Exam # 3 Study Guide

Chapter 13 Neural Tissue:

- How are neurons and neuroglia different?
- What types of neuroglia are in the CNS and PNS and what are the specific functions of each?
- What are the components (structure) of a neuron, why can't they reproduce and what are nissl bodies?
- What are the 5 types synapses? (3 between neurons, 1 between a neuron and muscle and 1 between a neuron and gland)
- How are neurons classified? Know the four structural and three functional classifications.
- How do neurons regenerate? What helps and what regenerates?
- Understand how a nerve impulse works and what is meant by excitability, action potential and threshold level.
- Understand what the speed of a nerve impulse depends on.
- What is a synapse and what are the differences between nonvesicular and vesicular synapses?
- Know the five neuronal pools and examples of each.

Chapter 14 Spinal Cord and Spinal Nerves:

- What are inside the Ganglia of the PNS?
- What are the main functions of the brain and spinal cord? Do they always work together?
- What are the features (regions and structures) of the spinal cord?
- What types of neurons (sensory or motor) do the dorsal and ventral roots carry?
- Which roots are afferent and efferent and what does that mean?
- What are the meninges and denticulate ligaments and what are their functions?
- What is in gray and white matter?
- What types of nuclei are in the posterior, lateral and anterior gray horns?
- Know the organization of white matter in the spinal cord. (What are the three regions and what do they convey?)
- How many cervical, thoracic, lumbar, sacral and coccygeal spinal nerves are there?
- What are the connective tissue layers of peripheral nerves and what do the surround?
- What are the four branches of the spinal nerves and what do they innervate?
- What are dermatomes?
- What are the four nerve plexuses and what components (trunks, cords, and nerves) belong to each?
- What are the two branches of the cervical plexus and what do they innervate?
- How are reflexes classified?
- What is a stretch reflex?

Chapter 16 Brain and Cranial Nerves:

- Know the embryology of the brain. What the CNS begins with and what forms at 3-4 weeks, 6weeks and at birth.
- What are inside the nuclei of CNS?
- Know the main functions of the brain regions (Medulla oblongata, Pons, Cerebellum, Mesencephalon, Epithalamus, Thalamus, Hypothalamus, Telencephalon.
- Know the functions and locations of cerebrospinal fluid (CSF).
- Know the layers of the meninges, components of the layers and the functions of the layers.
- Know the steps in the circulation of CSF.
- Know which nuclei (relay stations) are in a specific regions of the brain.
- Where the pineal gland located and what is is its function?
- Know which region of the brain the divisions of the thalamic nucleus are connected to.
- Know the cerebellar peduncles and what they connect the cerebellum with.
- Know the four main lobes of the brain and what they perceive.
- Know the locations and main functions fo the precentral and postcentral gyrus.
- What are acruate fibers, longitudinal fascicule, commissural fibers and projection fibers; what do they do?
- What are the components and functions of the limbic system?
- When we are stressed, a component of the limbic system is stimulated and forms memories while another component (the one that normally forms memories) is suppressed. What are the components?
- Know the cranial nerves by name, number. Also know their innervations and whether they carry sensory, motor or both sensory and motor neurons.

Chapter 17 Autonomic Nervous System

- Why do we call the autonomic nervous system "automatic"?
- How does the autonomic nervous system differ from the somatic nervous system?
- Know the two divisions of the autonomic nervous system and their alternate names.
- How to the two divisions differ in location on the spinal cord, location of the ganglia (relative to organs and spinal cord, function and neurotransmitter?
- How do meant by preganglionic and posganglionic fibers (nerons)?
- What are collateral and what are their functions?
- What are neurons that are terminal or intramural?
- Where do the suprarenal medullae release its neurotransmitter?
- What are the functions of the suprarenal medullae?
- What are varicosities, what is in them, where are they located on a neuron and relative to ganglia?
- Know the differences between Nicotinic and Muscarinic receptors.
- What is meant be cholinergic and adrenergic?
- What is meant by dual innervation?

- How do short and long visceral reflexes differ and how do visceral reflexes differ from somatic reflexes?

Chapter 18 General Senses

- Understand what the General and Special Senses are
- Understand the differences in receptor fields and which is most sensitive
- Understand the differences between tonic and phasic receptors, know examples of both and what they do when a stimulus is long lasting or constant
- Understand the concept of receptor adaptation and know the differences between peripheral and central adaptations
- Know general definitions, types, names and locations of Exteroceptors, Proprioceptors, interocepters, nociceptors, thermoreceptors, mechanoreceptors and chemoreceptors (What are they sensitive to or what do they monitor?)
- Know differences between, slow, fast and referred pain
- Know examples of referred pain on Figure 18.2
- What cold receptors share a information (nervous) pathway with
- What do muscle spindles adjust?
- What can golgi tendon organs do to a muscle?

Chapter 18 Special Senses

Olfaction:

- What cells are in the olfactory epithelium and what are their functions?
- What do airborne substances have to do before they can activate an olfactory receptor cell?
- What does a bowmans gland do?
- What are the steps in the olfactory pathway?
- Know the general definition of Olfactory Discrimination.

Gustation:

- What are the structures on the tongue and what do they consist of?
- Know the types of papillae, where they are located, what do they look like and what cranial nerve their information travels on.
- Know the steps in the gestation pathways.
- In what lobe of the brain is the gustatory cortex?
- What is meant by "threshold level" of a receptor?
- Is the threshold level low or high for unpleasant and pleasant tastes?

Equilibrium and Hearing:

- What is in the three regions of the ear?
- What are the functions of the three regions? (What do they do to sounds?)
- In what structure on which bone is the ear located?