Study Guide # 3

Human Anatomy

Neural Tissue

1. Give an overview of the Central (CNS) and Peripheral (PNS) Nervous Systems. Make a diagram

connecting the sensory, interneuronal (integration center) and motor pathways.

1. What are the 2 different general types of cells in the nervous system? What are their roles?
2. What are the 3 different functional types of *neurons* in the nervous system? Their functions?
3. Describe the anatomy of a typical motor neuron. What is a myelin sheath and its significance?
4. What are the roles of glial cells? Describe the roles of the 6 different types of glial cells in the NS.
5. What is gray matter? White matter? Nerve fiber? Nerve? Tract? Ganglion? Nucleus? Column?
6. Describe the arrangement and roles of the 3 connective tissues around nerves.

**Spinal Cord and Spinal Nerves**

1. Describe the gross anatomy of the length of spinal cord, naming the regions and structures.
2. Define a spinal nerve. How many are there? Describe the spinal nerve plexuses and locations.
3. Give examples of specific nerves arising from each the spinal nerve plexuses and their function.
4. Describe the cross-sectional anatomy of the “H” or “Butterfly” arrangement of the spinal cord.
5. Give a description of the role and arrangement of the *spinal* meninges, the layers and spaces.
6. What is multiple sclerosis? A spinal tap? An epidural block? Amyotrophic lateral sclerosis?
7. Describe a spinal reflex. Briefly compare monosynaptic and polysynaptic spinal reflexes.

**Brain and Cranial Nerves**

1. Outline the 6 major anatomical divisions of the adult brain. Include the subdivisions.
2. List the 5 cerebral lobes and their functions, including association areas. What is lateralization?
3. Explain the general functions of each above region of the brain. List elements of limbic system.
4. Where and what are the functions of *Association*, *Commissural* and *Projection* fibers?
5. What is the Blood Brain Barrier (BBB)? Describe Cerebral Spinal Fluid (CSF) and its roles.
6. Indicate how CSF is formed and how it is circulated. List the components and functions of CSF.
7. What are the ventricles of the brain? Describe their arrangement and their purpose.
8. Describe the *cranial* meninges. What are the dural sinuses? What is Meningitis? Hydrocephalus?
9. Be able to name and describe the functions of the 12 cranial nerves (include if sensory, motor or

mixed nerves) and what symptoms may appear if they are injured or damaged.

**The Autonomic Nervous System and The Special Senses**

1. Give an overview of the ANS in general; include the parasympathetic and sympathetic divisions.
2. List how the parasympathetic and sympathetic divisions differ *anatomically* and *functionally*.
3. Discuss the conduction of sound through the outer, middle and inner ear. What is deafness?
4. What is otitis media? Tinnitus? Otosclerosis? How are balance and equilibrium maintained?
5. Describe the anatomy of the eye, including tissue layers, chambers, cells and visual pathways.
6. Compare emmetropia, myopia, hyperopia and presbyopia in terms of focusing images on retina.
7. What is glaucoma and how does it arise? What is a cataract? What is macular degeneration?