – create myelin sheaths

20. The electrical potential created by the difference in charge between the inside and outside of a neuron is called the neuron's _____ potential.
    A) action
    B) threshold
    C) resting
    D) electrostatic

21. A neuron's resting potential is _____ mV.
    A) –70
    B) –55
    C) 0
    D) 30

22. An action potential is a sudden _____ change in the electrical charge of a neuron's _____.
    A) positive; axon
    B) positive; dendrites
    C) negative; axon
    D) negative; dendrites

23. As an action potential occurs, the neuron's electrical charge changes from _____ to _____.
    A) negative; more negative
    B) positive; more positive
    C) negative; positive
    D) positive; negative

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24. For typical neurons, which voltage is correctly identified with either the resting or threshold potential?
    A) –70 mV – threshold potential
    B) –55 mV – threshold potential
    C) 30 mV – resting potential
    D) 70 mV – resting potential

25. Which sequence CORRECTLY reflects the order in which electrical charges occur during an action potential, from first to last?
    A) threshold potential > resting potential > action potential
    B) resting potential > action potential > threshold potential
    C) action potential > threshold potential > resting potential
    D) resting potential > threshold potential > action potential

26. An action potential involves the transfer of _____ and _____ ions across an axon's membrane.
    A) calcium; potassium
    B) sodium; potassium
    C) sodium; calcium
    D) calcium; chloride

27. An action potential takes about _____ to complete.
    A) 0.1 ms
    B) 1 ms
    C) 0.01 s
    D) 1 s

28. You cannot fire a gun softly or flush a toilet halfway. Like an action potential, gunfire and a toilet's flush follow the _____ law.
    A) on-or-off
    B) all-or-none
    C) this-or-that
    D) is-or-isn't

29. The speed of an action potential in unmyelinated neurons is approximately _____ mph. The speed of an action potential in myelinated neurons is approximately ____ mph.
    A) 1 to 4.5; 1 to 4.5
    B) 1 to 4.5; 150 to 275
    C) 150 to 275; 1 to 4.5
    D) 150 to 275; 150 to 275

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30. Which disorder reflects damaged myelination?
    A) muscular dystrophy
    B) schizophrenia
    C) Parkinson's disease
    D) multiple sclerosis

31. Receptor sites are found on:
    A) myelin sheaths.
    B) axons.
    C) vesicles.
    D) dendrites.

32. A synapse is a:
    A) chemical.
    B) signal.
    C) joint.
    D) gap.

33. Which is the CORRECT ordering of events for an action potential?
    A) from the axon hillock, down the axon to the terminal buds
    B) from the terminal buds, down the axon to the axon hillock
    C) from the terminal buds, up the axon to the axon hillock
    D) from the axon hillock, up the axon to the terminal buds

34. Cocaine causes the neurotransmitter dopamine to remain at the site of the synapse longer than it normally would. Cocaine thus inhibits the process called:
    A) recycling.
    B) reuse.
    C) reuptake.
    D) reabsorption.

35. Within neurons is to between neurons as _____ is to _____.
    A) chemical; electrical
    B) electrical; mechanical
    C) electrical; chemical
    D) mechanical; chemical

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36. Methamphetamine increases the release of dopamine from an axon's terminal button. Curare blocks the release of acetylcholine. Methamphetamine is a dopamine _____; curare is an acetylcholine _____.
    A) antagonist; agonist
    B) exciter; inhibitor
    C) agonist; antagonist
    D) inhibitor; exciter

37. Researchers have identified approximately _____ neurotransmitters.
    A) 20
    B) 50
    C) 100
    D) 200

38. An advertisement for a new drug therapy catches your eye. The advertisement claims that the drug will counteract the symptoms of Alzheimer's disease. The drug probably works by acting as a(n):
    A) acetylcholine agonist.
    B) acetylcholine antagonist.
    C) serotonin agonist.
    D) serotonin antagonist.

39. The neurotransmitter GABA opposes the action of the neurotransmitter:
    A) glutamate.
    B) acetylcholine.
    C) serotonin.
    D) dopamine.

40. GABA is to glutamate as _____ is to _____.
    A) inhibitory; excitatory
    B) excitatory; inhibitory
    C) agonist; antagonist
    D) antagonist; agonist

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41. Carmen is driving at night in an unfamiliar city. The neighborhood looks dangerous; Carmen feels lost and on edge. The neurotransmitter _____ is helping her cope with the stressful situation.
    A) serotonin
    B) dopamine
    C) GABA
    D) norepinephrine

42. According to the text, Prozac and Zoloft boost the effects of serotonin. In other words, Prozac and Zoloft are serotonin:
    A) agonists.
    B) antagonists.
    C) inhibitors.
    D) stimulators.

43. Parkinson's disease is to dopamine as _____ is to _____.
    A) Alzheimer's disease; serotonin
    B) depression; acetylcholine
    C) depression; serotonin
    D) Alzheimer's disease; norepinephrine

44. Learning, attention, and movement all involve the neurotransmitter:
    A) serotonin.
    B) glutamate.
    C) GABA.
    D) dopamine.

45. The neurotransmitter MOST closely associated with drug abuse is:
    A) dopamine.
    B) glutamate.
    C) norepinephrine.
    D) acetylcholine.

46. Popular actor Michael J. Fox lives with Parkinson's disease. His symptoms include shaking and trembling, signs of a deficiency of the neurotransmitter:
    A) GABA.
    B) norepinephrine.
    C) dopamine.
    D) serotonin.

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47. Which neurotransmitter is INCORRECTLY described?
    A) acetylcholine – enables movement
    B) GABA – prepares the body for stress
    C) serotonin – helps regulate sleep and mood
    D) dopamine – plays a role in drug use

48. Which neurotransmitter is CORRECTLY matched with a psychological function?
    A) glutamate – relief of pain
    B) serotonin – contributes to memory
    C) dopamine – facilitates learning
    D) acetylcholine – produces feelings of pleasure

49. Which disorder is CORRECTLY paired with an associated neurotransmitter?
    A) Parkinson's disease – dopamine
    B) depression – glutamate
    C) schizophrenia – serotonin
    D) Alzheimer's disease – endorphins

50. _____ function(s) as the brain's natural painkiller.
    A) Acetylcholine
    B) Dopamine
    C) Endorphins
    D) GABA

51. "Runner's high" occurs when prolonged, intense athletic activity causes the release of _____, the brain's natural painkiller.
    A) endorphins
    B) glutamate
    C) norepinephrine
    D) adenosine

52. Mr. Lopez is prescribed oxycodone to manage chronic lower back pain. Oxycodone is called an opioid because its action resembles that of _____, the brain's natural painkillers.
    A) acetylcholine
    B) dopamine
    C) adenosine
    D) endorphins

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53. With respect to acetylcholine, Botox is to nicotine as _____ is to _____.
    A) stimulator; inhibitor
    B) inhibitor; stimulator
    C) agonist; antagonist
    D) antagonist; agonist

54. According to the textbook, caffeine blocks adenosine receptors. Therefore, with respect to adenosine, caffeine is a(n):
    A) agonist.
    B) antagonist.
    C) neurotransmitter.
    D) stimulator.

55. According to the text, adenosine slows down neuronal activity. In other words, adenosine is a(n) _____ neurotransmitter.
    A) excitatory
    B) inhibitory
    C) agonistic
    D) antagonistic

56. According to the text, caffeine increases activity not only in the brain, but also in a branch of the nervous system serving that innervates the body. This branch is called the _____ nervous system.
    A) central
    B) peripheral
    C) sympathetic
    D) secondary

57. At the broadest level, the nervous system is divided into the _____ and the _____ nervous systems.
    A) primary; secondary
    B) somatic; autonomic
    C) sympathetic; parasympathetic
    D) central; peripheral

58. The brain and the spinal cord constitute the _____ nervous system.
    A) central
    B) peripheral
    C) somatic
    D) primary

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59. The central nervous system consists of the _____. The peripheral nervous system comprises the _____.
    A) somatic and autonomic nervous systems; sympathetic and parasympathetic nervous systems
    B) somatic and autonomic nervous systems; brain and the spinal cord
    C) sympathetic and parasympathetic nervous systems; somatic and autonomic nervous systems
    D) brain and the spinal cord; somatic and autonomic nervous systems

60. The two major divisions of the peripheral nervous system are the _____ and _____ divisions.
    A) somatic; autonomic
    B) sympathetic; parasympathetic
    C) sensory; motor
    D) skeletal; muscular

61. Which choice CORRECTLY orders branches of the nervous system from the broadest to the most specific?
    A) peripheral > sympathetic > autonomic
    B) peripheral > autonomic > sympathetic
    C) sympathetic > peripheral > autonomic
    D) autonomic > peripheral > sympathetic

62. Imagine a large city in which a downtown business district is linked to outlying suburbs by a system of subway trains. The spinal cord's sensory neurons are analogous to the system's _____ trains; the spinal cord's motor neurons are analogous to the _____ trains.
    A) local; express
    B) express; local
    C) inbound; outbound
    D) outbound; inbound

63. Regarding the spinal cord's control of behavior, which statement is TRUE?
    A) The spinal cord cannot control any behaviors without the help of the brain.
    B) The spinal cord is not involved in reflexes.
    C) The spinal cord and the brain rarely interact in the control of behavior.
    D) The spinal cord can control some simple reflexes without the brain's help.

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64. Automatic, involuntary responses to stimuli are called:
    A) conditioned responses.
    B) reflexes.
    C) action potentials.
    D) instincts.

65. Within the reflex circuit, it is the _____ that allows the spinal cord to control certain reflexes without the brain's help.
    A) motor neuron
    B) sensory neuron
    C) integrator
    D) interneuron

66. Sensory is to motor as _____ is to _____.
    A) efferent; afferent
    B) afferent; efferent
    C) afferent; interneuron
    D) interneuron; efferent

67. Bundles of neurons carrying information to and from the central nervous system are called:
    A) nerves.
    B) glia.
    C) ganglia.
    D) nuclei.

68. Sensory and motor nerves make up the _____ nervous system.
    A) autonomic
    B) parasympathetic
    C) somatic
    D) sympathetic

69. Somatic is to autonomic as _____ is to _____.
    A) excitation; rest
    B) involuntary; voluntary
    C) rest; excitation
    D) voluntary; involuntary

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70. The somatic nervous system regulates external behavior; in contrast, the _____ nervous system underlies internal behavior.
    A) autonomic
    B) central
    C) endogenous
    D) secondary

71. Excitation is to rest as _____ is to _____.
    A) autonomic; somatic
    B) somatic; autonomic
    C) parasympathetic; sympathetic
    D) sympathetic; parasympathetic

72. Izzy's pupils are dilated and her heart is pounding; her breathing is shallow and rapid. Her _____ nervous system is active.
    A) somatic
    B) parasympathetic
    C) sympathetic
    D) secondary

73. Which situation is MOST likely to involve the action of the parasympathetic nervous system?
    A) Brooke's finger accidentally grazes the hot iron; she immediately jerks her hand away.
    B) After a satisfying evening meal, Callum relaxes in front of the television.
    C) Walking toward her car in a deserted parking garage one night, Danica is surprised by a strange man who seems to appear from nowhere.
    D) While barefoot, Yolanda accidentally steps on a piece of broken glass.

74. Arden's heart rate and respiration are slowing, and her digestion is facilitated. Her _____ nervous system has become active.
    A) sympathetic
    B) somatic
    C) parasympathetic
    D) secondary

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75. Which factor is NOT an effect of sympathetic nervous system activation?
    A) increased heart rate
    B) pupil constriction
    C) inhibited digestion
    D) increased respiration

76. Public speaking frightens Pavel. Unfortunately, he is scheduled to give a presentation when his class begins in 5 minutes. Pavel's _____ nervous system is probably kicking into high gear.
    A) somatic
    B) parasympathetic
    C) reflexive
    D) sympathetic

77. The parasympathetic nervous system:
    A) activates digestion.
    B) dilates the pupils.
    C) increases respiration.
    D) increases blood flow to the muscles.

78. Twenty minutes before an introductory calculus final, anxious students gather in the hall outside the examination room. To calm their nerves and gain reassurance, some students engage in small talk with those next to them. This behavior exemplifies the _____ response to stress.
    A) fight-or-flight
    B) go-no go
    C) lock-and-load
    D) tend-and-befriend

79. Women earn nearly _____% of the bachelor's degrees in the United States. However, in fields such as computer science, engineering, and physics, women account for fewer than _____% of the bachelor's degrees.
    A) 50; 30
    B) 50; 40
    C) 60; 20
    D) 60; 40

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80. Neurotransmitter is to hormone as _____ is to _____.
    A) gland; neuron
    B) endocrine system; nervous system
    C) body; brain
    D) fast; slow

81. Which neurotransmitter is also a hormone?
    A) norepinephrine
    B) dopamine
    C) glutamate
    D) serotonin

82. The tiny _____ gland may be considered the endocrine system's "master gland."
    A) pituitary
    B) thyroid
    C) pineal
    D) adrenal

83. Because it controls the pituitary gland, the brain's _____ ultimately controls the endocrine system.
    A) hypothalamus
    B) hippocampus
    C) amygdala
    D) thalamus

84. Erin is under stress: She has only a few minutes to make a connection at a large, busy airport—and the gate is in another terminal! Erin's _____ gland is probably releasing hormones.
    A) pineal
    B) adrenal
    C) thyroid
    D) pancreatic

85. Megan's pineal gland is releasing a high level of melatonin. Megan is MOST likely:
    A) anxious.
    B) hungry.
    C) sleepy.
    D) in love.

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86. Lamar takes a melatonin tablet to help him sleep. The tablet's active ingredient is released naturally by the:
    A) pancreas.
    B) pineal gland.
    C) thyroid gland.
    D) pituitary gland.

87. Which hormone is CORRECTLY matched with its corresponding endocrine gland?
    A) melatonin – adrenal gland
    B) insulin – pancreas
    C) thyroxin – pituitary gland
    D) melatonin – ovaries

88. Which endocrine gland is matched with the CORRECT function?
    A) pancreas – regulates metabolism
    B) pineal gland – regulates blood sugar
    C) thyroid gland – controls sleep-wake cycles
    D) adrenal gland – regulates salt balance

89. Estrogen is a female sex hormone. Based on the textbook's discussion of the endocrine system, which gland MOST likely releases estrogen?
    A) the pancreas
    B) the thyroid gland
    C) the ovaries
    D) the pineal gland

90. The cerebrum:
    A) is one part of the brain.
    B) contains some of the brain's structures.
    C) contains most of the brain's structures.
    D) is the same thing as the brain.

91. Regarding the brain's hemispheres, which statement is TRUE?
    A) The functions of the two hemispheres are identical.
    B) The left hemisphere controls the left side of the body.
    C) The brain's hemispheres are perfectly symmetrical.
    D) The right hemisphere controls the left side of the body.

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92. Just over _____ children had hemispherectomies at Johns Hopkins between 1975 and 2001.
    A) 50
    B) 100
    C) 200
    D) 500

93. Of the children who had hemispherectomies at Johns Hopkins between 1975 and 2001, _____% no longer experienced seizures after the operation, whereas _____% continued to have troubling seizures.
    A) 65; 15
    B) 65; 25
    C) 75; 15
    D) 75; 25

94. Split-brain operations are used to treat drug-resistant:
    A) depression.
    B) epilepsy.
    C) schizophrenia.
    D) anxiety.

95. In a split-brain operation, the:
    A) cerebellum is severed from the brainstem.
    B) limbic system is separated from higher cortical areas.
    C) frontal lobe is severed from the parietal lobe.
    D) right hemisphere is severed from the left hemisphere.

96. The left and right hemispheres of the brain are connected by a bundle of fibers called the:
    A) corpus callosum.
    B) cerebellum.
    C) central sulcus.
    D) information superhighway.

97. Pioneering split-brain studies were conducted by:
    A) Penfield.
    B) Wernicke.
    C) Gage.
    D) Sperry.

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98. Roger Sperry's Nobel Prize-winning split-brain investigations:
    A) offered mainly correlational data.
    B) offered a way for psychologists to study the operation of each hemisphere.
    C) suggested a potential treatment for depression.
    D) exemplify the use of naturalistic observation.

99. After the split-brain procedure, Sperry and Gazzaniga's patients:
    A) were less expressive emotionally.
    B) demonstrated personality changes.
    C) experienced fewer seizures.
    D) showed moderate cognitive deficits.

100. An image of a dinner fork is flashed in a split-brain patient's left visual field. The patient will be:
    A) able to name the object.
    B) able to point to a fork with his or her left hand.
    C) able to point to a fork with his or her right hand.
    D) unable to either name or point to the object.

101. An image of a screwdriver is flashed in a split-brain patient's right visual field. The patient will be:
    A) able to name the object.
    B) able only to point to a screwdriver with his or her left hand.
    C) able only to point to a screwdriver with his or her right hand.
    D) unable to either name or point to the object.

102. Trevor is scratching his head, trying desperately to solve a visual analogy as part of an intelligence test; Sienna, meanwhile, is giving an oral presentation in a political science class. Of the brain's hemispheres, Trevor's _____ hemisphere and Sienna's _____ hemisphere are MOST active.
    A) left; left
    B) left; right
    C) right; left
    D) right; right

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103. Which statement is MOST accurate with respect to the lateralization of language among right-handers?
    A) It is most likely left-lateralized.
    B) It is most likely right-lateralized.
    C) The control of language is shared equally between the hemispheres.
    D) No generalization can be made: the lateralization of language varies dramatically from one person to another.

104. A stroke damaged a portion of Broca's area in Joelle's brain. Joelle will probably experience deficits in:
    A) language comprehension.
    B) face recognition.
    C) speech production.
    D) object recognition.

105. Which individual provided early evidence for the left hemisphere's role in language processing?
    A) Gall
    B) Penfield
    C) Hitzig
    D) Wernicke

106. Speech production is to language comprehension as _____ is to _____.
    A) Broca; Hitzig
    B) Broca; Wernicke
    C) Hitzig; Wernicke
    D) Wernicke; Hitzig

107. Broadly speaking, visual tasks are to linguistic tasks as _____ is to _____.
    A) the right hemisphere; the left hemisphere
    B) the left hemisphere; the right hemisphere
    C) Broca's area; Wernicke's area
    D) Wernicke's area; Broca's area

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108. Sam is recovering from a small stroke. He has difficulty following rapidly changing conversations, and he does not seem to understand puns or sarcasm. Additionally, he has trouble recognizing the faces of his friends and acquaintances. The stroke may have damaged:
A) Broca's area.
B) the left hemisphere.
C) Wernicke's area.
D) the right hemisphere.

109. _____ plays a key role in understanding ironic or satirical language.
A) Broca's area
B) The left hemisphere
C) The right hemisphere
D) Wernicke's area

110. Kate has suffered right-hemisphere damage. Which process is LEAST likely to be affected?
A) understanding a pun
B) determining whether a painting she is hanging is straight or crooked
C) reciting a shopping list out loud
D) recognizing a familiar look on her boyfriend's face

111. Broca's area is to Wernicke's area as _____ is to _____.
A) reading; speaking
B) reading; writing
C) language comprehension; language production
D) speech production; language comprehension

112. Violet's speech is slow and labored; however, she can understand the speech of others. Violet suffers from damage to the _____ lobe.
A) frontal
B) temporal
C) occipital
D) parietal

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113. Warren suffers from damage to Wernicke's area. Which impairment should he experience in thought or behavior?
    A) Warren should experience an inability to recognize faces.
    B) Warren should have difficulty recognizing objects visually.
    C) Warren should have trouble producing fluent speech.
    D) Warren should experience difficulty understanding language.

114. The process by which the brain reorganizes itself throughout development is termed:
    A) neurogenesis.
    B) neuroplasticity.
    C) neuroadaptation.
    D) neuromutability.

115. The text states that brain scans reveal that, when visually impaired people learn Braille early in life, brain areas specialized for vision become active, suggesting that they become involved in processing touch sensations. Based on information in the text, these areas are probably in the _____ lobe.
    A) frontal
    B) temporal
    C) parietal
    D) occipital

116. The text states that brain scans reveal that, when visually impaired people learn Braille early in life, brain areas specialized for vision become active, suggesting that they become involved in processing touch sensations. Based on information in the text, these areas take on functions normally associated with the _____ lobe.
    A) occipital
    B) temporal
    C) parietal
    D) frontal

117. Which statement BEST expresses the relationship between neuroplasticity and neurogenesis?
    A) Neurogenesis is an example of neuroplasticity.
    B) Neuroplasticity is an example of neurogenesis.
    C) Neurogenesis is the same process as neuroplasticity.
    D) Neuroplasticity is unrelated to neurogenesis.

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118. According to the text, research on neurogenesis began in the:
    A) 1970s.
    B) 1980s.
    C) 1990s.
    D) 2000s.

119. Which statement is TRUE?
    A) Stem cells have been used to treat Parkinson's disease in humans.
    B) Stem cells have treated spinal cord injuries in mice.
    C) Stem cells must come from embryonic organisms.
    D) Stem cells have been used to treat brain-injured humans.

120. The use of stem cells in research and treatment remains controversial because stem cells come from:
    A) nonhuman species.
    B) human embryos.
    C) paid adult donors.
    D) genetic engineering in the laboratory.

121. The textbook cites research (Schellenberg & Winner, 2011) exploring the potential cognitive benefits of musical training. What did these researchers find?
    A) On all tests, the scores of people with musical training were equivalent to the scores of those without such training.
    B) On all tests, the scores of people with musical training exceeded the scores of those without such training.
    C) As compared with people without musical training, people with musical training scored higher on auditory tests but not on overall IQ tests.
    D) As compared with people without musical training, people with musical training scored higher on auditory tests, language tests, and overall IQ tests.

122. A technique called _____ records the brain's activity through scalp electrodes.
    A) electroencephalogram (EEG)
    B) positron emission tomography (PET)
    C) computerized axial tomography (CAT)
    D) functional magnetic resonance imaging (fMRI)

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123. _____ detects blood flow to brain regions, indicating heightened neural activity.
A) Functional magnetic resonance imaging (fMRI)
B) Positron emission tomography (PET)
C) Computerized axial tomography (CAT)
D) Electroencephalogram (EEG)

124. Brent is taking part in an experiment in a cognitive neuroscience lab on campus. Silently, he reads rapid sequences of words flashed on a computer screen. Simultaneously, the electrical activity of his brain is recorded through skull electrodes. The brain scanning technique used in this study is:
A) computerized axial tomography (CAT).
B) electroencephalogram (EEG).
C) positron emission tomography (PET).
D) functional magnetic resonance imaging (fMRI).

125. Later in the course, you will learn about the different patterns of electrical activity in the brain that occur in the different stages of sleep and dreaming. Our knowledge of these patterns MOST likely reflects the use of a technique known as:
A) computerized axial tomography (CAT).
B) positron emission tomography (PET).
C) electroencephalogram (EEG).
D) functional magnetic resonance imaging (fMRI).

126. A researcher is using a strong magnet to track blood-oxygen changes in participants' brains as they complete decision-making tasks. The researcher is using _____ to examine the brain's activity.
A) computerized axial tomography (CAT)
B) positron emission tomography (PET)
C) electroencephalogram (EEG)
D) functional magnetic resonance imaging (fMRI)

127. Which brain study technique is CORRECTLY matched with a description?
A) computerized axial tomography (CAT) – detects electrical energy in the brain
B) electroencephalogram (EEG) – reveals patterns of blood flow in the brain
C) positron emission tomography (PET) – uses radioactive glucose to detect active areas in the brain
D) functional magnetic resonance imaging (fMRI) – uses X-rays to create cross-sectional images of the brain

Scientific American Psychology 2nd edition Licht Test Bank

128. The brain's outermost cellular layer is called the:
    A) brain stem.
    B) cerebellum.
    C) association area.
    D) cerebral cortex.

129. The temporal lobe is to the occipital lobe as _____ is to _____.
    A) hearing; touch
    B) vision; hearing
    C) touch; vision
    D) hearing; vision

130. Vision is to the occipital lobe as _____ is to the _____ lobe.
    A) hearing; frontal
    B) hearing; parietal
    C) touch; parietal
    D) touch; frontal

131. The temporal lobe is _____ the _____ lobe.
    A) beneath; occipital
    B) beneath; parietal
    C) behind; occipital
    D) behind; parietal

132. Alphonse suffered a stroke, resulting in a lesion in his temporal lobe. Which of Alphonse's perceptual or cognitive functions is MOST likely impaired?
    A) motor coordination
    B) decision making
    C) hearing
    D) vision

133. In a roller-blading mishap, Wendy fell down and injured the very back of her head. Which of her senses is MOST likely impaired?
    A) vision
    B) touch
    C) hearing
    D) smell

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134. Which sequence CORRECTLY identifies and orders the lobes of the cortex, from anterior to posterior?
    A) frontal > temporal and parietal > posterior
    B) occipital > temporal and parietal > frontal
    C) frontal > occipital > temporal and parietal
    D) frontal > temporal and parietal > occipital

135. Anterior to the parietal lobe is the frontal lobe; beneath it is the _____ lobe.
    A) occipital
    B) dorsal
    C) temporal
    D) posterior

136. Sensory and motor information is integrated in the _____ areas of the cortex.
    A) association
    B) correlation
    C) relational
    D) coordination

137. The brain's association areas:
    A) are more precisely localized than are the sensory and motor areas.
    B) receive and analyze sensory stimuli.
    C) make up the majority of the cortical surface.
    D) are smaller than the sensory or motor areas.

138. Broca's area is to Wernicke's area as the _____ lobe is to the _____ lobe.
    A) frontal; parietal
    B) frontal; temporal
    C) parietal; frontal
    D) temporal; frontal

139. Networks of neurons in the _____ lobe are involved in processing emotions and making plans.
    A) frontal
    B) occipital
    C) parietal
    D) temporal

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140. Which research method in psychology is exemplified by the study of Phineas Gage's thought and behavior following his brain injury?
A) the correlational method
B) case study
C) naturalistic observation
D) the experimental method

141. The brain injury suffered by 19th-century railroad worker Phineas Gage allowed psychologists to learn about the functions of the brain's:
A) frontal lobe.
B) brainstem.
C) limbic system.
D) right hemisphere.

142. The _____ appears to support some aspects of personality development.
A) corpus callosum
B) parietal lobe
C) brainstem
D) frontal lobe

143. In which lobe is the motor cortex located?
A) occipital
B) frontal
C) parietal
D) temporal

144. In a neurophysiological investigation, a subject makes an involuntary gesture when a portion of its brain is electrically stimulated. The area of the brain that was MOST likely stimulated is the:
A) front portion of the frontal lobe.
B) front portion of the parietal lobe.
C) rear portion of the frontal lobe.
D) rear portion of the parietal lobe.

145. Autopsy studies of Einstein's brain suggest that the _____ lobe may be involved in spatial and mathematical intelligence.
A) frontal
B) parietal
C) temporal
D) occipital

Scientific American Psychology 2nd edition Licht Test Bank

146. Which statement BEST describes the relationship between the amount of motor cortex devoted to the control of a particular movement and the degree of precision required by the movement?
A) There is no relationship.
B) There is only a weak relationship.
C) There is a positive correlation.
D) There is a negative correlation.

147. There is a _____ correlation between the touch sensitivity of a body part and the amount of somatosensory cortex devoted to that part.
A) negative
B) minimal
C) positive
D) perfect

148. Somatosensory cortex is to motor cortex as the _____ lobe is to the _____ lobe.
A) temporal; parietal
B) parietal; temporal
C) parietal; frontal
D) frontal; parietal

149. Auditory cortex is to the _____ lobe as _____ cortex is to the occipital lobe.
A) parietal; somatosensory
B) parietal; visual
C) temporal; somatosensory
D) temporal; visual

150. Which choice CORRECTLY pairs a case study or scientist from psychology's history with the cortical area with which he is associated?
A) Einstein – parietal lobe
B) Fritsch – temporal lobe
C) Gage – somatosensory cortex
D) Penfield – occipital lobe

151. Which lobe is CORRECTLY matched with its cortical area?
A) frontal lobe – visual cortex
B) occipital lobe – somatosensory cortex
C) parietal lobe – motor cortex
D) temporal lobe – auditory cortex

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152. The _____ is a group of interrelated structures involved in people's experiences of emotion, motivation, and memory.
A) reticular formation
B) limbic system
C) hindbrain
D) corpus callosum

153. Which structure is NOT part of the limbic system?
A) the amygdala
B) the hippocampus
C) the medulla
D) the thalamus

154. A neuroscientist finds that, as compared with civilian college students, veterans of the wars in Iraq and Afghanistan show higher activation in a certain brain area when they are shown intense, emotional pictures. This brain area is MOST likely the:
A) thalamus.
B) hypothalamus.
C) hippocampus.
D) amygdala.

155. Darnell underwent surgery to control his severe epilepsy. Now, however, Darnell cannot form new memories of his experiences, although he does remember events in the past. MOST likely, the surgery destroyed a portion of the _____ in Darnell's brain.
A) hypothalamus
B) hippocampus
C) amygdala
D) thalamus

156. The amygdala is to emotion as the hippocampus is to:
A) problem solving.
B) motivation.
C) arousal.
D) memory.

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157. The _____ may be considered the brain's sensory relay station.
A) amygdala
B) hippocampus
C) thalamus
D) hypothalamus

158. Pizza! Beer! Sex! Our motivation or drive for such things is based in part on the activity of the brain structure known as the:
A) hypothalamus.
B) hippocampus.
C) thalamus.
D) pons.

159. The hypothalamus is located immediately _____ the thalamus.
A) below
B) above
C) in front of
D) behind

160. Which limbic system structure is CORRECTLY matched with the potential effects of damage to that structure?
A) amygdala – unusual emotional or aggressive behavior
B) hypothalamus – unusual emotional or aggressive behavior
C) hypothalamus – difficulties in learning and memory
D) amygdala – poor regulation of hunger and eating.

161. The reticular activating system is located in the _____. It regulates _____.
A) midbrain; arousal
B) forebrain; movement
C) forebrain; arousal
D) hindbrain; movement

162. The pons serves to:
A) regulate arousal.
B) relay sensory information.
C) coordinate movement.
D) consolidate memories.

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163. The hindbrain includes the:
    A) medulla.
    B) frontal lobes.
    C) thalamus.
    D) cortex.

164. Which choice CORRECTLY identifies the structures in the brainstem?
    A) medulla, thalamus, amygdala
    B) reticular formation, thalamus, amygdala
    C) pons, reticular formation, amygdala
    D) medulla, pons, reticular formation

165. The part of brainstem closest to the spinal cord is the _____; it is important for such functions as _____.
    A) pons; breathing and heart rate
    B) pons; movement
    C) medulla; breathing and heart rate
    D) medulla; movement

166. The word “cerebellum” means little brain. Where in the brain is the cerebellum located in relation to the brainstem?
    A) in front of
    B) beneath
    C) behind
    D) above

167. Yves has been drinking. He has difficulty walking a straight line when asked to do so by a police officer. Apparently, Yves's _____ is functioning poorly.
    A) cerebellum
    B) thalamus
    C) medulla
    D) amygdala

168. Kira seems uncoordinated, often tripping or stumbling. In addition, she sometimes displays emotional reactions that do not fit the situation. Kira's _____ may be damaged.
    A) medulla
    B) pons
    C) cerebellum
    D) hippocampus

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169. _____ was an early approach to explaining the functions of the brain by trying to link the physical structure of the skull with a variety of characteristics.
A) Biopsychology
B) Phrenology
C) Behavioral neuroscience
D) Physiological psychology

170. In _____, a computer analyzes the electromagnetic response of the brain, creating cross-sectional images similar to those produced by computerized axial topography (CAT), but with superior detail.
A) digital tomosynthesis
B) magnetic resonance imaging
C) electroencephalogram
D) positron emission topography

171. Which part of a typical neuron has a nucleus containing DNA?
A) the cell body
B) the synapse
C) a myelin sheath
D) an axon

172. After a brain injury, a class of glial cells called _____ restore the barrier between the brain and blood.
A) microglia
B) astrocytes
C) Schwann cells
D) nodes of Ranvier

173. _____ are a type of glial cells that produce the myelin that envelops axons.
A) Ependymal cells
B) Astrocytes
C) Schwann cells
D) Nodes of Ranvier

174. In the context of the processes that take place inside a neuron, _____ is the natural tendency of ions to spread out or disperse.
A) tomography
B) diffusion
C) lateralization
D) neurogenesis

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175. _____ is a neurotransmitter that relays messages from neurons to muscles, thus enabling movement.
A) Norepinephrine
B) GABA
C) Serotonin
D) Acetylcholine

176. _____ is a food-borne poison that has been transformed into a tool for treating various medical and cosmetic conditions through its impact on acetylcholine activity.
A) Botulinum neurotoxin
B) Serotonin
C) Norepinephrine
D) Dopamine endorphin

177. A major responsibility of the spinal cord is:
A) communicating between different lobes of the brain.
B) gathering information from sensory receptors and sending it to the central nervous system.
C) taking information from the brain and delivering it throughout the body.
D) regulating involuntary activities of the body.

178. Identify a TRUE statement about the peripheral nervous system.
A) It includes all the neurons that are not in the central nervous system.
B) It communicates with the rest of the body through the central nervous system.
C) It includes the brain and spinal cord.
D) It helps individuals determine if the touch they feel is pleasurable or painful.

179. Identify a TRUE statement about the autonomic nervous system.
A) It gathers information from sensory receptors.
B) It includes the brain and spinal cord.
C) It initiates the fight-or-flight response.
D) It regulates involuntary activities.

180. The _____ uses glands to convey messages by releasing hormones into the bloodstream.
A) endocrine system
B) parasympathetic nervous system
C) spinal cord
D) somatic nervous system

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181. _____ is the idea that each cerebral hemisphere processes certain types of information and excels in certain activities.
A) Callosotomy
B) Lateralization
C) Reuptake
D) Ablation

182. _____ is a region of the cortex that plays a pivotal role in language comprehension.
A) Broca's area
B) Wernicke's area
C) The occipital lobe
D) The frontal lobe

183. The _____ cortex is a band of tissue running parallel to the motor cortex that receives and integrates information related to pain and temperature from all over the body.
A) somatosensory
B) auditory
C) primary visual
D) prefrontal

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Answer Key

1. D
2. C
3. B
4. A
5. B
6. C
7. B
8. D
9. D
10. A
11. B
12. A
13. C
14. A
15. D
16. B
17. D
18. B
19. D
20. C
21. A
22. A
23. C
24. B
25. D
26. B
27. B
28. B
29. B
30. D
31. D
32. D
33. A
34. C
35. C
36. C
37. C
38. A
39. A
40. A
41. D
42. A
43. C
44. D

Scientific American Psychology 2nd edition Licht Test Bank

45. A
46. C
47. B
48. C
49. A
50. C
51. A
52. D
53. D
54. B
55. B
56. B
57. D
58. A
59. D
60. A
61. B
62. C
63. D
64. B
65. D
66. B
67. A
68. C
69. D
70. A
71. D
72. C
73. B
74. C
75. B
76. D
77. A
78. D
79. C
80. D
81. A
82. A
83. A
84. B
85. C
86. B
87. B
88. D
89. C
90. C

Scientific American Psychology 2nd edition Licht Test Bank

91. D
92. B
93. A
94. B
95. D
96. A
97. D
98. B
99. C
100. B
101. A
102. C
103. A
104. C
105. D
106. B
107. A
108. D
109. C
110. C
111. D
112. A
113. D
114. B
115. D
116. C
117. A
118. C
119. B
120. B
121. D
122. A
123. A
124. B
125. C
126. D
127. C
128. D
129. D
130. C
131. B
132. C
133. A
134. D
135. C
136. A

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137. C
138. B
139. A
140. B
141. A
142. D
143. B
144. C
145. B
146. C
147. C
148. C
149. D
150. A
151. D
152. B
153. C
154. D
155. B
156. D
157. C
158. A
159. A
160. A
161. A
162. C
163. A
164. D
165. C
166. C
167. A
168. C
169. B
170. B
171. A
172. B
173. C
174. B
175. D
176. A
177. C
178. A
179. D
180. A
181. B
182. B

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183. A

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1. Neuroscience is the same thing as biological psychology.
   A) True
   B) False

2. Neurons are the fundamental building blocks of the nervous system.
   A) True
   B) False

3. Axons receive signals from other neurons.
   A) True
   B) False

4. Receiving is to sending as axons are to dendrites.
   A) True
   B) False

5. Myelin insulates dendrites.
   A) True
   B) False

6. Glial cells outnumber neurons.
   A) True
   B) False

7. Glial cells called Schwann cells help guard the brain from inflammation and infection.
   A) True
   B) False

8. The potential of a nerve cell at rest is about –70 mV.
   A) True
   B) False

9. For a typical neuron, the threshold potential is –70 mV and the resting potential is –55 mV.
   A) True
   B) False

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10. During an action potential, potassium ions rush into a neuron.
    A) True
    B) False

11. For an individual neuron, some action potentials are stronger than are others.
    A) True
    B) False

12. Action potentials travel more quickly in myelinated than in unmyelinated axons.
    A) True
    B) False

13. One disease that reflects a breakdown in myelin is cystic fibrosis.
    A) True
    B) False

14. The process whereby neurotransmitters are reabsorbed by the sending neuron is called reuptake.
    A) True
    B) False

15. Neurons are physically connected at a place called a synapse.
    A) True
    B) False

16. Nicotine is an acetylcholine agonist.
    A) True
    B) False

17. GABA sends inhibitory messages to a receiving neuron.
    A) True
    B) False

18. Glutamate and GABA have similar effects on neural activity.
    A) True
    B) False

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19. Despite their different roles in behavior, all neurotransmitters are excitatory in their effects.
    A) True
    B) False

20. Ellie lives with depression. Her medication probably elevates the activity of acetylcholine.
    A) True
    B) False

21. Dopamine is involved in learning through reinforcement.
    A) True
    B) False

22. Endorphins are the brain's own morphine.
    A) True
    B) False

23. After a long run, Aaron sometimes experiences a feeling of euphoria, a "runners' high" reflecting the activity of a neurotransmitters called adenosine.
    A) True
    B) False

24. Caffeine enhances the activity of the neurotransmitter adenosine.
    A) True
    B) False

25. The somatic nervous system is a division of the central nervous system.
    A) True
    B) False

26. The sympathetic nervous system is a branch of the autonomic nervous system.
    A) True
    B) False

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27. Sensory neurons carry information to the brain.
    A) True
    B) False

28. Interneurons connect sensory neurons to motor neurons.
    A) True
    B) False

29. Reflexes are controlled by the peripheral nervous system.
    A) True
    B) False

30. Afferent is to efferent as motor is to sensory.
    A) True
    B) False

31. The somatic nervous system controls the body's internal responses.
    A) True
    B) False

32. Kate's racing heart suggests that her sympathetic nervous system is active.
    A) True
    B) False

33. The parasympathetic nervous system controls the fight-or-flight response.
    A) True
    B) False

34. Men earn a majority of the bachelor's degrees in the United States.
    A) True
    B) False

35. Some chemicals act as both neurotransmitters and hormones.
    A) True
    B) False

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36. The adrenal gland is the endocrine system's "CEO."
    A) True
    B) False

37. The pineal gland secretes the hormone melatonin.
    A) True
    B) False

38. Thyroxin is to insulin as the thyroid gland is to the pituitary gland.
    A) True
    B) False

39. The cerebrum contains the brainstem.
    A) True
    B) False

40. The bundle of nerve fibers joining the two hemisphere is called the corpus callosum.
    A) True
    B) False

41. The split-brain operation is used to treat severe schizophrenia.
    A) True
    B) False

42. Wilder Penfield conducted ground-breaking split brain studies.
    A) True
    B) False

43. Will is a split-brain patient. When an object's image is flashed in his left-visual field, he cannot name the object.
    A) True
    B) False

44. Left brain is to language processing as right brain is to visual and spatial tasks.
    A) True
    B) False

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45. Some people are left-brained and others are right-brained.
    A) True
    B) False

46. Abbie is right-handed. There is a 25% chance that language is right-lateralized in her brain.
    A) True
    B) False

47. Wernicke's area is in the right frontal lobe.
    A) True
    B) False

48. Broca's and Wernicke's areas process music and gestures as well as language.
    A) True
    B) False

49. The right hemisphere's role in language processing is negligible.
    A) True
    B) False

50. We are born with all the brain cells we will ever have.
    A) True
    B) False

51. Neuroplasticity is apparent, even when an entire hemisphere is lost.
    A) True
    B) False

52. The evidence relating musical training to cognitive performance is mainly correlational.
    A) True
    B) False

53. Embryonic stem cells have helped treat Parkinson's disease in humans.
    A) True
    B) False

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54. A psychologist is using EEG when she uses scalp electrodes to measure the electrical activity in a participant's brain.
    A) True
    B) False

55. Computerized axial tomography (CAT) measures blood flow to the different areas of the brain.
    A) True
    B) False

56. After a stroke, Mrs. Williamson has difficulty understanding what is said to her. The stroke probably damaged her temporal lobe.
    A) True
    B) False

57. The processing of touch, pain, and pressure sensations occurs in the temporal lobe.
    A) True
    B) False

58. The case of Phineas Gage provided early knowledge regarding the role of the occipital lobe in thought and behavior.
    A) True
    B) False

59. When examining Albert Einstein's brain, researchers found an area of the frontal lobe related to math processing that was 20% larger.
    A) True
    B) False

60. The motor cortex is to the visual cortex as the frontal lobe is to the occipital lobe.
    A) True
    B) False

61. The auditory cortex is located in the parietal lobe.
    A) True
    B) False

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62. Autopsy studies of Einstein's brain suggested that the size of the parietal lobe may be negatively correlated with mathematical and spatial intelligence.
    A) True
    B) False

63. The different body parts are equally represented in the somatosensory cortex.
    A) True
    B) False

64. When a stroke damages a portion of Mrs. Schexnayder's auditory cortex, it destroys cells in the temporal lobe.
    A) True
    B) False

65. Evolutionarily, the cortex is the oldest part of the brain.
    A) True
    B) False

66. The limbic system contains the pons and medulla.
    A) True
    B) False

67. People with epilepsy have sometimes had portions of their limbic system removed. Subsequent memory problems may reflect damage to the thalamus.
    A) True
    B) False

68. Information travels from our sensory receptors to the thalamus in the brain, which relays it to higher association areas.
    A) True
    B) False

69. Anjelica is becoming increasingly hungry during a long late-afternoon class. Certain cells in her hypothalamus are probably becoming especially active.
    A) True
    B) False

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70. Heart rate and respiration are controlled by the medulla in the brainstem.
    A) True
    B) False

71. The cerebellum is part of the limbic system.
    A) True
    B) False

72. An individual with damage to the cerebellum would have trouble regulating attention and arousal.
    A) True
    B) False

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Answer Key

1. A
2. A
3. A
4. A
5. A
6. A
7. A
8. A
9. A
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11. A
12. A
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26. A
27. A
28. A
29. A
30. A
31. A
32. A
33. A
34. A
35. A
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42. A
43. A
44. A

Scientific American Psychology 2nd edition Licht Test Bank

45. A
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61. A
62. A
63. A
64. A
65. A
66. A
67. A
68. A
69. A
70. A
71. A
72. A

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1. Which statement is TRUE?
   A) Biological psychology is a broader field than neuroscience.
   B) Neuroscience is a subfield of psychology.
   C) Neuroscience is a broader field than biological psychology.
   D) Biological psychology and neuroscience are both subfields of psychology.

2. _____ ions rush into a neuron during an action potential.
   A) Magnesium
   B) Calcium
   C) Sodium
   D) Potassium

3. Imagine your forearm, hand, and fingers as a giant model of a neuron. Based on this model, forearm is to finger as _____ is to _____.
   A) cell body; axon
   B) dendrite; cell body
   C) dendrite; axon
   D) axon; dendrite

4. The breaks between the myelin sheath of an axon are called:
   A) axon hillocks.
   B) terminal buds.
   C) dendrites.
   D) nodes of Ranvier.

5. Identify a TRUE statement about a neuron.
   A) In its inactive state, the inside of a neuron is negatively charged.
   B) The membrane of a neuron is permeable to positive sodium ions.
   C) In its inactive state, the inside of a neuron has positive sodium ions.
   D) The membrane of a neuron is permeable to negative protein ions.

6. After a particularly strenuous workout, Javon feels especially good. Javon's euphoria may reflect the release of the brain's natural painkiller, called:
   A) glutamate.
   B) serotonin.
   C) dopamine.
   D) endorphins.

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7. Mrs. Archer has been diagnosed with multiple sclerosis. This disorder reflects:
   A) depletion of serotonin.
   B) destruction of axons.
   C) damaged myelin.
   D) atrophy of dendrites.

8. Which of these divisions of the nervous system is the broadest or MOST inclusive?
   A) sympathetic
   B) peripheral
   C) somatic
   D) autonomic

9. In the spinal cord, information is sent to the brain via:
   A) efferent nerves.
   B) motor nerves.
   C) sensory nerves.
   D) interneurons.

10. The somatic nervous system:
   A) includes the brain and the spinal cord.
   B) contains sensory and motor nerves.
   C) controls internal, physiological responses.
   D) contains sympathetic and parasympathetic divisions.

11. Which neurotransmitter enables movement by relaying messages from neurons to muscles?
   A) norepinephrine
   B) acetylcholine
   C) serotonin
   D) noradrenaline

12. Ashlynne's adrenal gland is highly active, releasing hormones. Ashlynne is probably:
   A) sleepy.
   B) hungry.
   C) stressed.
   D) in love.

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13. Which situation is MOST likely to involve the action of the sympathetic nervous system?
    A) Fannie's finger accidentally grazes the hot iron; she immediately jerks her hand away.
    B) After a satisfying evening meal, Giancarlo relaxes in front of the television.
    C) Walking toward her car in a deserted parking garage one night, Ronette is surprised by a strange man appearing from nowhere.
    D) Yvonne gets home from class and eats a snack.

14. The brain's left hemisphere:
    A) is identical in function to the right hemisphere.
    B) controls the right side of the body.
    C) is completely symmetrical with the right hemispheres.
    D) controls the left side of the body.

15. The bundle of nerve fibers connecting the two hemispheres is called the:
    A) cerebrum.
    B) central sulcus.
    C) corpus callosum.
    D) cerebellum.

16. _____ performed trail-blazing split-brain studies.
    A) Pierre Paul Broca
    B) Wilder Penfield
    C) Karl Wernicke
    D) Roger Sperry

17. The process in which a stimulus causes an involuntary response without the initial involvement of the brain is called:
    A) a reflex arc.
    B) neurogenesis.
    C) the tend-and-befriend response.
    D) lateralization.

18. Language is left-lateralized for:
    A) a small minority of people, whether they are right-or left-handed.
    B) a majority of right-handers but a minority of left-handers.
    C) a majority of left-handers but a minority of right-handers.
    D) most people, whether they are right-or left-handed.

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19. Speech production is to speech comprehension as _____'s area is to _____'s area.
    A) Broca; Gage
    B) Gage; Wernicke
    C) Broca; Wernicke
    D) Wernicke; Broca

20. Higher-level cognitive functions like thinking and planning are primarily the responsibility of the _____ lobe of the brain.
    A) parietal
    B) occipital
    C) temporal
    D) frontal

21. A brain tumor has slowly robbed Mr. Schneider of his ability to interpret sensations related to touch. The tumor is probably centered in his _____ lobe.
    A) occipital
    B) parietal
    C) temporal
    D) frontal

22. Broca's area and Wernicke's area are examples of _____ areas of the brain because they _____.
    A) association; integrate information from many brain areas
    B) association; receive sensory information
    C) sensory; integrate information from many brain areas
    D) sensory; receive sensory information

23. Studies of Phineas Gage's injury and Einstein's brain have illuminated the functions of the _____ and _____ lobes, respectively.
    A) occipital; temporal
    B) temporal; parietal
    C) frontal; parietal
    D) frontal; temporal

24. The medulla oversees:
    A) heart rate and respiration.
    B) overall arousal.
    C) muscular coordination.
    D) sleep-wake cycles.

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25. Which lobe is matched with the CORRECT association area?
    A) frontal – primary visual cortex
    B) parietal – primary motor cortex
    C) temporal – auditory cortex
    D) occipital – somatosensory cortex

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Answer Key

1. C
2. C
3. D
4. D
5. A
6. D
7. C
8. B
9. C
10. B
11. B
12. C
13. C
14. B
15. C
16. D
17. A
18. D
19. C
20. D
21. B
22. A
23. C
24. A
25. C

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