Chapter 13: Brain and Cranial Nerves

Multiple Choice

1. Which of the following statements concerning the brainstem is true?
A) The brainstem consists of the medulla, pons, and cerebellum.
B) The brainstem is responsible for higher level thinking skills.
C) Damage to the brainstem is usually fatal.
D) All twelve cranial nerves enter or exit from the brainstem.
E) The brainstem is a relay for sensory input.
Answer: c
Level: 1

2. In the CNS, clusters of gray matter containing cell bodies are called
A) nuclei.
B) pyramids.
C) tracts.
D) peduncles.
E) ganglia.
Answer: a
Level: 1

3. The fact that the right side of the brain controls the left side of the body is explained by the
A) division of the cerebrum into two hemispheres.
B) division of the cerebellum into two hemispheres.
C) decussation of the pyramids in the medulla.
D) need for contra-lateral control of body function.
E) brainstem being below the midbrain.
Answer: c
Level: 1

4. Which of the following is correctly associated with the medulla oblongata?
A) It gives rise to conscious thoughts.
B) It contains nuclei for regulation of heart rate and blood vessel diameter.
C) It contains enlargements called cerebral peduncles.
D) It is the most superior portion of the brainstem.
E) It relays sensory information.
Answer: b
Level: 1

5. The pyramids of the medulla contain
A) ascending motor tracts.
B) descending motor tracts.

C) ascending sensory tracts.
D) descending sensory tracts.
E) none of the above
Answer: b
Level: 1

6. Walking a tightrope would activate what portion of the medulla?
A) the pyramids
B) the superior colliculi
C) the olives
D) both A and B
E) both A and C
Answer: e
Level: 2

7. Consider the following five terms and determine which does not belong.
A) medulla oblongata
B) pons
C) cardiac center
D) pyramids
E) olives
Answer: b
Level: 1

8. A patient with a traumatic head injury may exhibit vomiting as a result of irritation of nuclei in the
A) pons.
B) cerebellum.
C) medulla oblongata.
D) corpora quadrigemina.
E) midbrain.
Answer: c
Level: 1

9. A small lesion in the brainstem which resulted in a rapid heart rate, intense vasoconstriction, and elevated blood pressure would probably be located in the
A) medulla oblongata
B) pons
C) cerebellum
D) hypothalamus
E) cerebrum
Answer: a
Level: 3

10. The part of the brain that connects the medulla to the midbrain is the
A) cerebral peduncle.

B) pons.
C) cerebellum.
D) thalamus.
E) hypothalamus.
Answer: b
Level: 1

11. The nucleus for the facial nerve (cranial nerve VII) is located in the
A) pons.
B) medulla.
C) mesencephalon.
D) cerebrum.
E) cerebellum.
Answer: a
Level: 1

12. Damage to pontine nuclei might affect
A) vision.
B) talking.
C) blood pressure.
D) respiration.
E) heart rate.
Answer: e
Level: 1

13. Which two portions of the brain are involved in controlling respiration?
A) pons, hypothalamus
B) cerebrum, hypothalamus
C) pons, medulla oblongata
D) medulla oblongata, cerebral peduncles
E) pons, thalamus
Answer: c
Level: 1

14. The nuclei of cranial nerves III and IV are located in the
A) pons.
B) medulla.
C) midbrain.
D) diencephalon.
E) cerebellum.
Answer: c
Level: 1

15. The superior and inferior colliculi are located in which of the following portions of the midbrain?
A) tegmentum (floor)

B) cerebral peduncles
C) substantia nigra
D) red nucleus
E) tectum (roof)
Answer: e
Level: 1

16. The inferior colliculi
A) are an integral part of the cerebrum.
B) are involved with auditory pathways in the CNS.
C) interconnect directly with the eye.
D) are a major CNS motor neurotransmitter group.
E) are located in the pons.
Answer: b
Level: 1

17. The superior colliculi receive input from the
A) eyes, skin, cerebrum and inferior colliculi.
B) inferior colliculi, pyramids, skin and red nucleus.
C) skin, ears, pyramids and cerebellum.
D) cerebrum, cerebellum, thalamus and inferior colliculi.
E) nose, tongue, inner ear.
Answer: a
Level: 1

18. When you walk up behind someone and tap their right shoulder, they will reflexly
A) raise their arms.
B) hit you.
C) turn their head toward the left.
D) sneeze.
E) turn their head toward the right.
Answer: e
Level: 2

19. A bird hits the windshield of your car and you reflexly duck and close your eyes. Which of the following is responsible for this action?
A) medulla
B) superior colliculus
C) pneumotaxic center
D) thalamus
E) cerebellum
Answer: b
Level: 2

20. The substantia nigra interconnects with the
A) basal nuclei.

B) tegmentum.
C) red nuclei.
D) reticular nuclei.
E) tectum.
Answer: a
Level: 1

21. A lesion in the cerebral peduncles might affect
A) hearing.
B) movement.
C) sight.
D) heart rate.
E) taste.
Answer: b
Level: 1

22. The sleep/wake cycle is influenced by the
A) basal nuclei.
B) reticular formation.
C) vermis.
D) thalamic nuclei.
E) cerebellum.
Answer: b
Level: 1

23. The reticular formation
A) is composed of nuclei scattered throughout the cerebellum.
B) coordinates fine motor movements.
C) maintains alertness and attention.
D) is responsible for pain interpretation.
E) is composed of nuclei scattered throughout the cerebrum.
Answer: c
Level: 1

24. Which of the following activities would stimulate the reticular formation?
A) a warm bath
B) a clock radio coming on in the morning
C) a long lecture in a darkened auditorium
D) eating a big meal
E) getting a back rub
Answer: b
Level: 2

25. During an autopsy the brainstem was separated from the rest of the brain by a cut between the
A) medulla and pons.

B) pons and midbrain.
C) midbrain and diencephalon.
D) thalamus and cerebrum.
E) medulla and the spinal cord.
Answer: c
Level: 2

26. The cerebellum communicates with other parts of the CNS by means of nerve tracts called the
A) vermis.
B) flocculonodular pathways.
C) cerebellar peduncles.
D) arbor vitae.
E) folia.
Answer: c
Level: 1

27. The portion of the cerebellum that is involved in balance and eye movements is the
A) vermis.
B) flocculonodular lobe.
C) cerebellar peduncles.
D) arbor vitae.
E) lateral hemisphere.
Answer: b
Level: 1

28. Smooth, flowing movements are the result of fine motor coordination in the
A) anterior vermis.
B) cerebellar peduncles.
C) lateral cerebellar hemispheres.
D) flocculonodular lobe.
E) arbor vitae.
Answer: c
Level: 1

29. Which of the following is not a function of the cerebellum?
A) coordinate control of voluntary movements
B) help in the maintenance of muscle tone
C) control the heart rate
D) control skeletal muscles to maintain balance
E) control of posture, locomotion, and fine motor coordination.
Answer: c
Level: 1

30. A person with a lesion in the brain exhibited the following manifestations: normal tension in skeletal muscle, disturbed fine motor control, exhibited tremors when reaching for

objects. What part of the brain is most likely damaged?
A) the prefrontal lobe
B) the frontal lobe
C) the basal ganglia
D) the pyramids
E) the cerebellum
Answer: e
Level: 2

31. The intermediate mass connects the two portions of the
A) thalamus.
B) epithalamus.
C) hypothalamus.
D) subthalamus.
E) corpus callosum.
Answer: a
Level: 1

32. Which of the following is mismatched?
A) lateral geniculate nucleus - visual impulses
B) medial geniculate nucleus - auditory impulses
C) ventral posterior nucleus - sensory impulses
D) habenular nuclei - taste impulses
E) ventral lateral nuclei – motor functions
Answer: d
Level: 1

33. The habenular nuclei and pineal body are both found in the
A) thalamus.
B) epithalamus.
C) hypothalamus.
D) subthalamus.
E) hyperthalamus
Answer: b
Level: 1

34. Which of the following is false?
A) The thalamus projects sensory information to the cerebral cortex.
B) The subthalamic nuclei are associated with the basal nuclei.
C) The thalamus controls many endocrine functions.
D) The pineal body may play a role in controlling the onset of puberty.
E) The third ventricle separates the two large portions of the thalamus.
Answer: c
Level: 1

35. Most sensory input that ascends through the spinal cord and brainstem projects to the

A) pineal gland.
B) hypothalamus.
C) thalamus.
D) mammillary bodies.
E) subthalamus.
Answer: c
Level: 1

36. The mammillary bodies
A) influence breast milk production.
B) produce reproductive hormones.
C) are involved in emotional responses to odors.
D) are found in the thalamus.
E) influence the onset of puberty.
Answer: c
Level: 1

37. Injury to the thalamus would
A) cause us to stop breathing.
B) affect body temperature regulation.
C) probably overload the cerebrum with sensory information.
D) prevent puberty.
E) affect pH regulation.
Answer: c
Level: 1

38. Afferent fibers terminating in the hypothalamus provide input from the
A) visceral organs.
B) taste receptors of the tongue.
C) limbic system.
D) the prefrontal cortex of the cerebrum
E) all of these
Answer: e
Level: 1

39. An individual who has an eating disorder along with intense thirst and wildly varying body temperatures may have a dysfunction of the
A) pons.
B) medulla.
C) thalamus.
D) hypothalamus.
E) brainstem.
Answer: d
Level: 2

40. A 13-year-old child exhibited retarded growth, reduced metabolism, lack of normal

reproductive gland development, inability to regulate water intake or water elimination from the body, and an uncontrolled appetite. What part of the child's brain is most likely involved?
A) reticular formation
B) primary sensory cortex
C) medulla oblongata
D) thalamus
E) hypothalamus
Answer: e
Level: 3

41. Arrange the following in order from the diencephalon downward.
1. spinal cord
2. midbrain
3. medulla
4. pons
A) 1, 2, 3, 4
B) 2, 4, 3, 1
C) 3, 2, 4, 1
D) 4, 2, 3, 1
E) 4, 1, 3, 2
Answer: b
Level: 2

42. Which of the following feelings is not related to hypothalamic function?
A) fear of the unknown
B) sexual pleasure
C) feeling satiated after a meal
D) pleasant memories
E) road rage
Answer: d
Level: 2

43. Which of the following is a function of the hypothalamus?
A) initiates voluntary movements
B) involved in psychosomatic illnesses
C) control of balance
D) unconscious swinging of the arms while walking
E) perception of sensation
Answer: b
Level: 2

44. The pineal body
A) connects the two cerebral hemispheres.
B) modifies mood.
C) causes hot and cold flashes.
D) appears to play a role in controlling the onset of puberty.

E) plays a role in the production of cerebrospinal fluid.
Answer: d
Level: 1

45. The cerebral gyri increase
A) memory assimilation time.
B) the surface area of the cortex.
C) the size of the thalamic nuclei.
D) speech ability.
E) volume of the brain.
Answer: b
Level: 1

46. The central sulcus separates the
A) two parietal lobes.
B) frontal and parietal lobes.
C) occipital and temporal lobes.
D) temporal and frontal lobes.
E) parietal and occipital lobes.
Answer: b
Level: 1

47. The lateral fissure separates the _____ from the rest of the cerebrum.
A) frontal lobe
B) parietal lobe
C) occipital lobe
D) temporal lobe
E) cerebellum
Answer: d
Level: 1

48. Which of the following is not a lobe of the cerebrum?
A) parietal
B) frontal
C) occipital
D) sphenoidal
E) temporal
Answer: d
Level: 1

49. The gray matter on the outer surface of the cerebrum is called the
A) cortex.
B) pia mater.
C) reticular formation.
D) arbor vitae.
E) cerebral medulla.

Answer: a
Level: 1

50. During brain surgery, the superior portion of the postcentral gyrus of a patient is stimulated. The patient is most likely to
A) flex his fingers
B) talk to the surgeon
C) smile
D) feel pressure on his toes
E) move his hand
Answer: d
Level: 3

51. If an animal has had its cerebrum removed, it cannot
A) see.
B) live.
C) breathe.
D) regulate body temperature.
E) regulate heart rate.
Answer: a
Level: 2

52. Association fibers connect
A) the cerebrum with the spinal cord.
B) one cerebral hemisphere to another.
C) areas of the cerebral cortex within the same hemisphere.
D) areas of the cerebral cortex with areas of the midbrain.
E) areas of the cerebral cortex with areas of the spinal cord.
Answer: c
Level: 1

53. Tracts of white matter that connect the right and left hemispheres are composed of
A) decussation fibers.
B) association fibers.
C) commissural fibers.
D) projection fibers.
E) pyramidal fibers.
Answer: c
Level: 1

54. The cerebral medulla
A) has the same function as the medulla oblongata.
B) is the gray matter on the cerebrum's surface.
C) consists of many nerve tracts of white matter beneath the cerebral cortex.
D) is another name for the basal nuclei.
E) is the outer layer of the cerebrum.

Answer: c
Level: 1

55. The primary somatic sensory or general sensory area is located in
A) the postcentral gyrus.
B) the precentral gyrus.
C) the prefrontal gyrus.
D) Wernicke's gyrus.
E) the prefrontal cortex.
Answer: a
Level: 1

56. Which of the following activities is not associated with the cerebrum?
A) interpreting smell and taste
B) acting as a control center of the autonomic nervous system
C) initiating voluntary movements
D) making moral judgments
E) writing poetry
Answer: b
Level: 1

57. The corpus callosum
A) consists of a broad band of gray matter.
B) is found at the base of the transverse fissure.
C) is a band of commissural fibers that connects the right cerebral hemisphere to the left cerebral hemisphere.
D) connects the frontal lobe to the occipital lobe.
E) connects the frontal lobe to the parietal lobe.
Answer: c
Level: 1

58. Which of the following basal nuclei is located in the cerebrum?
A) subthalamic nucleus
B) red nucleus
C) caudate nucleus
D) substantia nigra
E) habenular nuclei
Answer: c
Level: 1

59. Lesions of the basal nuclei could cause
A) loss of memory.
B) uncontrolled rage.
C) fluent but circular speech.
D) a slight shaking of the hands or head.
E) loss of smell.

Answer: d
Level: 2

60. The corpus striatum is composed of the
A) subthalamic and red nuclei.
B) lentiform and caudate nuclei.
C) caudate nucleus and substantia nigra.
D) substantia nigra and hippocampus.
E) subthalamic nuclei and pineal body.
Answer: b
Level: 1

61. The basal nuclei function to
A) produce stiff, exaggerated movements.
B) assist the autonomic nervous system.
C) inhibit unwanted muscular activity.
D) control alertness.
E) store memory.
Answer: c
Level: 1

62. The limbic system involves various neural connections between
A) the medulla and pons.
B) the pons and cerebellum.
C) the cerebrum and diencephalon.
D) the diencephalon and midbrain.
E) the cerebrum and midbrain.
Answer: c
Level: 1

63. The limbic system
A) has recently evolved.
B) is associated with basic survival instincts of food acquisition and reproduction.
C) controls voluntary movements of the arms and legs.
D) is a memory area in the midbrain.
E) includes the brainstem.
Answer: b
Level: 1

64. The most superficial meningeal layer is
A) the pia mater.
B) the arachnoid layer.
C) the dura mater.
D) the epidural sinus.
E) the skull.
Answer: c

Level: 1

65. Cerebrospinal fluid fills the
A) subarachnoid space.
B) subdural space.
C) dural sinuses.
D) epidural space.
E) none of the above
Answer: a
Level: 1

66. Which of the following pairs is mismatched?
A) falx cerebri - longitudinal fissure
B) tentorium cerebelli - base of brain
C) falx cerebelli - between the cerebellar hemispheres
D) pia mater - surface of the brain
E) dural venous sinus - collects blood that returns from the brain
Answer: b
Level: 1

67. Cerebrospinal fluid is formed by tissue in the walls and roofs of the
A) subarachnoid space.
B) dural sinuses.
C) fissure of Sylvius.
D) ventricles of the brain.
E) subdural space.
Answer: d
Level: 1

68. Cerebrospinal fluid is produced by the ____ and is reabsorbed by the ____.
A) choroid plexus, arachnoid granulation
B) arachnoid granulation, choroid plexus
C) dural sinus, dura mater
D) dura mater, dural sinus
E) septa pellucida, cerebral aqueduct
Answer: a
Level: 1

69. If cerebrospinal fluid does not drain properly,
A) the brain will shrink and shrivel.
B) the excess fluid exerts pressure on the brain.
C) the cerebral cortex absorbs the fluid and swells.
D) the choroid plexus enlarges.
E) the arachnoid granulations halt their function.
Answer: b
Level: 2

70. Water-soluble molecules such as glucose and amino acids move across the blood-brain barrier by
A) diffusion.
B) endocytosis.
C) exocytosis.
D) mediated transport.
E) filtration.
Answer: d
Level: 1

71. The central nervous system develops from a flat mass of tissue called the neural
A) groove.
B) tube.
C) plate.
D) crest.
E) fold.
Answer: c
Level: 1

72. The cerebrum develops from the embryonic region called the
A) telencephalon.
B) mesencephalon.
C) diencephalon.
D) metencephalon.
E) rhombencephalon.
Answer: a
Level: 1

73. Cranial nerve function includes
A) somatic motor.
B) sympathetic control.
C) cognitive skills.
D) regulation of emotions.
E) none of the above
Answer: a
Level: 1

74. The Roman numerals assigned to each cranial nerve reflect
A) the order of their discovery.
B) the sequence from anterior to posterior in which they emerge from the brain.
C) their importance, with highest numbers being the most important.
D) the complexity of each nerve, with complex nerves having higher numbers.
E) the sequence from posterior to anterior in which they emerge from the brain.
Answer: b
Level: 1

75. Which of the following cranial nerves is exclusively sensory?
A) vestibulocochlear (VIII)
B) hypoglossal (XII)
C) trochlear (IV)
D) facial (VI)
E) trigeminal (V)
Answer: a
Level: 1

76. The oculomotor nerve
A) innervates all the muscles that move the eyeball.
B) adjusts pupil size to the level of lighting.
C) transmits action potentials from the retina.
D) controls the organ of balance.
E) innervates two of the six muscles that move eye.
Answer: b
Level: 1

77. Which of the following would help to determine if the oculomotor nerve was damaged?
A) have the patient distinguish between green and red colors
B) determine if the patient can see anything
C) have the patient look superiorly and inferiorly
D) have the patient cry
E) determine if the patient still has night vision
Answer: c
Level: 2

78. Ptosis (drooping of the upper eyelid) of the left eye would be caused by damage to the
A) facial nerve.
B) abducens nerve.
C) trochlear nerve.
D) oculomotor nerve.
E) optic nerve.
Answer: d
Level: 2

79. The abducens nerves
A) transmit pain impulses from the teeth.
B) are involved in eye movement.
C) dilate blood vessels in the skin.
D) slow the heart rate.
E) control size of the pupil.
Answer: b
Level: 1

80. A kiss on the cheek would be perceived by impulses from the
A) trochlear nerve.
B) abducens nerve.
C) trigeminal nerve.
D) vestibulocochlear nerve.
E) facial nerve.
Answer: c
Level: 2

81. Difficulty with chewing or an inability to chew might result from damage to the
A) vagus nerve.
B) trochlear nerve.
C) hypoglossal nerve.
D) trigeminal nerve.
E) vestibulocochlear nerve.
Answer: d
Level: 1

82. Dentists anesthetize a portion of the _____ nerve to stop pain impulses from the teeth.
A) facial
B) trigeminal
C) hypoglossal
D) glossopharyngeal
E) abducens
Answer: b
Level: 1

83. Which of the following cranial nerves innervates only one muscle of the eyeball?
A) optic nerve
B) facial nerve
C) trochlear nerve
D) trigeminal nerve
E) oculomotor nerve
Answer: c
Level: 1

84. Facial expression is regulated by the
A) facial nerve.
B) vagus nerve.
C) abducens nerve.
D) trigeminal nerve.
E) accessory nerve.
Answer: a
Level: 1

85. Paralysis on the right side of the face could result from damage to the right _____ nerve.

A) vagus
B) facial
C) accessory
D) trigeminal
E) none of the above
Answer: b
Level: 2

86. A baseball player was hit on the left side of his skull in the parotid area. He cannot close his eye and the corner of his mouth droops. Which cranial nerve was damaged?
A) facial
B) glossopharyngeal
C) accessory
D) optic
E) oculomotor
Answer: a
Level: 3

87. A deer hunter lost the hearing in his right ear after his gun exploded when he tried firing it. His hearing loss is the result of damage to the nerve?
A) vagus
B) hypoglossal
C) glossopharyngeal
D) trigeminal
E) vestibulocochlear
Answer: e
Level: 1

88. The glossopharyngeal nerve
A) innervates the larynx.
B) is involved in the sense of taste.
C) innervates intrinsic tongue muscles.
D) transmits sensory information from the abdominal viscera.
E) controls facial expressions.
Answer: b
Level: 1

89. The facial and glossopharyngeal nerves
A) innervate the salivary glands.
B) control movements of the tongue.
C) are involved in the sense of smell.
D) control the production of tears.
E) carry pain from the teeth.
Answer: a
Level: 1

90. Motor control of the face is the function of the ____ nerve, while sensation from the face is determined by the ____ nerve.
A) facial, trigeminal
B) trochlear, facial
C) facial, glossopharyngeal
D) trigeminal, glossopharyngeal
E) trigeminal, facial
Answer: a
Level: 1

91. Damage to branches of the _____ nerve can interfere with normal speech.
A) facial
B) vagus
C) trigeminal
D) glossopharyngeal
E) abducens
Answer: b
Level: 1

92. Which nerve has branches that extend to the thoracic and abdominal viscera?
A) facial nerve
B) vagus nerve
C) trigeminal nerve
D) glossopharyngeal nerve
E) accessory nerve
Answer: b
Level: 1

93. Damage to which of the following cranial nerves might result in death?
A) facial nerve
B) vagus nerve
C) trigeminal nerve
D) glossopharyngeal nerve
E) optic nerve
Answer: b
Level: 2

94. Which of the following cranial nerves does not innervate the tongue?
A) glossopharyngeal
B) hypoglossal
C) accessory
D) facial
E) all of the above innervate the tongue
Answer: c
Level: 1

95. Unilateral damage to a cranial nerve is suspected because the tongue deviates to the right when it is protruded. Which cranial nerve is damaged?
A) right hypoglossal
B) left hypoglossal
C) right glossopharyngeal
D) left glossopharyngeal
E) left facial
Answer: a
Level: 2

96. The accessory nerve
A) has fibers that join the vagus nerve.
B) has both a cranial and a spinal component.
C) provides innervation to the trapezius and sternocleidomastoid muscles.
D) is cranial nerve XI.
E) all of the above
Answer: e
Level: 1

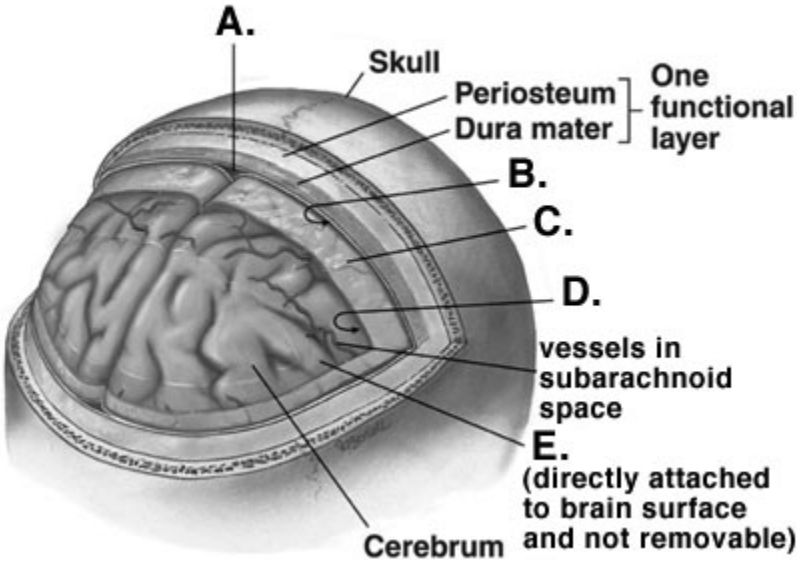
97. Dysfunction of the sternocleidomastoid muscle could result from damage to the
A) vagus nerve.
B) abducens nerve.
C) accessory nerve.
D) hypoglossal nerve.
E) facial nerve.
Answer: c
Level: 2

98. A fracture of the cribriform plate might injure the _____ cranial nerve?
A) glossopharyngeal
B) trigeminal
C) olfactory
D) facial
E) optic
Answer: c
Level: 2

99. When you lick frosting off a knife with the tip of your tongue and find the frosting has an orange flavor to it, which cranial nerve is being used to determine the taste of the frosting?
A) facial
B) trigeminal
C) hypoglossal
D) glossopharyngeal
E) abducens
Answer: a
Level: 2

100. Which of the following cranial nerves has a parasympathetic component?
A) facial
B) trochlear
C) trigeminal
D) hypoglossal
E) accessory
Answer: a
Level: 1

Refer to the following figure for questions 101-105.



101. What does "A" represent on the diagram of the skull and brain?
A) subarachnoid space
B) dural venous sinus
C) pia mater
D) arachnoid mater
E) subdural space
Answer: b
Level: 1

102. What does "B" represent on the diagram of the skull and brain?
A) subarachnoid space
B) dural venous sinus
C) pia mater
D) arachnoid mater
E) subdural space
Answer: e
Level: 1

103. What does “C” represent on the diagram of the skull and brain?
A) subarachnoid space
B) dural venous sinus
C) pia mater
D) arachnoid mater
E) subdural space
Answer: d
Level: 1

104. What does “D” represent on the diagram of the skull and brain?
A) subarachnoid space
B) dural venous sinus
C) pia mater
D) arachnoid mater
E) subdural space
Answer: a
Level: 1

105. What does “E” represent on the diagram of the skull and brain?
A) subarachnoid space
B) dural venous sinus
C) pia mater
D) arachnoid mater
E) subdural space
Answer: c
Level: 1

For questions 106 to 110 match the following functions with the correct lobe of the brain.
A) important in voluntary motor function
B) fifth lobe of the brain
C) plays an important role in memory
D) reception and integration of visual input
E) somesthetic center

106. occipital lobe
Answer: d
Level: 1

107. frontal lobe
Answer: a
Level: 1

108. insula
Answer: b
Level: 1

109. temporal lobe
Answer: c
Level: 1

110. parietal lobe
Answer: e
Level: 1

For questions 111 to 115 match the embryonic brain regions with the correct portion of the adult central nervous system.
A) diencephalon
B) mesencephalon
C) metencephalon
D) myelencephalon
E) telencephalon

111. cerebellum
Answer: c
Level: 1

112. thalamus and hypothalamus
Answer: b
Level: 1

113. cerebrum
Answer: e
Level: 1

114. medulla oblongata
Answer: d
Level: 1

115. midbrain
Answer: b
Level: 1

For questions 116 to 129 match the following regions of the brain with appropriate structures.
A) medulla oblongata
B) pons
C) cerebellum
D) midbrain
E) diencephalons

116. pneumotaxic center
Answer: b
Level: 2

117. corpora quadrigemina
Answer: d
Level: 2

118. vermis
Answer: c
Level: 1

119. pyramids
Answer: a
Level: 1

120. red nuclei
Answer: d
Level: 1

121. medial geniculate nucleus
Answer: e
Level: 1

122. arbor vitae
Answer: c
Level: 1

123. substantia nigra
Answer: d
Level: 1

124. olives
Answer: a
Level: 1

125. pineal body
Answer: e
Level: 1

126. habenular nuclei
Answer: e
Level: 1

127. cerebral peduncles
Answer: d
Level: 1

128. tectum

Answer: d
Level: 1

129. hypothalamus
Answer: e
Level: 1

Fill in the Blank

130. The forebrain identified in early embryos is called the _____.
Answer: prosencephalon
Level: 1

131. Nerve fibers that cross from one side of the nervous system to the other are said to _____.
Answer: decussate
Level: 1

132. The _____ is the part of the brain between the brainstem and the cerebrum.
Answer: diencephalon
Level: 1

133. Cortical areas involved in recognition and integration are called _____ areas.
Answer: association
Level: 1

134. Nerve tracts that connect the two hemispheres are called _____.
Answer: commissures
Level: 1

135. The cingulate gyrus is part of the _____ system.
Answer: limbic
Level: 1

136. The fluid produced by the choroid plexuses is _____.
Answer: cerebrospinal fluid
Level: 1

137. Sensory impulses from the thoracic and abdominal organs are carried via the _____ nerve.
Answer: vagus
Level: 1

138. Constriction of the pupils of the eyes is controlled by the _____nerve.
Answer: oculomotor

Level: 1

139. Wind blowing on the face would be perceived by sensations from the _____ nerve.
Answer: trigeminal
Level: 1

140. The facial and glossopharyngeal nerves both are involved in the sensation of _____ .
Answer: taste
Level: 1

141. Sensory impulses from the thoracic and abdominal organs are carried via the _____ nerve.
Answer: vagus
Level: 1

Essay Questions

142. Which cranial nerve(s) is (are) needed to perform each of the following?
a. crying because you broke a present
b. chewing the Christmas turkey
c. smelling cookies baking in the oven
d. seeing snowflakes
e. smiling for Christmas picture
f. bowing your head
g. listening to Christmas carols
h. singing Christmas carols
i. raising the eyelids in surprise
j. having a toothache from eating too many cherry chocolates
k. focusing the lens of your eye so you can read this test
l. tasting a piece of Christmas pie
Answer: A) facial nerve
B) trigeminal
C) olfactory
D) optic
E) facial
F) accessory
G) vestibulocochlear
H) vagus
I) oculomotor
J) trigeminal
K) oculomotor
L) facial, glossopharyngeal
Level: 2

143. Which cranial nerve might be damaged in each of the following situations?

a. drooping upper eyelid
b. corner of mouth sags and tears drip continuously from eyes
c. person falls if eyes are closed
d. inability to whistle
e. blindness
f. shrugging shoulders becomes difficult
Answer: A) oculomotor
B) facial
C) vestibulocochlear
D) facial
E) optic
F) accessory
Level: 2

144. Why is input from the eyes, inferior colliculi, and the cerebrum useful in eliciting visual reflexes?
Answer: Input from the eyes would provide visual information necessary for visual reflexes; input from the inferior colliculi would provide auditory information useful in the location of a visual disturbance. Impulses from the cerebrum would help in the functions of eye fixation and pursuit of moving objects.
Level: 3

145. Symptoms of psychosomatic illness include insomnia, diarrhea and constipation and heart palpitations. Show how the hypothalamus might be implicated in psychosomatic illness.
Answer: The hypothalamus is involved in coordinating responses to the sleep-wake cycle. Insomnia is a possible result if the hypothalamus is damaged. The hypothalamus also functions in autonomic regulation of heart rate and movement of food through the digestive tract. Diarrhea, constipation, and heart palpitations are all possible if the hypothalamus is damaged.
Level: 3

146. Explain why the absence of a properly functioning corpus callosum might result in impaired learning of tasks that require coordination of both limbs.
Answer: The corpus callosum allows sensory and motor information from one hemisphere to be shared with the other hemisphere. To perform tasks that require coordination of both limbs, each side of the cerebral cortex needs to know what the other side is doing or planning to do. If the corpus callosum is cut, tactile information from the left hand could not enter the left hemisphere, which controls the right hand. As a result, the right hand would not receive any information of how to respond in relation to the movement of the left hand.
Level: 3

147. Speculate why a man might mistake his wife for a hat.
Answer: The visual association cortex compares the present visual information to past visual information (Have I seen this before?) and decides whether or not the input is recognized and the significance of that input. Damage in this area could cause one object to be mistaken for another (for instance, wife for hat). Influence from another area, especially the frontal lobe, could also affect how the visual association cortex "recognizes" or identifies objects and assist in this error

in identification.
Level: 3

148. The cerebral cortex of humans is highly convoluted. What advantage does this provide?
Answer: The skull restricts the growth of the brain. As the cerebral hemispheres grow, they become creased and folded, producing convolutions that increase their surface area. This increased surface area allows more neurons to occupy the limited space in the cranial cavity.
Level: 3

149. Speculate what would happen to a developing brain if cerebrospinal fluid is not drained properly.
Answer: If CSF does not drain properly, the fluid will begin to accumulate and exert pressure on the brain. In a newborn, the head will enlarge because the skull bones have not fused. The ventricles will also enlarge as a result of the excess fluid. This means that proportionately, the cortex becomes thinner. Brain damage may or may not result depending on the amount of excess CSF and the pressure generated.
Level: 3

150. Although alcohol has effects on other areas of the brain, it has a considerable effect on cerebellar function. What kinds of motor tests would reveal the drunken condition?
Answer: Because the cerebellum acts to match intended movements with actual movements, reduced cerebellar function results in an inability to point precisely to an object (such as one's nose). It also results in poor balance, thus trying to balance on a beam and walk would be difficult.
Level: 3