Study Guide – Exam 4

1) **Know the following terms:** neutrophil, antibody, pancreas, monocyte, agglutination, neutralization, macrophage, antigen, epitope, collecting duct, urethra, renal pelvis, ureter, renal vein, kidney, integration, dendrite, astrocyte, axon, reception, synapse, transmission (as it applies to nervous systems), hormone, tropic hormone, nontropic hormone
2) What substances do the **parietal** and **chief cells** of the stomach's lining secrete into the lumen? What do these substances do after they are released into the lumen of the stomach? Why are these substances **not** secreted by the same cell?
3) What occurs in the **duodenum** of the small intestine?
4) Describe the **structure of an antibody**. What is an antibody composed of? Antibodies are also known as _____ (fill in the blank).
5) Which organ of the human digestive tract produces **bile**? What is the purpose of bile in the digestive system?
6) Where does digestion of carbohydrates begin in the digestive system? Where does protein digestion begin?
7) What is the **function of the epiglottis**?
8) What is the **function of the gallbladder**?
9) What are the primary **functions of the small intestine**? Describe the "brush border" of the small intestine. Describe how nutrients are absorbed by the small intestine.
10) What is the main **function of the large intestine**?
11) Explain how the pancreas serves as both an **exocrine** and **endocrine** organ.
12) List and describe the many ***non-specific*** defenses of your immune system (include aspects of both your first and second lines of defense).
13) What are the key differences between **innate immunity** and **adaptive (acquired) immunity**?
14) **Antibody-mediated immunity** and **cell mediated immunity** are the two types of adaptive immunity. How is **antibody-mediated immunity *different*** from **cell-mediated immunity**?
15) Why are **helper T cells** crucially important to the functioning of your immune system?
16) What is **immunological memory**, and why is it important? How does the secondary response to an antigen differ from the primary response?
17) How are B-cell receptors different from T-cell receptors?
18) Describe two kinds of **passive immunity**.
19) What is the **glomerulus**, and what is its function in mammals?
20) What is an **osmoconformer**? Provide an example.
21) What is an **osmoregulator**? Provide an example.
22) What is the main form of nitrogenous waste released by mammals to their environment? Fishes? Birds and reptiles?
23) What are **nephrons**? List the major parts of a nephron, and describe the function of each part.
24) What is the function of a **Schwann cell**? Why are these cells important in your nervous system?
25) Differentiate between **interneurons**, **afferent neurons**, and **efferent neurons**. Describe the primary role (or function) of each.
26) A **motor neuron** is a special type of _____ that innervates _____ (fill in the blanks).

27) What is an **action potential**? What occurs during the **depolarization** of an axon? What is the **refractory period**? How does the action potential (or impulse) **propagate** down an axon?
28) Know the following systems and their **basic** functions:
    a. **Central Nervous System (CNS)**
    b. **Peripheral Nervous System (PNS)**
    c. **Somatic System**
    d. **Autonomic System** and its **Sympathetic** and **Parasympathetic divisions**.
29) Know the major parts of the adult human brain and their basic functions.
30) Describe the general structure of a neuron.
31) Describe the basic model of a neuronal circuit and how it works (i.e., basic model of neural signaling).
32) What is the primary function of a nervous system? In other words, why do we have a nervous system?
33) Describe the two types of synapses. By which synapse do the majority of vertebrate neurons communicate?
34) What is saltatory conduction?
35) Describe the **four types of cell signaling** in the endocrine system?
36) Provide an example of each of the following types of hormones (or local regulator): 1) **amine hormone**, 2) **peptide hormone,** 3) **steroid hormone,** and 4) **fatty acid-derived molecules**. Which ones are primarily hydrophilic? Which ones tend to be hydrophobic? Why can hydrophobic hormones enter their target cells and bind to internal receptors?
37) List the **major endocrine** cells and **glands** of humans and the hormones that they produce.
38) Learn **all of the hormones** that I mentioned in class and **know their basic functions (flash cards might be useful here)**.
39) Why is an **iodine deficiency** in someone's diet harmful to their thyroid gland (including its function)?
40) What causes **Type-I** and **Type-II diabetes**?
41) What is the proposed function of **melatonin** in humans?