Unit 4 Review
Homeostasis

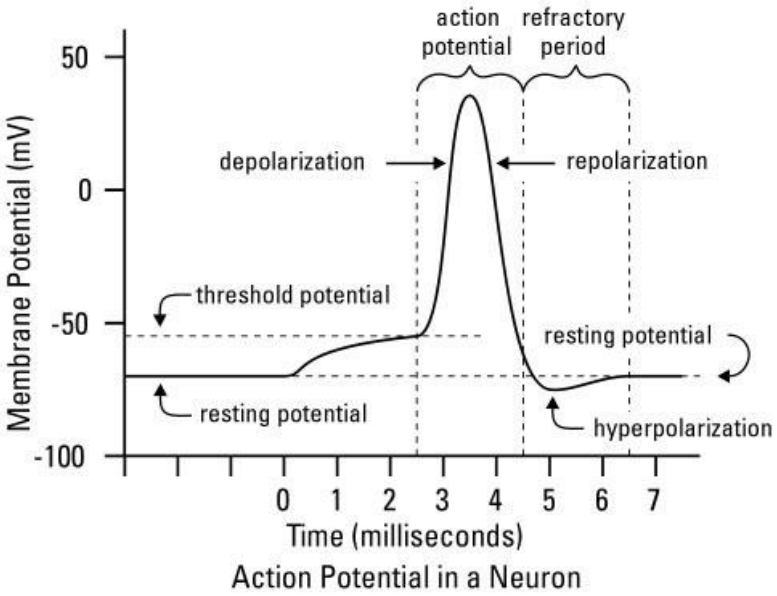
CHAPTER 8: NERVOUS SYSTEM

Section 8.1: Human Body Systems and Homeostasis

- Compare and contrast a negative feedback to a positive feedback system.
- Describe the following components of feedback systems: sensor, control center, effector
- Identify and describe the type of feedback systems that is used in the following scenarios:
    - Fever
    - Labour contractions
    - High blood sugar levels
    - Sudden change in body temperature

Section 8.2: Structures and Processes of the Nervous System

- Identify and describe the function of each structure within a neuron *(i.e. dendrite, cell body, axon, myelin, terminal buds, node of ranvier)*
- What three types of neurons are found in a reflex arc? Why are reflex arcs important in the human body?
- Describe the order in which the impulses are transmitted through a reflex arc.
- Describe each step that is outlined in the graph below. *(Make sure to mention all channels and pumps that are active and which ions are flowing in/out of the membrane)*



Action Potential in a Neuron

- How does a myelinated neuron differ from a non-myelinated neuron when delivering a nerve impulse?
- Why are myelinated neurons able to transmit signals quicker than a non-myelinated neuron?
- Explain how an electrical signal can be transmitted as a chemical signal from a pre-synaptic to a post-synaptic cell.
- How are neurotransmitters able to activate an Action Potential in a post-synaptic neuron? *(EPSPs and IPSPs, summation, axon hillock)*

- What is the function of acetylcholine? The enzyme Acetylcholineesterase? What would happen to the neuromuscular junction if the enzyme where mutated?

Section 8.3: The Central Nervous System (CNS)

- Identify all of the structures in the brain and their main functions.

Section 8.4: The Peripheral Nervous System (PNS)

- How to the autonomic and somatic nervous systems differ?
- When is the sympathetic nervous system triggered? How does this system affect organs in the body?
- When is the parasympathetic nervous system triggered? How does this system affect the organs in the body?

CHAPTER 9: ENDOCRINE SYSTEM

Section 9.1: Glands and Hormones of the Endocrine system

- Compare and contrast steroid hormones and water-soluble hormones.
- What is a tropic hormone?
- Which gland is considered the master gland of the endocrine system?

Section 9.2: Hormonal Regulation of Growth, Development and Metabolism

- What are the two main structures of the pituitary gland? How do these two structures differ from one another?
- How do the hypothalamus and pituitary glands work together to maintain homeostasis?
- How is the nervous system interconnected with the endocrine system.
- Explain the role of the following hormones on the body: hGh, thyroxine (T4), oxytocin, ADH.
- Explain which glands are responsible for releasing the hormones above and how they are regulated in the body.

Section 9.3: Hormonal Regulation of Stress Response and Blood Sugar

- What two hormones are released from the pancreas to control blood sugar?
- After a meal what happens to the blood sugar levels? What hormone is released from the pancreas after a meal?
- If one undergoes strenuous exercise or has skipped a meal what will happen to the blood sugar levels? What hormone will be released from the pancreas when this occurs?

Section 9.4: Hormonal Regulation in the Reproductive System

- What reproductive structure is responsible for sperm production?
- Identify the role of the following hormones on the male reproductive system: FSH, LH, GnRH, testosterone, inhibin
- Explain how the hormones above influence the reproductive system and how they can be regulated to control sperm production. Explain how the following hormones influence the ovarian and uterine cycle of the female reproductive system: LH, FSH, estrogen and progesterone

- Explain how these hormones are regulated to ensure that the ovum is released and that the uterine is prepared for the development of the fetus.

CHAPTER 10: EXCRETORY SYSTEM

- Explain the role of the following structures on the excretory system: Bowman's capsule, glomerulus, filtrate, collecting duct.
- Explain the process of urine formation in the kidney

For further practice answering Thinking/Inquiry and Application questions, consult the questions at the end of each chapter in the textbook.