

# Biology 358 - Neuroanatomy

## Final Exam

Please **print your name clearly** on the back of the last page of this exam. Please read the instructions preceding each section carefully.

**Note: Final exams are not returned! If you want to see your final exam grade you must stop into my office sometime during the first two weeks of next term. After that all exams will be shredded.**

### Section 1: Picture Labeling:

The following pages are unlabeled photos of either spinal cord or some portion of the brain. Utilizing the blue marker supplied to you, *label the following structures on any and all photos in which they could be found*. Outline the area in the photo where the structure would be found, and then extend a line from the photo out to the white margin. (You need to do this on one side only). In the white margin label the outlined segment with the number found to the left of the structures listed below. *However, if the structure is not found on the photo put the number in the margin of the segment and mark the structure NFOS (not found on segment). (1 point each)*

- |                                  |                                  |
|----------------------------------|----------------------------------|
| 1. Medial lemniscus pathway      | 14. Middle cerebellar peduncle   |
| 2. Spinothalamic pathway         | 15. Superior cerebellar peduncle |
| 3. Fasciculus cuneatus           | 16. Inferior cerebellar peduncle |
| 4. Nucleus cuneatus              | 17. Red nucleus                  |
| 5. Inferior olive                | 18. Substantia nigra             |
| 6. Anterior corticospinal tract  | 19. Medial geniculate body       |
| 7. Lateral corticospinal tract   | 20. VPL                          |
| 8. Spinocerebellar tracts        | 21. VPM                          |
| 9. Rubrospinal tract             | 22. Caudate                      |
| 10. Giant cell reticular nucleus | 23. Putamen                      |
| 11. Small cell reticular nucleus | 24. Globus pallidus              |
| 12. Thalamic reticular formation | 25. CM                           |
| 13. Reticular formation          | 26. DM                           |

## Section 2: Essays

Answer the following questions on the blank pages that follow the CNS photos utilized in section 1 of this exam. *You must answer the question using no more than 1 page (both sides if necessary)*. Each question is worth 35 points.

27. You are called to provide a neurological consultation to a General Practitioner in a local hospital. When you read the patient's chart you note that the attending General Practitioner has diagnosed the individual as having a lesion in the corpus callosum. In order to confirm or reject this diagnosis you walk into the examining room and give the patient a verbal command to pick up a pencil that is on the desk with his left hand. The patient is unable to do this, and therefore you know that the General Practitioner's diagnosis is correct. Explain the following:
- Are you right or wrong?
  - What *one* essential fact would you need to know to arrive at this diagnosis based upon the information given above?
  - In addition, briefly (no more than 1-2 sentences) explain how you would determine that the damage was *not* in the auditory association cortex.
28. A left-handed, 42-year old, male professional beer drinker awoke one morning, following a strenuous workout with his team, with generalized weakness in the upper and lower extremities of both sides and pronounced bilateral diminution of pain and temperature sensibility on both sides of the body below the neck. There were no apparent disturbances of position sense, vibratory sensibility, or tactile discrimination. Localize the problem anatomically and give a reason for your answer.