STUDY GUIDE – Exam 3 (Chapter 14) Nutrition and Digestion

1. A. Name and explain two important reasons why you ingest food. B. Name the three macromolecules your body needs for proper nutrition. C. Why are carbohydrates important for nutrition? D. Why should you eat whole wheat bread over white?

2. A. Why are lipids important in your diet? B. Why are proteins important in our diet? C. What are essential amino acids? F. What is the difference between complete and incomplete proteins. Give some examples of each.

3. A. What are the two main categories of micronutrients? B. Why are they called micronutrients? C. Why are vitamins important for proper nutrition? D. Name the 4 fat-soluble vitamins along with their appropriate food sources and why they are needed. E. Name (be able to recognize) the 9 water-soluble vitamins. Note any information stated in class as important for this category.

4. A. Why are minerals important for proper nutrition? B. Name (be able to recognize) major mineral groups learned in class. Note any information stated in class as important for this category.

5. A. What process/chemical reaction occurs within our cells that transforms glucose into energy? B. What is the usable form of energy called that results from this process? C. Review (show) the formula for this process.

6. A. Name two ways in which your body expends energy. B. What is BMR? Explain.

7. A. Follow the path of food in the alimentary canal in humans (write out in order) and be able to identify them on a diagram. Also, be able to identify the accessory organs that aid in digestion.

8. A. Mouth/Oral Cavity - name and explain the function(s) of each of the following structures: teeth, tongue, salivary glands. B. Saliva contains the enzyme salivary amylase. What does this enzyme do? C. What is another purpose of saliva? D. What type(s) of digestion occurs in the mouth (mechanical/chemical)? Explain.

9. A. Pharynx - Where is this located? B. What does the epiglottis do when you swallow? C. Esophagus - describe its structure and function. E. What is peristalsis?

10. A. Stomach - what are two different functions of the stomach. B. What substances are produced by gastric glands and what are their functions? D. What is the approximate pH of gastric juice? E. Why doesn’t your stomach digest itself? F. What is heartburn?

11. A. Small Intestine - give approximate length and diameter. B. What is the primary function of the small intestine? C. What are the three parts of the small intestine and explain what happens in each.

12. A. Chemical digestion: For each structure listed, explain what part it plays in chemical digestion of food in the small intestine (where it is an what is does/makes): liver, pancreas, gall bladder.

13. A. Absorption - how do villi and microvilli aid with absorption? B. Draw and describe the structure of a villus. C. Show/describe where fat products are absorbed and where amino acids/sugars are absorbed.

14. A. Large Intestine (Colon): give approximate length and diameter B. What is the main function of the large intestine? C. What events lead to constipation? diarrhea?
Urinary System

1. A. Describe the broader concept of “excretion” in your own words. B. Why is this process necessary for the body? C. Name some parts of the body that can be used for excretion. D. Name some metabolic wastes that can be excreted from the body.

2. A. Name the major structures of the urinary system as learned in class and describe their functions. B. Draw a simplified version of the urinary system (and blood supply) and label the parts.

3. A. Name the parts of the kidney and describe the purpose/function of each.

4. A. What is a nephron and what does it do overall? B. Name the parts of the nephron as described in class. C. Name and describe the three main steps of blood filtration where along the nephron each takes place. D. Draw a simplified nephron (and blood supply) and label the parts.

5. Describe the following diseases of the urinary system/treatment: A. Urinary Tract Infections B. Kidney stones

6. A. Describe the parasite Schistosoma haematobium. B. How is this infection acquired? C. What are some of the effects of infection with this organism? D. What is Pharoah’s Curse?

Musculoskeletal System

1. A. What bones are part of the axial skeletal B. appendicular skeleton? 

2. A. Describe and give examples of the three types of joints: ball/socket, hinge, pivot. B. What are osteons, central canals and lacunae?

3. A. Describe how tendons are involved in muscle attachment to bone. B. What is meant by agonistic pairs?

4. A. How are actin and myosin involved in muscle contraction? B. Draw and label a diagram of a sarcomere. Be sure to label the thick and thin filaments and the Z-lines.

5. A. How are ATP and Creatine Phosphate each involved in muscle physiology? B. What happens when muscle cells run out of oxygen?

6. A. Describe the process of osteoporosis. B. What nutrients and macromolecules are involved in this pathology?

7. A. Describe Trichinella spiralis- B. How is this infection acquired? C. What happens to the worm in the muscles?

Integumentary System

1. A. List the primary functions of the integumentary system. B. What are the main parts of the integumentary system?

2. A. List the three layers of the skin. B. What structures are found in each of the three layers? C. Describe the functions and differences of the two kinds of sweat glands discussed in class.
1. **A.** What are some functions of the circulatory system as learned in class? **B.** Name and describe the main structures of the circulatory system.

2. **A.** What is the basic function of a heart? **B.** What is pulmonary circulation and what is its purpose? **C.** What is systemic circulation and what is its purpose?

3. Describe the following structures in terms of location and function as related to the human heart/circulatory system: **A.** right atrium, left atrium, right ventricle, left ventricle, **B.** superior vena cava, inferior vena cava, aorta, pulmonary artery, pulmonary veins, **C.** aortic/pulmonary semi-lunar veins, bicuspid valve or A-V valve, tricuspid valve or A-V valve, septum.

4. Be able to locate any of these on a diagram. **A.** Trace the path of blood (write out the structures) starting with the left ventricle. Be able to trace the path from any point in the circulatory system. **B.** Put a check next to those structures that contain oxygenated blood.

5. Heartbeat: **A.** What is the cardiac cycle? **B.** How long is the cardiac cycle? **C.** Describe the following as they pertain to the cardiac cycle (include time for each): diastole, systole.

6. **A.** What accounts for the “heart sounds” (lub-Dupp)? **B.** What is a possible cause for a heart murmur? **C.** What are you “feeling” when you take your pulse?

7. **A.** What is the natural pacemaker of the heart and where is it located? **B.** Describe how the pacemaker works.

8. **A.** What is athlersclerosis? **B.** What causes a heart attack?

9. Describe the following blood vessels in terms of location and/or direction of blood flow, relative sizes, and basic structure: arteries, veins, arterioles, venules, capillaries.

10. **A.** Define blood pressure. **B.** Explain what the two numbers represent when measuring someone’s blood pressure (i.e. 120/80). **C.** Which is systolic and which is diastolic? **D.** Which blood vessels have the greatest blood “pressure” why?

11. **A.** What does the lymphatic system consist of? **B.** What two other systems does it function with? **C.** How does the lymphatic system work with the circulatory system?

12. **A.** What is Plasma? What is it composed of and what percent of the blood does it represent? **B.** Cellular components of the blood account for what percentage of blood volume? **C.** What are the three cellular components of blood as discussed in class? **D.** Describe each of these components as far as structure and function.
STUDY GUIDE - Test 3

Respiratory System and Cellular Respiration
Chapters 10 and 3 (parts of)

1. A. Name the major structures in the human respiratory system and give their function(s). B. Which are used for air conducting and which for gas exchange? C. Be able to locate them on a diagram.

2. A. Name and explain some functions of the respiratory system as outlined in class.

3. A. Which blood gas concentration controls breathing? B. By what process is gas exchanged between the capillaries and the tissues of the body? C. Why does your breathing rate increase when you exercise? D. What structures expand or “move” to allow the chest cavity to expand during air intake?

4. Describe the following respiratory diseases: A. emphysema  B. tuberculosis  C. asthma

5. A. What is cellular respiration? B. Where does it occur? C. What is the general formula for cellular respiration?

6. A. Name and describe the four basic steps involved in cellular respiration. B. What happened to your original glucose at the end of the Kreb's Cycle? C. In which step is most of the ATP made?