Biology 358 — Neuroanatomy
First Exam

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

You must answer *all* questions on this exam. Because statistics demonstrate that, on average, between 2-5 questions on every exam are ambiguous enough to come out "aberrant" on an item analysis the total number of points possible on this exam is 106. However, grades will be calculated out of a possible 100 points, assuming that 2-3 questions on this exam are aberrant.

Section 1: Diagram labeling. The following pages are unlabeled diagrams of either spinal cord or some portion of the brain. Utilizing the blue marker supplied to you, label the following structures on the diagram. **Outline the area in the diagram where the structure would be found, and then extend a line from the diagram 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 segment** put the number in the margin of the segment and mark the structure **NFOS** (not found on segment). (2 points each)

HBS-1

1. Tract where, if there is a lesion, the patient would suffer from (among other things) astereognosis on the contralateral side below T_6.

2. Tracts that are responsible for conveying information dealing with temperature, pain, pressure and crude touch.

3. SON (second order neuron) for pathway responsible for conducting conscious proprioception.

4. SON for pathway responsible for conducting unconscious proprioception.

5. This structure contains the UMNs (upper motor neurons) for a tract that decussates immediately, extends throughout the spinal cord, and influences motor movements primarily through its interplay with the cerebellum.

HBS-3

6. Neuronal processes of SON for the tract responsible for conducting fine touch, pressure, vibration, kinesthetic sense from levels superior to T_6.

7. Tracts responsible for conducting unconscious proprioception.

8. Reticular formation

9. Tracts that are responsible for conveying information dealing with temperature, pain, pressure and crude touch.

10. Neuronal somas of SON for the tract responsible for conducting fine touch, pressure, vibration, kinesthetic sense from levels superior to T_6.

HBS-7

11. Neuronal processes of SON for the tract responsible for conducting fine touch, pressure, vibration, kinesthetic sense.

12. Reticular formation nucleus termed magnocellular nucleus.

13. Reticular formation nucleus termed parvicellular reticular nucleus.

14. Structure that relays motor information to the contralateral cerebellum.

15. Rubrospinal tract

16. SONs responsible for conveying information dealing with temperature, pain, pressure and crude touch.

Section 2: **Diagram labeling.** The following page contains a diagram of the brachial plexus. Some of these nerves are labeled with a number. Fill in the anatomical name of the nerve in the spaces provided below. (2 points each)

17.

18.

19.

20.

21.

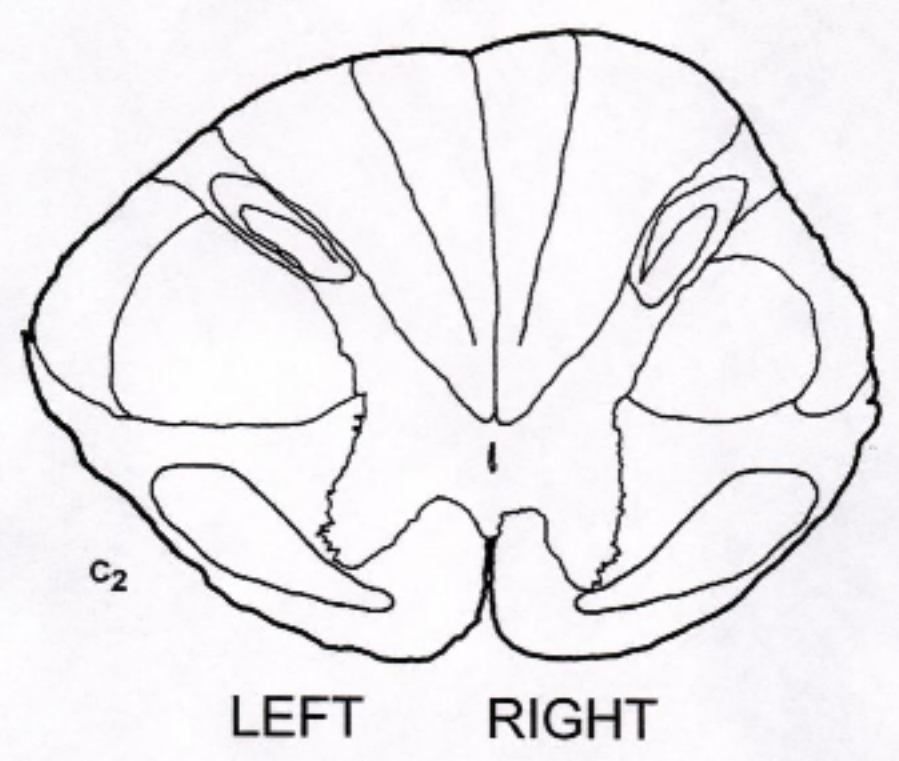
22.

23.

Section 3: **Think problem.** (10 points)

24. Shade in the location of the lesion(s) in the above drawing that will account for *only* the following neurological deficits.

    a. Stroking the bottom of the left foot results in a Babinski sign
    b. clumsy left leg and arm (as noted by physician but not patient)
    c. deficit in fast pain from the right foot.



25. Give a solid rationale for your answer to question #24. (10 points)

Section 4: Terminology. Define the following terms in the space provided.

26. pallidus

27. crus

28. plexus

29. claustrum

30. cistern

31. limbic

32. vermis

33. fornix

34. rhinencephalon:

35. hippocampus

36. pons

37. glia

38. pineal

39. fasciculus

40. dyskinesia

41. Lower motor neurons (LMNs) obey at least two rules according to their arrangement within the grey matter of the spinal cord. In the spaces provided explain both of these arrangement “rules” or “patterns.” (10 points)