

Name:

Period:

Please highlight the correct answer/response in yellow (The entire answer, not just the letter). Type your answer to the Free Response question under the prompt. Once complete, please place a copy in my P drive in the correct folder. You may print a copy and hand in if you choose.

This is due on or before Tuesday March 12th at 8:00am.

The Peripheral Nervous System—Nerves on the Edge

Learning Objective 2.4 - How do the somatic and automatic nervous systems allow people and animals to interact with their surroundings and control the body's autonomic functions?

1. The peripheral nervous system consists of _____. 77
- all the nerve cells that are not in the brain and spinal cord
 - all nerves in the brain and the spinal cord
 - the spinal cord and autonomic system
 - the brain and the sympathetic system
 - the brain and the parasympathetic system
2. The peripheral nervous system consists of the _____ and the _____ nervous systems.
- autonomic; somatic
 - autonomic; sympathetic
 - parasympathetic; somatic
 - parasympathetic; sympathetic
 - parasympathetic; autonomic
3. Voluntary muscles are controlled by the _____ nervous system.
- autonomic
 - sympathetic
 - central
 - parasympathetic
 - somatic
4. Every deliberate action you make, such as pedaling a bike, walking, scratching, or smelling a flower, involves neurons in the _____ nervous system.
- sympathetic
 - somatic
 - parasympathetic
 - central
 - autonomic
5. Involuntary muscles are controlled by the _____ nervous system.
- somatic
 - autonomic
 - sympathetic
 - parasympathetic
 - parasympathetic
6. Vladimir is typing on the computer keyboard. The motion of his fingers on the keys is probably being controlled

by _____.

- a) the autonomic nervous system
- b) sensory pathway neurons
- c) motor pathway neurons
- d) autonomic neurons
- e) central nervous system

7. When you see someone you have a crush on and your heart pounds, your hands get sweaty, and your cheeks feel hot, your _____ is/are active.

- a) skeletal nervous system
- b) spinal reflexes
- c) central nervous system
- d) autonomic nervous system
- e) somatic nervous system

8. The autonomic nervous system has two divisions called the _____ and the _____.

- a) central; peripheral
- b) sympathetic; parasympathetic
- c) receptors; effectors
- d) limbic; endocrine
- e) central; limbic

9. Which component of the nervous system mobilizes the body in times of stress?

- a) central
- b) somatic
- c) sympathetic
- d) parasympathetic
- e) autonomic

10. The part of the autonomic nervous system that is responsible for reacting to stressful events and bodily arousal is called the _____ nervous system.

- a) central
- b) somatic
- c) sympathetic
- d) parasympathetic
- e) autonomic

11. The branch of the autonomic nervous system that restores the body to normal functioning after arousal and is responsible for day-to-day functioning of the organs and glands is called the _____.

- a) spinal cord
- b) somatic nervous system
- c) sympathetic nervous system
- d) parasympathetic nervous system
- e) reflex arc

12. Malcolm is studying alone in his room late at night when he hears a loud noise downstairs. His heartbeat increases significantly and his breathing becomes shallow. He wonders if a burglar has entered the house and decides to investigate. When he gets downstairs, he discovers his cat has knocked over a plant stand. His body begins to relax and return to normal. Which part of Malcolm's nervous system is responsible for returning him to a normal state?

- a) spinal cord
- b) somatic nervous system
- c) sympathetic nervous system
- d) reflex arc
- e) parasympathetic nervous system

Peeking Inside the Brain

13. Sometimes in order to study parts of an animal's brain, researchers may deliberately damage a part of the brain. They accomplish this by placing into the brain a thin insulated wire through which they send an electrical current that destroys the brain cells at the tip of the wire. This technique is called _____.

- a) deep lesioning
- b) ESB
- c) EEG
- d) CT scan
- e) PET scan

14. Insertion into the brain of a thin insulated wire through which is sent an electrical current that stimulates the brain cells at the tip of the wire is called _____.

- a) deep lesioning
- b) ESB
- c) EEG
- d) CT scan
- e) PET scan

15. Small metal disks are pasted onto Miranda's scalp and they are connected by wire to a machine that translates the electrical energy from her brain into wavy lines on a moving piece of paper. From this description, it is evident that Miranda's brain is being studied through the use of _____.

- a) a CT scan
- b) functional magnetic resonance imaging
- c) a microelectrode
- d) an electroencephalogram
- e) magnetic resonance imaging

16. A brain-imaging method that takes computer-controlled X-rays of the brain is called _____.

- a) electroencephalography (EEG)
- b) magnetic resonance imaging (MRI)
- c) positron emission tomography (PET)
- d) computed tomography (CT)
- e) functional magnetic resonance imaging (fMRI)

17. Rashad is in the hospital and is about to undergo a brain-imaging process that involves placing him inside a magnetic field so that a computer can create three-dimensional images of his brain. What procedure is he about to undergo?

- a) electroencephalography (EEG)
- b) magnetic resonance imaging (MRI)
- c) computed tomography (CT)
- d) positron emission tomography (PET)
- e) functional magnetic resonance imaging (fMRI)

18. Libby's physician refers her to a medical center in order to have the biochemical activity in her brain analyzed. She is given an injection of a radioactive glucose-like substance and then is told to lie down with her head in a scanner. The technique being used is _____.

- a) positron emission tomography
- b) functional magnetic resonance imaging
- c) microelectrode recording
- d) an electroencephalogram
- e) magnetic resonance imaging (MRI)

19. A researcher wants to obtain a "movie" of changes in the activity of the brain using images from different time periods. Which of these would be the best choice for this researcher?

- a) electroencephalography (EEG)
- b) computed tomography (CT)
- c) positron emission tomography (PET)
- d) functional magnetic resonance imaging (fMRI)
- e) magnetic resonance imaging (MRI)

From the Bottom Up: The Structures of the Brain

Learning Objective 2.6 - What are the different structures of the bottom part of the brain and what do they do?

20. The _____ is a structure in the brain stem responsible for life-sustaining functions, such as breathing and heart rate.

- a) reticular activating system
- b) pons
- c) medulla
- d) cerebellum
- e) hippocampus

21. An auto accident rendered Chris's nervous system unable to send messages for him to breathe, so he is on a respirator. Which brain structure was damaged in the accident?

- a) pons
- b) medulla
- c) cerebellum
- d) reticular formation
- e) hippocampus

22. The brain is divided into several different structures on the bottom part of the brain referred to as the "hindbrain." Which of the parts of the brain listed below is NOT located in the hindbrain?

- a) medulla
- b) pons
- c) cerebellum
- d) thalamus
- e) reticular formation

23. The point at which the nerves from the left side of the body cross over into the right side of the brain, and vice versa, is the _____.

- a) reticular activating system
- b) pons
- c) medulla
- d) cerebellum
- e) hippocampus

24. The _____ is a structure in the brain stem that connects the top of the brain to the bottom and plays a role in sleep, dreaming, left-right body coordination, and arousal.

- a) reticular activating system
- b) pons
- c) medulla
- d) cerebellum
- e) hippocampus

25. Which of the following is responsible for the ability to selectively attend to certain kinds of information in one's surroundings and become alert to changes?

- a) reticular formation
- b) pons
- c) medulla
- d) cerebellum
- e) thalamus

26. What is the main function of the reticular formation?

- a) to control thinking
- b) to regulate emotions
- c) to control levels of alertness
- d) to coordinate involuntary rapid fine-motor movements.

e) to control gross muscle functions

27. The cerebellum _____.

- a) controls blood pressure
- b) is involved in emotional behavior
- c) coordinates involuntary rapid fine-motor movement
- d) relays messages from the sensory receptors
- e) controls gross muscle functions

28. Damage to the cerebellum is likely to disrupt which of the following?

- a) playing basketball
- b) sleeping
- c) homeostasis
- d) thinking
- e) dreaming

29. Katie has grown up sleeping with a fan running in her room since she was an infant. This provides white noise to drown out the television programs being watched by other family members who were still awake. In an effort to save electricity, her mother has started coming into her room and turning her fan off after she thinks Katie is asleep. However, each time Katie wakes up and asks for the fan to be turned back on. Katie is selectively attending to certain kinds of information in her surroundings has been linked to the _____ part of the brain.

- a) reticular formation
- b) pons
- c) cerebellum
- d) medulla
- e) corpus callosum

Learning Objective 2.7 - What are the structures of the brain that control emotion, learning, memory, and motivation?

30. Which of the following is a group of several brain structures located under the cortex and involved in learning, emotion, memory, and motivation?

- a) limbic system
- b) cerebellum
- c) cerebral cortex
- d) cerebrum
- e) reticular formation

31. Signals from the neurons of which sense are NOT sent to the cortex by the thalamus?

- a) hearing
- b) taste
- c) touch
- d) vision
- e) smell

32. Which part of the brain is very small but extremely powerful and controls the pituitary gland?

- a) hippocampus
- b) thalamus
- c) hypothalamus
- d) amygdala
- e) fornix

33. Eating, drinking, sexual behavior, sleeping, and temperature control are most strongly influenced by the _____.

- a) hippocampus
- b) thalamus
- c) hypothalamus
- d) amygdala

e) fornix

34. The _____ is the part of the brain responsible for the formation of long-term memories.

- a) hippocampus
- b) hypothalamus
- c) fornix
- d) amygdala
- e) thalamus

35. Which of the following brain structures is located near the hippocampus and is responsible for fear responses and memory of fear?

- a) hippocampus
- b) hypothalamus
- c) fornix
- d) amygdala
- e) thalamus

36. The _____ is located within the temporal lobe on each side of the brain and if electrically stimulated it may produce dream-like or memory-like experiences.

- a) thalamus
- b) amygdala
- c) hypothalamus
- d) fornix
- e) hippocampus

37. Jerry loves the smell of the grass after it rains. This is a result of his _____, which has (have) received signals from neurons in his sinus cavity.

- a) thalamus
- b) olfactory bulbs
- c) opticfactory bulbs
- d) hippocampus
- e) mamillary bodies

38. The outermost part of the brain that is made up of tightly packed neurons and is only a tenth of an inch thick is called the _____.

- a) amygdala
- b) medulla
- c) cerebellum
- d) fornix
- e) cortex

Learning Objective 2.8 - What parts of the cortex control the different senses and the movement of the body?

39. The cortex is divided into two sections referred to as _____.

- a) cerebral hemispheres
- b) cerebellums
- c) corpus callosums
- d) neurotransmitters
- e) mamillary bodies

40. The thick band of neurons that connects the right and left cerebral hemispheres is called the _____.

- a) cortex
- b) cerebrum
- c) medulla
- d) cerebellum
- e) corpus callosum

41. Which of the following is the section of the brain located at the rear and bottom of each cerebral hemisphere and

contains the visual centers of the brain?

- a) occipital lobe
- b) parietal lobe
- c) temporal lobe
- d) frontal lobe
- e) Broca's area

42. Which of the following regions contains the primary visual cortex?

- a) occipital lobe
- b) parietal lobe
- c) temporal lobe
- d) Broca's area
- e) frontal lobe

43. After a head injury a person reports that she is unable to see, although her eyes are uninjured. A doctor would suspect an injury in the _____.

- a) occipital lobe
- b) parietal lobe
- c) temporal lobe
- d) frontal lobe
- e) Wernicke's area

44. The part of the occipital lobe that is responsible for receiving visual information from the eyes is called the _____.

- a) primary visual cortex
- b) somatosensory cortex
- c) temporal lobe
- d) Broca's area
- e) frontal lobe

45. Damage to the _____ would result in an inability to identify and comprehend what is seen through the eyes.

- a) visual association cortex
- b) primary visual cortex
- c) temporal lobe
- d) frontal lobe
- e) parietal lobe

46. Which of the following regions contains the somatosensory cortex?

- a) occipital lobe
- b) parietal lobe
- c) temporal lobe
- d) frontal lobe
- e) Wernicke's area

47. The _____ lobes are located at the top and back of each cerebral hemisphere, containing the centers for touch, body position, and temperature.

- a) frontal
- b) temporal
- c) occipital
- d) parietal
- e) mamillary bodies

48. John has decided to start to learn how to wrestle. His first day at practice, a seasoned wrestler slams the back of his head to the mat. John was shaken and reported to the trainer that he "saw stars" after he hit his head. As a result of "seeing stars," John's _____ was temporarily affected as a result of the slam.

- a) corpus callosum
- b) occipital lobe

- c) parietal lobes
- d) somatosensory cortex
- e) Broca's area

49. Which of the following regions contains the auditory cortex?

- a) temporal lobes
- b) parietal lobes
- c) frontal lobes
- d) occipital lobes
- e) association areas

50. The part of the brain located just behind the temples, containing neurons responsible for the sense of hearing and meaningful speech, is called the _____.

- a) association areas
- b) parietal lobes
- c) frontal lobes
- d) occipital lobes
- e) temporal lobes

51. Which of the following lobes are involved in planning, memory, and personality?

- a) temporal lobes
- b) parietal lobes
- c) frontal lobes
- d) occipital lobes
- e) association areas

52. Marta was in an automobile accident and suffered an injury to her brain, resulting in paralysis of her left arm. What part of Marta's brain was injured?

- a) auditory association area
- b) motor cortex
- c) association areas
- d) corpus callosum
- e) somatosensory cortex

53. After suffering a brain injury by falling from a ladder, Zack's wife continues to tell the doctor that his personality has changed. He used to be fun loving and carefree, but he is now more critical and yells at his children for seemingly little reason. Zack is likely to have suffered damage to the _____ part of his cortex.

- a) occipital lobe
- b) parietal lobes
- c) temporal lobes
- d) association areas
- e) frontal lobes

54. Messages from the brain to the muscles and glands in the body begin their journey in the _____.

- a) auditory association area
- b) motor cortex
- c) association areas
- d) Broca's area
- e) somatosensory cortex

Learning Objective 2.9 - What parts of the cortex are responsible for higher forms of thought, such as language?

55. Incoming sensory messages are made sense of in _____.

- a) Broca's area
- b) the motor projection areas
- c) the association areas
- d) Wernicke's area
- e) the somatosensory cortex

56. The area of the frontal lobe that is devoted to the production of fluent speech is _____ area.

- a) Broca's
- b) Gall's
- c) Wernicke's
- d) Korsakoff's
- e) Cajal's

57. Bill was admitted to the hospital last week after he fell. When Bill's son visited, he found his father was unable to get words out in a smooth, connected fashion. If Bill's difficulty speaking is due to brain damage, what is the likely location of the damage?

- a) Broca's area
- b) Gall's area
- c) Wernicke's area
- d) Korsakoff's area
- e) Cajal's area

58. The area at the back of the temporal lobe that is crucial in the ability to listen, process, and understand what others are saying is _____ area.

- a) Broca's
- b) Gall's
- c) Wernicke's
- d) Korsakoff's
- e) Cajal's

59. Robert's mother is usually meticulous in her presentation. When picking her up for a family dinner, he noticed that her make-up was only applied to the right side of her face. Her hair was also brushed on the right side, but on the left it was matted and uncombed. He immediately took her to the hospital after she was unaware of any problems. She was diagnosed with _____, which is evidenced by damage to the association areas of the right hemisphere.

- a) Wernicke's aphasia
- b) Broca's aphasia
- c) spatial neglect
- d) split-brain
- e) temporal lobe damage

Learning Objective 2.10 - How does the left side of the brain differ from the right side?

60. Which of the following is the upper part of the brain consisting of two cerebral hemispheres and the structures that connect them?

- a) occipital lobe
- b) parietal lobe
- c) corpus callosum
- d) cerebellum
- e) cerebrum

61. Researcher Roger Sperry won a Nobel prize for his research on epilepsy. Sperry cut through the _____, which joins the two hemispheres of the brain.

- a) medulla
- b) pons
- c) cerebrum
- d) pituitary gland
- e) corpus callosum

62. If Darren's brain is like that of most people, then language will be handled by his _____.

- a) corpus callosum
- b) occipital lobe
- c) right hemisphere

- d) left hemisphere
- e) cerebellum

63. Which of the following is a function of the right hemisphere?

- a) perception, expression of emotion, and recognition of patterns
- b) sense of time and rhythm
- c) speech, handwriting, and calculation
- d) language processing in most individuals
- e) hearing, balance, and tactile sensation

64. Which is not a specific function of the left hemisphere of the brain?

- a) expression of emotion
- b) written language
- c) mathematical calculations
- d) spoken language
- e) pattern recognition

65. Which is not a specific function of the right hemisphere of the brain?

- a) nonverbal
- b) analysis of detail
- c) music and artistic expression
- d) emotional thought and recognition
- e) movement and balance

Free Response

Please answer the question on a separate sheet/word doc. Answer in your own words and cite all sources.

Explain the difference between the Central Nervous System (CNS) and the Peripheral Nervous System (PNS).

