UNIT ONE: GENERAL INTRODUCTION

1. The human brain is the most complex mass of protoplasm on earth.
   A True  B False

2. The lowest part of the hindbrain, the ———, is continuous with the spinal cord.
   A cerebellum  B fissure of Rolando  C medulla oblongata  D occipital lobe

3. The lower brain stem is a part of the hindbrain and consists of the medulla and:
   A pineal gland  B limbic lobe  C thalamus  D pons

4. The ——— paired spinal nerves arise from the spinal cord.
   A 24  B 31  C 12  D 32

5. The angstrom is named after Swedish physicist ——— J. Angström.
   A Anders  B Vilgot  C Maximilian  D Svante

UNIT TWO: BASIS AND CHARACTER OF NERVOUS SYSTEM FUNCTION

6. Important specialized structures called synaptic ——— are usually found at the tips or terminal ends of the axons.
   A points  B terminals  C transfers  D connectors

7. The interior of the nucleus (of a neuron) is called the nucleoplasm, consisting largely of ———, which directs the operations of the cell.
   A clonidine  B noradrenaline  C chromatin  D various enzymes

8. ——— neurons conduct impulses from receptors to the brain and spinal cord, such impulses being informational (vision, sound, etc.).
   A Sensory  B Motor  C Multipolar  D Pseudounipolar

9. Neurons communicate with neurons at sites called ——— or synaptic junctions.
   A E-gaps  B transmitters  C synapses  D dendrites

10. Neurotransmitter fragments taken up by endocytosis are ultimately resynthesized as ——— neurotransmitter.
    A an obsolete  B a complete  C a truncated  D a weaker

11. Oligodendrocytes (oligo, meaning few; dendro, meaning ———) are smaller than astrocytes and have fewer processes.
    A pointed  B small  C tree  D many-sided

12. Axons of the PNS greater than ——— micrometer in diameter have a lipoprotein-rich membrane coat called the myelin sheath.
    A 1  B 2  C 3  D 4

13. Receptors are essentially ———; that is, they receive the energy of the stimulus in one form and transform that energy into another form.
    A translators  B action potentials  C charged ions  D transducers

14. Neurotendinous (———) organs are encapsulated receptors found in most (if not all) tendons.
    A Tenus  B Fibrous  C Windus  D Golgi

15. In succeeding stretches and contractions (of muscle spindles), the ——— efferents fire and stimulate contraction of the intrafusal fibers.
    A beta  B gamma  C alpha  D calcium

16. The presynaptic membrane of the axon terminal is separated from the sarcolemma by a space ——— nanometers wide.
    A 10 to 15  B 20 to 60  C 120 to 140  D 500 to 650

UNIT THREE: EARLY DEVELOPMENT OF THE CENTRAL NERVOUS SYSTEM

17. Development of the early neural tube is initiated by a indentation along the ——— of the neural plate.
    A anterior aspect  B posterior aspect  C lateral edge  D midline

18. It is not possible at 23 days of age to distinguish neuroglia from neurons.
    A True  B False

19. ——— cells are a peripheral kind of glial cell that migrate along the axons growing into all parts of the body.
    A Von Ebner’s  B Brunner’s  C Schwann  D Bartholin’s
20. Regarding the formation of the spinal cord, the marginal layer of the neural tube becomes the ——— of the spinal cord.
A grey matter  B white matter  C spinocerebellar tracts  D filum terminale

21. The hindbrain is named the rhombencephalon (from rhombus, meaning ———).
A square-like  B diamond shape  C pointed  D crooked

22. The sulcus ——— is a longitudinal groove on each side of the lumen of the neural tube.
A calcarin  B inferior temporals  C limitans  D occipitotemporalis

23. In brain wall development, the amygdaloid (from amygdale, meaning ———) nucleus is the first part of the corpus striatum to appear.
A egg-shaped  B circle  C globule  D almond

24. In cerebral neocortex development, the majority of neuroblasts reaching layer IV become stellate (meaning ———) or granule cells.
A ovoid  B star-shaped  C detached  D pointed

26. The most significant loss of neurons and glia occurs before ——— days of age.
A 20  B 5  C 150  D 100

UNIT FOUR: SPINAL CORD

27. The spinal cord is the caudal two-thirds of the central nervous system, approximately ——— cm in length in males.
A 27  B 32  C 38  D 45

28. Lamina ———, also called the gray commissure, is the gray matter surrounding the central canal. It consists of small interneurons.
A VII  B III  C IX  D X

29. The myotatic (———) reflex is one of the simplest known, depending on just two neurons and one synapse.
A squeeze  B stretch  C twisting  D elongation

30. The axons of the secondary neurons terminate in the ventral posterior lateral nucleus of the:
A thalamus  B hypothalamus  C hippocampus  D olfactory bulb

31. Free nerve endings are now thought to be the principal receptors for both pain and temperature.
A True  B False

32. The ——— spinothalamic tract conducts impulses related to sensations of light, poorly localized (protopathic) touch.
A posterior  B anterior  C left lateral  D right lateral

33. Largely limited to the thoracic cord, ——— column can be seen from segments L3 to C8 of the cord.
A Madeleine’s  B Gelsomina’s  C Clarke’s  D Josie’s

34. The ——— tract is the major cortically derived descending pathway affecting the motor neurons.
A corticospinal  B frontopontine  C solitarius  D fimbria

35. Ascending fibers of the MLF (medial ——— fasciculus) arise primarily from the vestibular nuclei in the upper medulla.
A longitudinal  B limbic  C lingual  D lateral

36. The ——— tract begins with the superior colliculus of the midbrain, an important center for visual-following and eye-centering reflexes.
A stria terminalis  B trochlear  C trigeminal  D tectospinal

37. The medullary reticulospinal tract originates in the medial ——— of the medulla.
A one-fifth  B one-half  C two-thirds  D four-fifths

UNIT FIVE: BRAIN

38. The anterior surface of the midbrain merges with that of the:
A diencephalon  B pituitary gland  C cerebral cortex  D hypothalamus

39. The lowest part of the medulla is similar to the spinal cord in its external appearance.
A True  B False

40. Immediately adjacent (———) to the lateral corticospinal tracts are the rubrospinal tracts.
A posterior  B superior  C inferior  D anterior
41. The spinal trigeminal nucleus is often written spinal nucleus of:
   A Y B V C A D X

42. The nucleus ——— can be found somewhat lateral to the reticular formation.
   A habenular B pontine C ambiguous D interpeduncular

43. Between the nucleus of ——— and the ventricular floor run the arching fibers of the facial (VII) nerve.
   A IV B VI C V D I

44. The periaqueductal ——— is rich in small neurons and is a significant repository of the naturally occurring opioid peptide B endorphin.
   A white B gray C yellow D black

45. The ——— nucleus is a large, round cell mass in the midbrain tegmentum that has a faintly pink cast in the fresh state.
   A habenular B pontine C ambiguous D interpeduncular

46. Between the nucleus of ——— and the ventricular floor run the arching fibers of the facial (VII) nerve.
   A IV B VI C V D I

47. The periaqueductal ——— is rich in small neurons and is a significant repository of the naturally occurring opioid peptide B endorphin.
   A white B gray C yellow D black

48. There are at least ——— discrete raphe nuclei.
   A three B five C seven D twelve

49. Regarding the cerebellar cortex, the granule layer consists of enormous numbers (approximately ——— billion) of packed granule cells.
   A 2 B 4 C 8 D 10

50. All fibers entering the cerebellum terminate in specified portions of the cerebellar:
   A peduncles B cortex C lateral reticular nucleus D red nucleus

51. The thalamus has a number of nuclei, over ——— by some counts.
   A 120 B 80 C 55 D 30

52. The dorsomedial nucleus sends its largest fiber projections to the ——— cortex.
   A motor B primary auditory C prefrontal D premotor

53. Significant masses of ——— -like cells are found in the internal medullary lamina of each thalamus.
   A cube B sphere C reticular D ovoid

54. The ——— makes up the base of the diencephalon.
   A lateral ventricle B hypothalamus C mammillary body D cerebrum

55. Fibers from hippocampus form the:
   A fimbria B preoptic area C mesencephalon D interthalamic adhesion

56. The stria terminalis carries fibers from the ventromedial hypothalamic nucleus to the ——— nucleus.
   A gracilis B habenular C intralaminar D amygdaloid

57. The pineal gland is a small (———) neuroendocrine organ attached by a stalk to the posterior, dorsal aspect of the diencephalon.
   A 4 mm by 4 mm B 7 mm by 5 mm C 11 mm by 15 mm D 1 mm by 2 mm

58. The ——— is the largest part of the striatum.
   A internal capsule B putamen C caudate nucleus D claustrum

59. Pathology in the basal ganglia may lead to a number of motor dysfunctions known as ——— (uncontrolled, purposeless movements).
   A dyskinesias B dystonias C MS D scene reproduction

60. The ——— nuclei constitute the anterior linchpin of the limbic system.
   A globus pallidus B inferior vestibular C septal D cochlear

61. The hippocampus (“———”), named for its fancied similarity to the sea creature, is found within the medial border of the temporal lobe.
   A hammerhead shark B jellyfish C sea horse D octopus
62. Area ——— is the primary visual area (also called the striate cortex).
A 5  B 17  C 2  D 12

63. The limbic lobe was originally called le grand lobe limbique by the French neurologist, Paul:
A Thomure  B Broca  C Marchessault  D Ami
to

64. Regarding the cerebral cortex, Layer ——— is the internal granular layer consisting largely of stellate cells with small pyramidal cells.
A III  B II  C V  D IV

65. Axons of Layer ——— pyramidal cells tend to enter the subcortical white matter and project to the brain stem or spinal cord.
A V  B Vi  C III  D I

66. There are approximately ——— million fibers in the average corpus callosum.
A 50  B 100  C 300  D 2

67. Fibers from the nucleus raphe magnus descend bilaterally in the posterolateral funiculus of the spinal cord.
A True  B False

UNIT SIX: CRANIAL NERVES

68. The accessory (———) nerve has both a spinal (C1-CS) component and a cranial component - which is associated with the vagus nerve.
A III  B IV  C VI  D XI

69. The foramen ——— conducts the maxillary division of the trigeminal nerve in an anterior direction as it proceeds toward the upper teeth.
A spherum  B rotundum  C magnum  D parvum

70. The sulcus limitans of the embryonic neural tube divides the tube into the basal and ——— plates.
A alar  B lateral  C posterior  D anterior

71. The largest of the cranial nerves, the trigeminal (V) has ——— nuclei in the brain stem.
A two  B five  C three  D four

72. The ——— or first cranial nerve, derived embryologically from the telencephalon, is the most rostral of the cranial nerves.
A oculomotor  B trochlear  C olfactory  D abducens

73. In the visual system, rods can synapse with many bipolar cells, whereas cones usually have a ——— relationship with these cells.
A two-to-one  B two-to-two  C one-to-one  D one-to-two

74. Some optic tract-collicular fibers leave the optic tract to enter the superior colliculus directly.
A True  B False

75. Interruption of the optic tract or optic radiation on one side causes homonymous (———) hemianopsia.
A irreversible  B of the same side  C of the same type  D uniform in color

76. Regarding temporal lobe disease, there is a characteristic upper outer-quadrant defect in vision, often called a “———” defect.
A half-moon  B pie-in-the-sky  C crystal  D pie-wedge

77. Regarding the oculomotor (III) nerve, the nucleus of ——— is located in the rostral portion of the third nerve nuclear process.
A Gottlieb Daimler  B Ferdinand Braun  C Edinger Westphal  D Karl Benz

78. The trochlear (meaning “———”) nucleus lies ventral to the cerebral aqueduct at the level of the inferior colliculus of the midbrain.
A chain-like  B pulley  C rounded  D egg-shaped

79. Interruption of the opthalmic from the cornea represents one cause of absence of the corneal (———) reflex in both eyes.
A blink  B twitch  C flashing  D strain

80. Thalamocortical fibers ascend to the postcentral gyrus of the ——— lobe.
A occipital  B frontal  C temporal  D parietal

81. The tensor tympani, inserting in the malleus, dampens movement of the tympanic membrane in response to:
A excessive sound  B multiple sound wave types  C very low sound  D high-pitch sound
82. Emerging from the ——— foramen, the facial nerve turns anteriorly to enter the parotid gland.  
A supraorbital  B stylomastoid  C apical  D obturator

83. One bundle of preganglionic fibers is directed anteriorly as the greater petrosal (meaning ‘———’) nerve.  
A smooth  B long  C short  D rocky

84. Each taste bud, likened to the petals of a flowering bud, consists of about ——— neuroepithelial cells intertwined with supporting cells.  
A 5 to 7  B 2 to 3  C 40 to 50  D 100 to 150

85. The cochlea consists of ——— elongated tubes coiled around the central, bony pillar.  
A one  B three  C two  D four

86. The cochlear nerve (part of the VIII cranial nerve) conducts impulses generated in the organ of ——— to the cochlear nuclei.  
A Zuckerkandl  B Corti  C Jamison  D Smyth

87. The inner lining of the ducts and ampullae, utricle, and saccule is composed of a ——— layer of flat (squamous) or cuboidal cells.  
A 2- part  B 3- part  C 4- part  D single

88. Inferior vestibular axons both ascend and descend in the MLF (medial ——— fasciculus).  
A lateral  B longitudinal  C lobular  D lingual

89. The nucleus solitaries is ——— - shaped and located in the posterolateral medulla.  
A cone  B shoe-box  C cigar  D star

90. The ——— is the largest of the salivary glands.  
A sublingual  B accessory parotid  C parotid  D submandibular

91. The sensory component of the vagus (———) nerve consists of three parts.  
A IX  B X  C VI  D IV

92. The accessory (———) nerve consists of a small cranial root or division (internal branch) and a larger spinal root (external branch).  
A VIII  B IV  C V  D XI

93. Unilateral paralysis of the laryngeal muscles partially obstructs the airway, and speech becomes tiring (———).  
A dysphonia  B apraxia  C articulation disorder  D cluttering

94. The hypoglossal (———) nerve is a motor nerve innervating the intrinsic and extrinsic muscles of the tongue.  
A II  B XII  C X  D VI

UNIT SEVEN: SURVEY OF SPINAL NERVES

96. The axons of motor and sensory neurons outside the brain and spinal cord are enveloped by ——— cells.  
A Schwann  B contractile  C Gland of Moll  D mucous

97. Myelinated fibers exhibit conduction velocities of 3 to ——— meters per second.  
A 25  B 70  C 120  D 1,200

98. The anterior rami of spinal nerves ——— through T12 constitute the intercostals (peripheral) nerves.  
A T2  B T4  C T6  D T8

99. The phrenic nerve innervates the thoracic diaphragm, which is responsible for about ——— percent of the respiratory effort.  
A 25  B 40  C 60  D 75

100. Degeneration changes in the cell body (of a neuron) are referred to as chromatolysis (chroma, “color”; lysis, “———”).  
A dehydration  B dissolution  C aging  D malfunction

101. There may be as many as ——— growth cones from a single axon.  
A 15  B 50  C 250  D 120

UNIT EIGHT: SURVEY OF THE VISCERAL NERVOUS SYSTEM

102. The outflow of the VNS (——— nervous system) is divided into two divisions, sympathetic and parasympathetic.  
A visceral  B villus  C vitreous  D vestibular
103. Preganglionic fibers from the nucleus of Edinger ——— are directed to the ciliary ganglion in the orbit.
A Drasche  B Frece  C Bloch  D Westphal

104. Regarding the sympathetic ganglia, the superior cervical ganglion lies lateral to vertebrae:
A C4 and C5  B C5 and C6  C C2 and C3  D C1 and C2

105. Preganglionic fibers that pass through the sympathetic chain without synapsing arise from neurons at levels ——— of the spinal cord.
A T5 to L2  B T7 to T12  C T3 to T10  D T8 to L4

106. A bundle of axons of ——— preganglionic neurons transit the chain to form the greater splanchnic nerve.
A T5 to L2  B T7 to T12  C T3 to T10  D T8 to L4

UNIT NINE: SUPPORT SYSTEMS OF THE CENTRAL NERVOUS SYSTEM

107. The adult brain requires ——— milliliters (almost a quart) of oxygenated blood every minute to maintain normal activity.
A 200  B 500  C 750  D 900

108. The left and right vertebral arteries merge on the anterior aspect of the caudal pons to form the ——— artery.
A basilar  B posterior cerebral  C internal carotid  D anterior spinal

109. Saclike outpocketings or localized dilatations of arteries are known as aneurysms (“———”).
A narrow passages  B thin-walls  C widenings  D bursts

110. The cerebral hemispheres receive their blood supply from both the internal carotid and the vertebral-basilar systems.
A True  B False

111. The lenticulostriate arteries, known clinically as the “——— arteries,” are frequently the site of occlusion or rupture.
A delicate  B clotting  C stroke  D calcium

112. Loss of blood to the medullary pyramid produces a paresis (———) or paralysis on the opposite side of the body.
A tingling sensation  B weakness  C drooping  D heat sensation

113. A PICA syndrome is brought on by obstruction of the posterior inferior ——— artery (PICA).
A carotid  B column  C central  D cerebellar

114. Branches of the posterior cerebral artery are the only source of blood to the midbrain.
A True  B False

115. The ——— vein is the largest extracranial vessel draining the brain.
A precentral  B superficial frontal  C parietal superficial  D internal jugular

116. The internal cerebral veins merge just posterior to the pineal gland to form the great vein of:
A Galen  B Garza  C Giachetto  D Gagné

117. A small vertical sheet of dura, the ——— cerebelli, descends from the tentorium midline between the two cerebellar hemispheres.
A falx  B faux  C villi  D superior

118. The ——— ventricle is a thin cavity between the left and right thalamus and hypothalamus.
A right lateral  B left lateral  C third  D fourth

119. The choroid plexuses of the ventricles produce as much as ——— milliliters of CSF every 24 hours.
A 200  B 400  C 500  D 700

120. The dura mater surrounding the brain continues downward and ——— the spinal cord.
A runs posterior to  B completely envelopes  C runs anterior to  D covers almost ½ of
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