1. The cerebellum contains _____ of all the neurons in the adult human brain.
   A) 20%
   B) 50%
   C) 10%
   D) 80%

2. Neural agenesis refers to:
   A) an injury to a brain structure.
   B) the degeneration of a structure.
   C) the failure of a structure to develop.
   D) the creation of a brain structure.

3. If a tree falls in the forest, does it make a sound if no one is present?
   A) Yes, because sound is a physical phenomenon.
   B) Yes, because if you record the noise and play it again later you will hear it.
   C) No, because sound is a fabrication of your brain.
   D) This is an unanswerable philosophical question.

4. Phenotypic plasticity refers to:
   A) how an organism's genotype can be influenced by environmental factors.
   B) how an organism's genetics can be influenced by its nervous system.
   C) the study of nervous system plasticity.
   D) None of the answers is correct.

5. The CNS includes the _____, whereas the PNS includes the _____.
   A) brain and autonomic nervous system; spinal cord and somatic nervous system
   B) spinal cord and autonomic nervous system; brain and somatic nervous system
   C) spinal cord and brain; autonomic nervous system and somatic nervous system
   D) somatic nervous system and brain; spinal cord and autonomic nervous system

6. The somatic nervous system includes the _____, whereas the autonomic nervous system includes the _____.
   A) sympathetic and parasympathetic divisions; cranial nerves and spinal nerves
   B) brain and spinal cord; cranial nerves and spinal nerves
   C) sympathetic and parasympathetic divisions; brain and spinal cord
   D) cranial nerves and spinal nerves; sympathetic and parasympathetic divisions

7. The subdivision of the nervous system that controls the gut is called the:
   A) somatic nervous system.
   B) enteric nervous system.
   C) digestive nervous system.
   D) autonomic nervous system.

8. The term afferent refers to _____ signals.
   A) incoming
   B) outgoing
   C) different
   D) similar

9. Efferent is to afferent as:
   A) brain is to spinal cord.
   B) sensory is to motor.
   C) motor is to sensory.
   D) incoming is to outgoing.

10. Afferent is to efferent as:
    A) out is to in.
    B) top is to bottom.
    C) in is to out.
    D) bottom is to top.

11. Moving from superficial layers to deep layers, in what order are the meninges found?
    A) dura mater, arachnoid layer, pia mater
    B) pia mater, arachnoid layer, dura mater
    C) dura mater, pia mater, arachnoid layer
    D) pia mater, dura mater, arachnoid layer

12. Brain nomenclature can be very confusing. This is because:
    A) many structures have several names.
    B) research on brain includes scientists of many nationalities and languages
    C) some structures were named by numbers.
    D) All of the answers are correct.

13. Structures atop the brain or a structure within the brain are_____:
    A) lateral.
    B) ventral.
    C) medial.
    D) dorsal.

14. The ventral portion of a structure is sometimes called:
    A) superior.
    B) inferior.
    C) dorsal.
    D) medial.

15. Rostral is to caudal as:
    A) superior is to inferior.
    B) dorsal is to ventral.
    C) medial is to lateral.
    D) anterior is to posterior.

16. Coronal section is to horizontal section as:
    A) frontal view is to dorsal view.
    B) medial view is to frontal view.
    C) frontal view is to medial view.
    D) dorsal view is to medial view.

17. What best characterizes the composition of cerebrospinal fluid?
    A) sodium chloride and other salts
    B) essential amino acids
    C) glucocorticoids
    D) simple sugars and small lipids

18. Cerebrospinal fluid (CSF) flows between:
    A) the arachnoid layer and pia mater.
    B) the dura mater and pia mater.
    C) the dura mater and arachnoid layer.
    D) the superficial layer and deep layer.

19. The functions of the temporal lobes lie mainly in:
    A) decision making.
    B) hearing, language, and music.
    C) sensory processing and directing movements toward objects.
    D) vision.

20. Following a brain injury Greg has difficulty in understanding language and music. He is most likely to have suffered damage to his:
    A) frontal lobe.
    B) temporal lobe.
    C) occipital lobe.
    D) parietal lobe.

21. The frontal lobes are responsible for controlling:
    A) decision making.
    B) hearing, language, and music.
    C) vision.
    D) sensory processing and directing movements toward objects.

22. Following a brain injury Suzanne experiences difficulty with problem solving and decision making. She is most likely to have suffered an injury to her:
    A) parietal lobe.
    B) occipital lobe.
    C) frontal lobe.
    D) temporal lobe.

23. The parietal lobes primarily control:
    A) vision.
    B) hearing, language, and music.
    C) decision making.
    D) sensory processing and directing movements toward objects.

24. Following a recent stroke Jim experiences difficulty with directing movements toward objects. The stroke is most likely to have occurred in his:
    A) frontal lobe.
    B) temporal lobe.
    C) occipital lobe.
    D) parietal lobe.

25. The occipital lobes are responsible for:
    A) sensory processing and directing movements toward objects.
    B) decision making.
    C) visual processing.
    D) hearing, language, and music.

26. During a recent car accident Allison suffered a brain injury that left her blind even though her eyes are working fine. She is most likely to have suffered damage to her:
    A) occipital lobe.
    B) frontal lobe.
    C) temporal lobe.
    D) parietal lobe.

27. Sulci are:
    A) found only in the cerebellum.
    B) found only in the cerebrum.
    C) the cracks between the bumps on the brain.
    D) the bumps on the surface of the brain.

28. Gyri are:
    A) bumps on the surface of the cortex.
    B) cracks on the surface of the cortex.
    C) deformities on the surface of the cortex.
    D) only found in the spinal cord.

29. Which of the following is NOT a symptom associated with meningitis?
    A) severe headache
    B) stiff neck
    C) aggressiveness
    D) convulsions

30. Sulcus is to gyrus as:
    A) crack is to bump.
    B) bump is to crack.
    C) ridge is to mountain.
    D) crack is to crevasse.

31. The symptoms of the "sleeping sickness" that arose during World War I are caused by lesions to the:
    A) putamen.
    B) globus pallidus.
    C) substantia nigra.
    D) amygdala.

32. Which of the following arteries does NOT act as a major supplier to the cerebrum?
    A) anterior
    B) superior
    C) middle
    D) posterior

33. The artery that provides blood to the lateral, temporal, and frontal lobes is the _____ cerebral artery.
    A) anterior
    B) middle
    C) posterior
    D) inferior

34. The artery that provides blood to the occipital lobes is the _____ cerebral artery.
    A) anterior
    B) middle
    C) posterior
    D) inferior

35. A disruption of the blood supply to a brain region causes:
    A) meningitis.
    B) encephalitis.
    C) a stroke.
    D) cerebral agenesis.

36. _____ is mainly composed of cell bodies and capillaries.
    A) Reticular matter
    B) Gray matter
    C) The corpus callosum
    D) White matter

37. _____ is(are) mainly composed of nerve fibers with fatty coverings.
    A) Cerebral aqueducts
    B) Ventricles
    C) White matter
    D) Gray matter

38. CSF is made in:
    A) the pia mater.
    B) the dura mater.
    C) the ventricles.
    D) the arachnoid layer.

39. The large cavities inside the brain are known as:
    A) ventricles and are filled with CSF.
    B) ventricles and are filled with blood.
    C) the arachnoid layer and are filled with CSF.
    D) the arachnoid layer and are filled with blood.

40. What is the most unlikely function of CSF?
    A) aiding cell transmission in the brain
    B) acting as a shock absorber to the brain
    C) allowing certain compounds access
    D) helping the brain excrete metabolic wastes from the brain

41. Ischemic stroke is caused by:
    A) a clot.
    B) a broken blood vessel.
    C) meningitis.
    D) encephalitis.

42. A hemorrhagic stroke is caused by:
    A) a blood clot.
    B) a ruptured blood vessel.
    C) an embolism.
    D) All of the answers are correct.

43. Tissue plasminogen activator (t-PA) is effective for treating:
    A) ischemic stroke.
    B) hemorrhagic stroke.
    C) meningitis.
    D) All of the answers are correct.

44. When observing a sagittal brain section at the midline, what is the prominent feature composed of white matter?
    A) corpus callosum
    B) ventricles
    C) cingulate cortex
    D) hippocampus

45. Cutting the brain from front to back will give:
    A) a coronal view.
    B) a frontal view.
    C) a horizontal view.
    D) a sagittal view.

46. According to Descartes, the seat of the mind was located in the:
    A) frontal lobes.
    B) thalamus.
    C) pineal gland.
    D) temporal lobes.

47. The role of glial cells is primarily:
    A) to carry out information processing in the brain.
    B) to send signals from one brain region to another.
    C) to modulate the activity of neurons.
    D) to process sensory input.

48. CNS is to PNS as:
    A) neuron is to glia.
    B) gray matter is to white matter.
    C) nerve is to tract.
    D) tract is to nerve.

49. The prosencephalon is sometimes referred to as:
    A) the hindbrain.
    B) the middle brain.
    C) the auxiliary brain.
    D) the front brain.

50. In the human brain the basal ganglia, limbic system, and olfactory bulbs are considered part of the:
    A) telencephalon.
    B) metencephalon.
    C) diencephalon.
    D) mesencephalon.

51. In the human brain the mesencephalon contains:
    A) the neocortex.
    B) cerebellum.
    C) tectum and tegmentum.
    D) medulla.

52. The thalamus and hypothalamus are considered part of the:
    A) myelencephalon.
    B) telencephalon.
    C) metencephalon.
    D) diencephalon.

53. Which of the following structures is NOT part of the metencephalon?
    A) the cerebellum
    B) the pons
    C) the medulla
    D) None of the answers is correct.

54. Which of the following is NOT part of the hindbrain?
    A) the pons
    B) the tegmentum
    C) the reticular formation
    D) the medulla oblongata

55. Awakening from sleep is a function of:
    A) the pons.
    B) the medulla.
    C) the cerebellum.
    D) the reticular formation.

56. The reticular formation is primarily made up of:
    A) gray matter only.
    B) white matter only.
    C) gray matter and white matter.
    D) None of the answers is correct.

57. The primary function of the cerebellum is:
    A) control of sleeping and waking.
    B) control of movement.
    C) control of heart rate and respiration.
    D) sensory processing.

58. Orienting responses (e.g., turning your head to locate the source of a sound) are controlled by:
    A) the pons.
    B) the superior and inferior colliculi.
    C) the cerebellum.
    D) the diencephalon.

59. The red nucleus, substantia nigra, and periaqueductal gray matter are parts of the:
    A) tectum.
    B) pons.
    C) tegmentum.
    D) reticular formation.

60. Regulation of breathing and the cardiovascular system is primarily controlled by:
    A) the pons.
    B) the reticular activating system.
    C) the medulla.
    D) the cerebellum.

61. What are the functions of the superior and inferior colliculi respectively?
    A) auditory and visual
    B) visual and auditory
    C) tactile and visual
    D) visual and tactile

62. Which of the following is part of the tegmentum?
    A) the tectum
    B) the substantia nigra
    C) the inferior colliculus
    D) the superior colliculus

63. The hypothalamus is NOT primarily involved in:
    A) motor movements.
    B) sleeping.
    C) emotional behavior.
    D) sensory input.

64. Sexual behavior is a primary function of:
    A) the thalamus.
    B) the hypothalamus.
    C) the gyrus fornicutus.
    D) the red nucleus.

65. The _____ acts as a sensory relay station for signals arriving from sensory receptors that are being sent to the cortex.
    A) pituitary
    B) pons
    C) hypothalamus
    D) thalamus

66. Thalamus is to hypothalamus as:
    A) sensory input is to body maintenance.
    B) body maintenance is to sensory input.
    C) sexual behavior is to sleeping.
    D) feeding is to endocrine function.

67. The lateral geniculate nucleus deals with:
    A) touch.
    B) hearing.
    C) olfaction.
    D) vision.

68. The primary function of the thalamus is:
    A) transmission of sensory inputs to the cortex.
    B) regulation of hormone function.
    C) regulation of sleeping and waking.
    D) control of orienting responses.

69. Which of the following is NOT part of the forebrain?
    A) the cortex
    B) the tectum
    C) the basal ganglia
    D) the limbic system

70. The basal ganglia primarily controls:
    A) decision making.
    B) voluntary movement.
    C) learning and memory.
    D) processing of sound.

71. Cognition is usually attributed to:
    A) the limbic cortex.
    B) the cingulate cortex.
    C) the neocortex.
    D) the parahippocampal cortex.

72. Deficits in processing basic visual information (e.g., luminance) are caused by damage to the:
    A) frontal lobe.
    B) parietal lobe.
    C) occipital lobe.
    D) temporal lobe.

73. A person who has trouble locating the source of stimulation on the skin most likely has damage to the:
    A) temporal lobe.
    B) parietal lobe.
    C) occipital lobe.
    D) frontal lobe.

74. Trouble recognizing sounds is most commonly associated with damage to the:
    A) parietal lobe.
    B) frontal lobe.
    C) occipital lobe.
    D) temporal lobe.

75. Following a brain injury Steven has trouble organizing himself and has difficulty formulating plans to accomplish goals. Steven is most likely to have damaged his:
    A) frontal lobe.
    B) temporal lobe.
    C) parietal lobe.
    D) occipital lobe.

76. Six layers of gray matter on top of a layer of white matter would describe:
    A) the limbic cortex.
    B) the basal ganglia.
    C) the neocortex.
    D) the cingulate cortex.

77. Cortical regions:
    A) have the same density of cell layers.
    B) have different specific chemical characteristics.
    C) when stained look the same across the various areas.
    D) have very specific functions and rarely interrelate.

78. Motor output signals are sent through layer(s) _____ of the cortex.
    A) V and VI
    B) I to III
    C) IV
    D) II

79. Integrative functions are processed by layer(s) _____ of the cortex.
    A) V and VI
    B) I to III
    C) IV
    D) All of the answers are correct.

80. Sensory inputs are transmitted through layer(s) _____ of the cortex.
    A) I to III
    B) V and VI
    C) IV
    D) All of the answers are correct.

81. Memory and emotion are processed by the:
    A) limbic system.
    B) basal ganglia.
    C) thalamus.
    D) parietal lobe.

82. The caudate nucleus and the putamen are part of the:
    A) basal ganglia.
    B) limbic system.
    C) olfactory system.
    D) hindbrain.

83. Parkinson disease and Tourette syndrome are neurological diseases associated with the:
    A) cerebellum.
    B) frontal lobes.
    C) basal ganglia.
    D) thalamus.

84. The hippocampus and the amygdala are part of the:
    A) basal ganglia.
    B) limbic system.
    C) olfactory system.
    D) hindbrain.

85. The hippocampus and the cingulate cortex participate in performing _____ functions.
    A) digestive
    B) problem solving
    C) sexual
    D) memory

86. Which of the following structures is NOT part of the limbic system?
    A) hippocampus
    B) amygdala
    C) cingulate cortex
    D) putamen

87. Removal of the amygdala in cats leads to:
    A) changes in temperature regulation.
    B) sleep disruption.
    C) emotional changes.
    D) motor disruption.

88. There are _____ pairs of cranial nerves.
    A) 12
    B) 24
    C) 16
    D) 8

89. Sensory and motor signals from the head and neck travel through:
    A) lumbar sections of the spinal cord.
    B) sacral portions of the spinal cord.
    C) the cranial nerves.
    D) thoracic sections of the spinal cord.

90. Sensory and motor signals to the arms are sent through _____ sections of the spinal cord.
    A) sacral
    B) thoracic
    C) lumbar
    D) cervical

91. Sensory and motor signals from the head and neck are sent to _____ sections of the spinal cord.
    A) thoracic
    B) sacral
    C) lumbar
    D) None of the answers is correct.

92. Dermatomes are associated with the:
    A) peripheral nervous system
    B) spinal nervous system.
    C) autonomic nervous system.
    D) cranial nervous system.

93. The law of Bell and Magendie states that the:
    A) dorsal spinal cord is motor and the ventral is sensory.
    B) medial spinal cord is motor and the lateral is sensory.
    C) dorsal spinal cord is sensory and the ventral is motor.
    D) medial spinal cord is sensory and the lateral is motor.

94. Motor output from the spinal cord travels via the:
    A) dorsal spinal cord.
    B) ventral spinal cord.
    C) medial spinal cord.
    D) lateral spinal cord.

95. Sensory input to the spinal cord travels via the:
    A) dorsal spinal cord.
    B) ventral spinal cord.
    C) medial spinal cord.
    D) lateral spinal cord.

96. Increases in heart rate and inhibition of digestion are controlled by the:
    A) sympathetic nervous system.
    B) parasympathetic nervous system.
    C) spinal nervous system.
    D) cranial nervous system.

97. The _____ nervous system works to help us "rest and digest," whereas the _____ nervous system helps initiate fight-or-flight responses.
    A) sympathetic; parasympathetic
    B) sympathetic; spinal
    C) parasympathetic; sympathetic
    D) somatic; parasympathetic

98. The vagus, facial, and oculomotor nerves are the primary components of the:
    A) cranial nervous system.
    B) sympathetic nervous system.
    C) the parasympathetic nervous system.
    D) spinal nervous system.

99. The _____ contains a sheet of neurons lining the esophagus, stomach, small intestine, and colon.
    A) enteric nervous system (ENS)
    B) autonomic nervous system (ANS)
    C) somatic nervous system (SNS)
    D) central nervous system (CNS)

100. Language control is usually situated in the:
    A) same place on both hemispheres.
    B) different locations on each hemisphere.
    C) right hemisphere.
    D) left hemisphere.

101. The left hemisphere primarily controls functions on the _____ side of the body.
    A) contralateral
    B) left
    C) ipsilateral
    D) None of the answers is correct.

102. Spatial navigation is controlled by _____ of the brain.
    A) the left hemisphere
    B) both hemispheres
    C) the right hemisphere
    D) None of the answers is correct.

103. The brain appears to have:
    A) mainly serial or hierarchical systems.
    B) mainly parallel systems.
    C) a combination of serial and parallel systems.
    D) parallel systems at lower levels and serial processing farther up.

104. The notion of segregation of sensory and motor functions in the nervous system was postulated by:
    A) François Magendie and David Bell.
    B) David Hubel.
    C) John Hughlings Jackson.
    D) Nige Toretle.

105. Memory seems to be located:
    A) in the cingulate gyrus.
    B) in the hippocampus.
    C) throughout the brain.
    D) primarily in the temporal lobes.

106. Changes in balance between excitation and inhibition account for symptoms in:
    A) Tourette syndrome.
    B) Parkinson disease.
    C) stroke.
    D) both Tourette syndrome and Parkinson disease.

## Answer Key

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

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

91. D
92. B
93. C
94. B
95. A
96. A
97. C
98. C
99. A
100. D
101. A
102. C
103. C
104. A
105. C
106. D