

INTEGRATIVE BIOLOGY 245  
HUMAN NEUROANTOMY  
EXAMINATION II  
APRIL 2, 2009

PART I. Please choose the best answer.

1. The pontine nuclei project to the
  - a. cerebral cortex
  - b. abducens nucleus
  - c. red nucleus
  - d. granule cells in the cerebellar cortex
  
2. Which structure is not in the pontine tegmentum?
  - a. superior olivary nucleus
  - b. facial nucleus
  - c. inferior olivary nucleus
  - d. abducens nucleus
  
3. The lateral lemniscus is associated with what sensation?
  - a. touch
  - b. hearing
  - c. smelling
  - d. feeling
  
4. The medial longitudinal fasciculus is directly associated with what function?
  - a. hearing
  - b. coordination of foot and eye
  - c. balancing
  - d. coordination movements of eyes, head, neck with visual tracking
  
5. Which of the following tracts has an upper motor neuron?
  - a. rubrospinal tract
  - b. vestibulospinal tract
  - c. tectospinal tract
  - d. corticospinal tract
  
6. The tectospinal tract begins in the
  - a. superior colliculus
  - b. inferior colliculus
  - c. substantia nigra
  - d. midbrain tegmentum

7. The rubrospinal tract is not regulated by the
- Clarke's column
  - cerebellum
  - cerebrum
  - none of the above
8. The medial lemniscus carries what sensory modality?
- conscious proprioception and protopathic touch or crude touch
  - unconscious proprioception
  - conscious proprioception and epicritic touch
  - pain and temperature
9. LEARNING QUESTION. The nucleus reticularis magnocellularis in the medulla reticular formation giving rise to the medullary reticulospinal tract is involved in
- balance and coordination
  - head and eye movements
  - pain and temperature
  - stimulation of the inspiratory phase of respiration CORRECT ANSWER
10. A Brown-Sequard Syndrome would originate from a hemisection of the
- midbrain
  - medulla
  - spinal cord
  - pons
11. A posterior inferior cerebellar syndrome would not include:
- unconscious proprioception
  - taste
  - diminution of pain and temperature on the contralateral side
  - moving the eye laterally
12. How would you test for dysfunction of the nucleus ambiguus?
- shrug the shoulders
  - look cross eyed
  - swallow
  - protrude the tongue
13. The lateral spinothalamic TRACT synapses in the
- ipsilateral PVL of the thalamus
  - pulvinar
  - ventral anterior nucleus of the thalamus
  - contralateral PVM of the thalamus

14. An occlusion of the basilar artery would not include
- speaking
  - control lateral limb motor dysfunction
  - sight
  - hearing
15. The solitary nucleus is not concerned with
- sensory receptors in the wall of the gastrointestinal tract
  - enjoying a hot fudge sundae
  - sensory receptors in the pharynx
  - turning the head to the right
16. The axons from the XII nerve nucleus in the floor of the IV ventricle exit
- dorsally around the restiform body
  - ventrally between the pyramids and the inferior olivary nucleus
  - laterally with the restiform body
  - lateral to the superior olivary nucleus
17. The nucleus ambiguus includes axons which accompany the following cranial nerves
- V, VI, VII
  - VII, VIII, IX
  - IX, X, XI
  - IV, V, VI
18. The vagus nerve does not carry fibers to or from this nucleus
- dorsal motor nucleus of X
  - nucleus ambiguus
  - inferior olivary nucleus
  - solitary nucleus
19. The trapezoid body in the lower pons is concerned with what sensory modality?
- touch
  - hearing
  - pain
  - sight
20. The superior cerebellar peduncle (brachium conjunctivum) carries what fibers into the cerebellum from the spinal cord?
- posterior spinocerebellar
  - pontocerebellar
  - reticulocerebellar
  - anterior spinocerebellar

21. The spinal trigeminal nucleus and tract are concerned with which sensory modalities?
- touch to the face
  - taste
  - proprioception to the tongue
  - pain and temperature to the oral and nasal cavities
22. The locus ceruleus, found in the posterior lateral tegmentum of the upper pons is the most important source of the neurotransmitter, \_\_\_\_\_ in the CNS.
- glutamate
  - serotonin
  - norepinephrine
  - GABA
23. The secondary neuron in the conscious proprioception and epicritic pathway in the dorsal columns is found in the
- Clarke's column
  - nucleus gracilis and nucleus cuneatus
  - posterior ventral lateral nucleus of the thalamus
  - medulla reticular formation
24. The majority of fibers in the cerebral peduncles are coming from the
- postcentral gyrus
  - anterior nucleus of the thalamus
  - cerebral cortex
  - cerebellar cortex
25. Which nucleus is not found in the periaqueductal grey in the midbrain?
- III
  - IV
  - V (mesencephalic division)
  - VI

Part II. Please mark A=True and B =False

26. The periaqueductal grey is rich in beta endorphins which cause pain sensation to be elevated.
27. The largest nucleus in the midbrain is the red nucleus.
28. The oculomotor nerve supplies the superior oblique eye muscle.
29. Medial strabismus can be caused by damage to the VI cranial nerve.
30. The dorsal medial nucleus of the thalamus projects to the visual cortex.

31. The nucleus reticularis thalami is within the external medullary lamina of the thalamus, which lies between the thalamus and the internal capsule.
32. Reduction of dopamine synthesis in the nigral cells leads to depletion of dopamine in their terminals located primarily in the red nucleus.
33. Cortical bulbar fibers can terminate on the anterior horn cells.
34. The medial and lateral geniculate bodies are midbrain processing stations for auditory and visual impulses, respectively.
35. The large posterior nucleus in the thalamus called the pulvinar is concerned with visual associative functions.
36. LEARNING QUESTION Some reticular neurons project both upstream and downstream via bifurcating axons influencing nuclei along the way by means of collateral branches. TRUE
37. The ventral anterior nucleus in the thalamus projects to the basal ganglia.
38. The anterior nucleus of the thalamus projects to the cingulate gyrus which means belt in Latin and is concerned with emotion, executive cognitive functions, and sexual functions posteriorly.
39. The primary visual area is located largely on the medial surface of the occipital lobe on the superior and inferior lips of the calcarine fissure.
40. The centromedian and parafascicular nuclei are rich in endorphins and may play a role in acupuncture's ability to reduce pain.
41. The last area of the brain to myelinate and deals with higher cognitive functions is the prefrontal cortex.
42. With pet scans and FMRI, Broca's area appears more extensive than was previously known.
43. Inhibitory functions of the prefrontal cortex include being cautious and self-aggrandizement.
44. Other functions of the prefrontal cortex include judgment, planning ahead, initiative, working memory, changing set, etc.
45. Injury to the inferior parietal lobe causes a neglect syndrome.

46. At the end of the superior temporal sulcus is the angular gyrus, which has more glial cells per microscopic field than the prefrontal lobe.
47. Heschl's gyrus is primarily on the superior aspect of the middle temporal gyrus.
48. The dorsomedial nucleus of the thalamus projects to the prefrontal cortex, providing the fibers severed in a frontal lobotomy..
49. It has been reported that 30% of male brains have no intrathalamic adhesion (massa intermedia) possibly allowing for their ability to have in general more focused attention. (My research has shown the male cerebral cortex to be more lateralized, i. e. right greater cortical thickness than left, than the female cerebral cortex, supporting the previous sentence.)
50. If you could deliberately change one part of your brain, which part would you change either positively or negatively and why in two sentences?

ANSWER BELOW: