Neuroanatomy Final Exam

April 17, 2008 1:00 P.M.

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There are 50 questions for this examination. Each is worth 2 points. These questions will be graded by computer and must be answered on the accompanying computer answer sheet. On the computer answer sheet, your name should be printed in the boxes indicated and the appropriate circles below each letter filled in. Also fill in your Student ID number and the appropriate circles below each number.

Write Marino in the space provided for instructor.

On the back of the computer sheet there is a place for your signature and the date. Please fill these out.

Record your answer for each multiple choice question on the computer sheet. Mark each correct response with a #2 pencil on the answer sheet using numbers 1 - 100. If you erase be sure to erase completely.

There is only once correct answer for each question.



1. In the diagram above, the axons of alpha motor neurons are labeled?

2. In the diagram above, axons carrying pain information to the central nervous system would be labeled? \mathbf{p}

3. Descending autonomics would synapse on neurons whose axons are labeled?

For questions 4 - 7 Match the structure/function with the part of

4. Frontal lobe A

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- 5. Occipital lobe C
- 6. The what pathway \mathcal{D} information would go to?
- 7. The where pathway B information would go to?



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For questions 8 - 10 use the image on the right



- 8. Involved in emotions. B
- 9. The thalamus. 😰
- 10. Fibers going to and coming from the cortex.

For questions 11 - 15 match the adult structure on the left with the embryonic A. Prosencephalon < dien - tholomus structure it develops from on the right.

- 11. Cerebral cortex A
- 12. Caudate nucleus A
- 13. Facial nucleus C
- 14. Spinal Nucleus of 5. C

- B. Mesencephalon Bres mid C. Rhombencephalon met pons, curristlken mater metaller

15. If an individual lost the mandibular division of the 5th nerve the muscle innervated by uma - cors it would:

- A. Show hyperreflexia
- B. Show an increase in tone.

Matrophy rapidly.

(D) Demonstrate disuse atrophy.

16. Upper motor neurons that regulate neurons involved in innervating the lumbricals and interosseus muscles would in large part originate in the:

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(A) Frontal cortex.

B. Parietal cortex.

C. Brainstem.

D. Spinal Cord.

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Questions 17 - 19 involve the cerebellum and its connections.

- 17. Involved in coordinating head and eye movements. A
- 18. Involved in coordinating limbs during walking. B

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- If lesioned would lead to the inability to perform rapid alternating C movements.
- 20. A patient with Parkinson's disease would have:
 - (A) A tremor at rest.
 - B. Nystagamus.
 - C. Dysmetria.
 - D. Difficulty in grasping moving objects.

21. Which of the following basal ganglia nuclei receives direct input from the cerebral cortex?

- A. Caudate nucleus.
- B. Globus pallidus.
- C. Substantia nigra.
- D. Subthalamic nucleus.
- 22. First order neuron nerve cell body for vibratory sense is located in the:
 - A. Gray matter of the dorsal horn.
 - B Dorsal root ganglion
 - C. Medulla
 - D. Pons

23. The region in the cortex where the hand primary sensory cortex is found in the:

- A. Precentral gyrus
- B. Frontal lobe.
- O Postcentral gyrus.
- D. Paracentral lobule
- 24. The second order neuron nerve cell body for temperature is found in the:
 - (\widehat{A}) Gray matter of the dorsal horn.
 - B. Dorsal root ganglion

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- C. Medulla
- D. Pons

- A. Vestibulocerebellum
- B. Spinocerebellum
- C. Cerebrocerebellum

25. The region in the cerebral cortex where the <u>heteromodal</u> cortex is found for our location in space and the environment:

- A. Precentral gyrus
- B. Frontal lobe.
- C. Postcentral gyrus.
- D Posterior parietal lobe.

In the image below, indicate the letter corresponding to the location of the following structures:

- 26. Location of the principal (chief, main) sensory nucleus of the trigeminal nerve.
- 27. Location of III & IV cranial nerve nuclei. A
- 28. Location of the dorsal motor nucleus of X and the XII nucleus. C



For questions 29 - 33, match the finding/loss in the left column with their location in the right column.

29. Loss of only two-point touch
sensation from the face. \heartsuit A. Trip
B. Mo30. Loss of only thermal sensation from
the face. \bigcirc B. Mo31. Only rapid atrophy of the muscles of
mastication. \Im D. Chi32. Total loss of all sensation from one
side of the face AND inability to chew
on one side. AE. Me33. Loss of only efferent (motor) limb of jaw jerk reflex. \heartsuit

- A. Trigeminal nerve.
- B. Motor nucleus of V.
- C. Spinal nucleus/tract of V
- D. Chief (principal) nucleus of V.
- E. Mesencephalic tract/nucleus



- 34. The structure within the circles conveys taste bud sensation from which set of cranial nerves?
 - A. Vestibulocochlear (VIII), abducens (IV) and olfactory (I)
 - (B) Facial nerve (VII), vagus nerve (X) and glossopharyngeal nerve (IX)
 - C. Trigeminal nerve (V), facial (VII) and vagus (X).
- 35. Olfactory sensation reaches the primary olfactory cortex located in the:
 - (A) Medial temporal lobe.
 - B. Parietal lobe.
 - C. Occipital lobe.
 - D. Postcentral gyrus
 - E. Precentral gyrus

36. Primary olfactory neurons are located in the:

- (A) Olfactory epithelium.
- B. Olfactory bulb.
- C. Lateral olfactory tract.
- D. Axons in the cribiform plate.
- 37. Total deafness on one side is a result of a unilateral lesion in the:
 - A. Temporal lobe.
 - B. Cranial nerve VII (facial).
 - C. Lateral geniculate nucleus of thalamus.
 - D, Cochlear nuclei.

- 38. The axons of the bipolar neurons receiving information directly from the organ of Corti is found in the:
 - A. Vestibular ganglion.
 - (Vestibulocochlear nerve (VIII).
 - C. Medial geniculate nucleus of thalamus.
 - D. Auditory cortex.

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- 39. The auditory pathways from the ear to the primary auditory cortex are found in which region of the CNS?
 - ★: Facial nerve (VII).
 - B. Tegmentum of the pons.
 - C.Parietal lobe.
 - D. Cervical spinal cord.
- 40. A lesion of which ONE of the following may cause the patient to have vertigo?
 - A. Medial geniculate nucleus.
 - B. Vestibulospinal tracts in the lateral funiculus of the spinal cord.
 - C Vestibulocochlear nerve (VIII).
 - D. Primary visual cortex in the occipital lobe.
- 41 44. Match the visual pathway structure with the visual field deficit.
- 41. Upper quadratic anopia \mathcal{D}
- 42. Bitemporal hemianopsia. C
- 43. Homonymous hemianopsia. I
- 44. Total blindness in one eye. A

- A. Optic nerve.
- B. Optic tract.
- C. Optic chiasm.
- D. Looping fibers of the optic radiations.

45. Pupillary constriction that occurs during the pupillary light reflex tells you that the functional integrity of which **ONE** of the following structures is intact?

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- A. Optic radiations.
- B Oculomotor nerve.
- C. Visual cortex.
- D. Trochlear nerve.
- 46. Hormonal signals (releasing & inhibiting hormones) from the hypothalamus reach the pituitary via which one of the following?
 - A. Vagus nerve.

B. Fornix.

- C. Descending autonomics.
- D Vascular channels (capillaries & portal vein).

- 47. Regulation of food intake can occur by which of the following?
 - A. Leptin levels.

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- B. Hypothalamic activity.
- C. Insulin levels.
- (D) All of the above.
- 48. Hypothalamic regulation of water intake occurs when which of the following is functioning normally?
 - A. Mammillary bodies (nuclei).
 - B Supraoptic and paraventricular nuclei.
 - C. Arcuate nucleus.

49. Horner's syndrome suggests a unilateral lesion in the:

- X. Oculomotor nuclear complex (including the Edinger-Westfal nucleus).
- B Preganglionic sympathetic neurons.
- C. Pyramids.
- D. Abducens nerve.
- 50. Which of the following structures receives input from the descending autonomic fibers to mediate autonomic function?
 - \bigcirc Dorsal motor nucleus of the vagus.
 - B. Preganglionic sympathetic neurons in the sacral spinal cord.
 - C. Preganglionic parasympathetic neurons in the cervical spinal cord.
 - D. Preganglionic neurons in the brainstem that leave with cranial nerves 4 & 6.