Bio 160 Study guide – **Nervous System** – Chap. 8 and Lab 5

**CNS**

Name the 3 layers of the Meninges and describe their basic structure and location in relation to one-another and the brain/spinal cord

Where are the epidural space and the subarachnoid space located, and what do you find within each of those spaces?

What is the filum terminale and what is its purpose?

# What are the functions of Cerebrospinal fluid (CSF)

Where is CSF produced? What structures create it, and by what process is it created?

Describe the pathway of CSF circulation within, and around the CNS

How and where is CSF reabsorbed?

**The Spinal Cord & Spinal nerves**

Describe the longitudinal anatomy of the spinal cord

What are the cervical enlargement & lumbar enlargement, and what are they for?

What is the conus medularis?

How many spinal cord segments are there? How many pairs of spinal nerves come off of the spinal cord in total? How many come off of each region of the cord?

What is the cauda equina?

What is a nerve plexus?

List the 4 major plexuses, which spinal nerve levels they include, and specific peripheral nerves which arise from each plexus

What are the basic functions associated with each of the plexuses?

Which levels of spinal nerves do not participate in any plexus? What are those nerves called?

Describe and be able to draw a cross section of a spinal cord segment. Include the following structures and know the functions associated with: dorsal roots, dorsal root ganglion (DRG), ventral roots, spinal nerves, anterior median fissure, posterior median sulcus, gray matter horns (anterior, posterior & lateral (T1-L2, S2-S4), gray commissure, central canal, white matter columns (anterior, lateral, posterior)

What type of information (in general) is carried along the ascending tracts/pathways?

What specific types of information are carried along the:

Spinothalamic tracts

Posterior Columns

Spinocerebellar tracts

What symptoms could you see if there was damage to each of the above tracts?

What type of information (in general) is carried along the descending tracts

What specific types of information are carried along the:

Corticospinal (pyramidal) tracts

Medial & Lateral pathways

What symptoms could you see if there was damage to each of the above tracts?

Describe all of the structures that are involved in the transmission of:

sensory signals from a receptor to the brain

motor signals from the brain to skeletal muscle cells

**The Brain & Cranial nerves**

What are the 4 principal divisions of the brain?

What regions make up the brain stem?

What is the pyramidal decussation? Where is it located?

Which cranial nerve nuclei are located in the medulla oblongata (M.O.)?

List the reflex centers that are located within the M.O. and describe their functions

What is the major function associated with the Pons?

Which cranial nerve nuclei are located in the pons?

List the reflex centers that are located within the pons and describe their functions

List the main regions found within the midbrain

What makes up the structure of the cerebral peduncles?

What makes up the corpora quadrigemina?

What is the function of the superior colliculi?

What is the function of the inferior colliculi?

Which cranial nerve nuclei are located in the midbrain?

What function is associated with the reticular formation?

What regions make up the diencephalon?

## Describe the structure of the thalamus and its location in relationship to other brain structures

## What is the primary function of the thalamus?

## Describe the location of the hypothalamus in relationship to other brain structures

Describe the functions associated with the hypothalamus. Think about what would happen if you damaged specific nuclei (regions) of the hypothalamus

What are the mammillary bodies? Where are they located and what are their major functions?

What structure is found in the epithalamus and what is its function?

What is the limbic system? What parts of the brain make it up and what functions are associated with them? What would happen if you damaged these areas?

Describe the basic anatomy of the Cerebrum – including hemispheres, gyri, sulci, fissures, gray matter, white matter

Name the lobes of the cerebrum and the sulci which separate them from each other

Where is the insula located?

Describe the communication paths that occur across the white matter fibers in the cerebrum, including the association fibers, commissural fibers, and projection fibers

What is the corpus callosum and what is its importance? What would happen if it was damaged?

Describe the location (lobe) and functions associated with the following motor & sensory, association, and cerebral processing center areas of the cerebrum. What would happen if you damaged each of these areas?

* primary motor cortex (pre-central gyrus)
* gustatory cortex
* primary sensory area (post-central gyrus)
* auditory cortex
* olfactory cortex
* visual cortex
* somatic motor association area (pre-motor cortex)
* visual association area
* general interpretive area
* motor speech center (Broca’s area)
* prefrontal cortex

### Describe the anatomy of the cerebellum including its location in relation to other brain regions, fissures, hemispheres, lobes, gray and white matter

What functions are associated with the cerebellum, and what symptoms would you see if it was damaged?

Cranial Nerves: Know name, #, and basic function, including what symptoms would you see with damage to a specific cranial nerve

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II

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VII

VIII

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XII