Please choose the BEST answer.

1. A Brown Sequard syndrome at Cervical 7 would not show the following:
   a. loss of pain and temperature contralateral below C8
   b. loss of unconscious proprioception ipsilateral
   c. loss of all reflexes
   d. loss of epicritic touch ipsilateral

2. Lissauer’s fasciculus is related to
   a. unconscious proprioception
   b. cerebellar afferents
   c. conjugate eye movement
   d. ipsilateral pain pathways

3. “Plegia” means stroke; unilateral paralysis is termed hemiplegia. If pontine arteries on the right side were occluded, what would not be one of the symptoms?
   a. flaccid paralysis
   b. atrophy
   c. exaggerated deep tendon reflexes
   d. spastic paralysis

4. The __________ mediate the sense of position for the body.
   a. posterior columns
   b. anterior columns
   c. trigeminal lemniscus
   d. lateral lemniscus

5. The sense of position of the jaw is conveyed through the
   a. spinal trigeminal
   b. medial leminiscus
   c. mesencephalic nucleus of V
   d. spinotectal tract

6. The affective (emotional) quality of pain is likely to be processed in the frontal lobes and limbic system. Which is not a synaptic site in the ascending spinothalamic pathway for pain?
   a. substantia gelatinosa
   b. posteroverentral lateral nucleus of the thalamus
   c. posteroverentral medial nucleus of the thalamus
   d. periaqueductal grey
7. Localization of somatosensory stimuli is found in what part of the cerebral cortex? (Sometimes called SI and SII)
   a. precentral gyrus Area 4
   b. cingulate gyrus
   c. superior temporal gyrus Area 41
   d. postcentral gyrus Areas 3,1,2

8. Give one pathway by which the red nucleus can influence the anterior horn cell.
   a. tectospinal
   b. rubrospinal
   c. olivospinal
   d. nigrospinal

Question #9 was omitted.

9. The reticular formation projects to what part of the thalamus to function in alertness-awakening?
   a. intralaminar nuclei
   b. ventral anterior
   c. dorsal medial
   d. pulvinar

10. Which cranial nerve is found at the level of the superior colliculus in the midbrain?
    a. trochlear
    b. abducent
    c. spinal trigeminal
    d. oculomotor

11. At what level of the brain stem would you find the main sensory nucleus of the trigeminal nerve?
    a. upper medulla
   b. lower medulla
   c. upper pons
   d. lower pons

12. What cranial nerve nucleus would not be found in upper medulla?
    a. VIII
    b. VII
    c. XI
    d. X
13. What sensations do not project to the posterior lateral ventral nucleus of the thalamus?
   a. epicritic touch
   b. protopathic touch
   c. facial pain
   d. conscious proprioception

14. The dorsal longitudinal fasciculus connects the hypothalamus to the ________.
   a. cuneate nucleus
   b. superior olivary nucleus
   c. lateral horn in the spinal cord
   d. posterior columns

15. The medial longitudinal fasciculus connects the superior colliculus to the
   a. vestibular nucleus
   b. trochlear nerve
   c. red nucleus
   d. substantia nigra

16. The receptors bringing information into the posterior columns are the Golgi tendon organs and muscle spindles and _____.
   a. Merkle’s discs
   b. peritricheal endings
   c. Meissner’s corpuscles
   d. nociceptors

17. The second cell station for the medial division of the posterior column is located in the
   a. nucleus reticulatus
   b. nucleus gracilis
   c. nucleus cuneatus
   d. nucleus rediculatus

18. Epicritic touch is found in the posterior columns; whereas, protopathic touch is found in the _____ pathway.
   a. lateral spinal thalamic
   b. medial spinal thalamic
   c. anterior spinal thalamic
   d. rostral spinal thalamic
19. Itching tickling, lustful feelings reportedly travel in the same pathway as protopathic touch. Yet pain and temperature travel in the _______.
   a. posterior spinocerebellar
   b. anterior funiculus
   c. lateral spinocortical
   d. lateral spinothalamic

20. The medial geniculate body lies in the posterior thalamus and conveys auditory sensations to ________.
   a. Heschl’s gyrus (on superior temporal gyrus)
   b. median forebrain bundle
   c. dorsal longitudinal fasciculus
   d. medial longitudinal fasciculus

21. The substantia nigra has reciprocal innervation to the
   a. hypothalamus
   b. red nucleus
   c. cerebral peduncles
   d. basal ganglia

22. The periaqueductal grey gives rise to a descending tract which influences what sensory modality?
   a. itching
   b. proprioception
   c. lustful feeling
   d. painful feeling

23. The mammillothalamic tract, which goes to the anterior nucleus of the thalamus, is considered to have limbic functions. The anterior nucleus projects where?
   a. superior temporal gyrus
   b. cingulate gyrus
   c. fusiform gyrus
   d. cruciate gyrus

24. A large nucleus in the lateral reticular formation of the upper medulla is called the ________.
   a. nucleus solitarius
   b. nucleus ambiguus
   c. dorsal motor nucleus of X
   d. vestibular nucleus
25. What is the function of the answer to question #24?
   a. hearing
   b. tasting
   c. swallowing
   d. adjusting body temperature

26. The dorsal medial nucleus of the thalamus is one that people often remember because of the dire consequences following its destruction. Where does it project?
   a. prefrontal cortex, 9,10,11
   b. postcentral gyrus, 3,1,2
   c. prefrontal gyrus 4
   d. superior temporal gyrus 41

27. What part of the cerebral cortex does the pulvinar primarily send messages to?
   a. frontal
   b. parietal
   c. occipital
   d. temporal

28. The position of the VII nerve in the floor of the IV ventricle can be seen by the presence of the ____
   a. superior colliculus
   b. inferior colliculus
   c. facial colliculus
   d. none of the above

29. The spinal trigeminal nucleus is an extension of what area in the spinal cord?
   a. cauda equina
   b. substantia gelatinosa
   c. anterior horn
   d. lateral horn

30. The large inferior olivary nucleus in the upper medulla sends fibers to what large structure?
   a. thalamus, ventral basal nucleus
   b. basal ganglia, caudate-putamen
   c. cerebellum, Purkinje cells
   d. cerebral cortex, pyramidal cells
31. A well-defined tract with its nucleus is dorsal to the nucleus ambiguus and is associated with what functions?
   a. vision
   b. proprioception
   c. epicritic touch
   d. sensory to thoracic and abdominal viscera, taste buds

32. Inability to sense pain could be caused by the blockage of what artery?
   a. anterior cerebral
   b. posterior inferior cerebellar artery (PICA)
   c. posterior cerebral
   d. posterior communicating

33. A total middle cerebral artery occlusion would not present the following?
   a. lack of speech
   b. loss of hearing
   c. loss of pain and temperature
   d. loss of vision

34. Areas related to motor function in the midbrain would not include the:
   a. oculomotor nerve
   b. medial lemniscus
   c. red nucleus
   d. corticospinal and corticobulbar fibers

35. What two regions of the nervous system have pseudounipolar cells?
   a. superior colliculus and inferior colliculus
   b. III nerve nucleus and IV nerve nucleus
   c. mesencephalic V nucleus and dorsal root ganglia
   d. red nucleus and substantia nigra

36. Interneuron sensory relay nerve cells in the midbrain do not include
   a. medial lemniscus
   b. lateral lemniscus
   c. spinothalamic
   d. corticospinal tract
37. The norepinephrine rich neurons are found in what part of the brain stem?
   a. lower medulla
   b. upper pons
   c. upper midbrain
   d. ventral thalamus

38. The pyramis decussate in the
   a. lower medulla
   b. upper medulla
   c. middle medulla
   d. lower pons

39. The ventral lateral nucleus of the thalamus receives input from the cerebellum via the red nucleus and projects to the
   a. lower pons
   b. precentral gyrus, area 4
   c. visual cortex area 17
   d. cingulate area 24

40. The ventral anterior nucleus of the thalamus receives fibers from ____________ and projects to the premotor cortex area 6.
   a. retina
   b. superior colliculus
   c. basal ganglia
   d. red nucleus

41. The external medullary lamina contain the nucleus reticularis thalami which
   a. gates input to the cortex
   b. inhibits pain pathways
   c. is concerned with water balance
   d. deals with visual reflexes

42. The massa intermedia
   a. is missing in 30% of females
   b. receives fibers from the spinothalamic tract
   c. lies between the two hypothalami
   d. is larger in females than in males
43. The neurons in the cuneate and gracile nuclei project to the
   a. substantia nigra
   b. superior colliculus
   c. **posterior ventral lateral nucleus of the thalamus**
   d. posterior ventral medial nucleus of the thalamus

44. Where is a first synapse of the corticobulbar tract?
   a. anterior horn cell
   b. posterior horn cell
   c. oculomotor nucleus
   d. dorsal motor X nucleus

45. Which is not a symptom of a LMNL? (lower motor neuron lesion)
   a. atrophy
   b. loss of extensor reflex
   c. **spastic paralysis**
   d. paralysis

46. Unconscious proprioception enters the cerebellum through the
   a. middle cerebellar peduncle
   b. brachium conjunctivum
   c. **restiform body**
   d. brachium pontis

47. Fibers carrying conscious proprioception sensations cross the brain stem at what level?
   a. midbrain
   b. metencephalon
   c. **middle medulla**
   d. upper pons

48. The internal granular layer (Layer IV) is especially prominent in the sensory cortices and in the motor
cortex (area 4) it is_______.
   a. also prominent
   b. more prominent
   c. **almost absent**
   d. none of the above
49. The superior colliculus integrates sensory information from visual, somatosensory and auditory system. The pathway which helps with this integration is called the:
   a. pontocerebellar tract
   b. corticospinal tract
   c. tectospinal tract
   d. rubrospinal tract

50. Which structure (A, B, C, or D) could have dorsal medial nuclear fibers going to the prefrontal cortex?
   a.
   b.
   c.
   d.