BIO 211 Test 3 Review

Ch 21 The Respiratory System
1. Describe the primary functions of the respiratory system.
2. Explain how the respiratory exchange surfaces are protected from pathogens, debris and other hazards.
3. Identify the organs of the upper respiratory system and describe their functions.
4. Describe the structure of the larynx and discuss its roles in normal breathing and in the production of sound.
5. Discuss the structures found within the conducting zone.
6. Describe the anatomy of the lungs (including the pleura), the structures in the lungs (conducting to respiratory zone) and detail of the alveoli.
7. Define and compare the processes of external and internal respiration.
8. Describe the major steps involved in external respiration.
9. Define the respiratory volumes.
10. Summarize the physical principles governing the movement of air into the lungs (Boyle’s Law)
11. Describe the respiratory muscles responsible for respiratory movements.
12. Summarize the physical principles governing the diffusion of gases into and out of the blood. (Dalton’s and Henry’s Laws)
13. Explain the structural features of the respiratory membrane.
14. Describe the partial pressures of oxygen and carbon dioxide in alveolar air, blood, and the systemic circuit.
15. Describe how oxygen is picked up, transported and released in the blood.
16. Discuss the structure and function of hemoglobin and how PO2, pH, temperature and BPG affect oxygen binding.
17. Describe how carbon dioxide is transported in the blood.
18. Describe the factors that influence respiration rate.
19. Identify and discuss reflex respiratory activity—chemoreceptors, baroreceptors, Hering- Breur, and protective reflexes.
20. Describe the brain centers involved in the control of respiration.

Ch 22 The Digestive System
1. Identify the organs of the digestive system and list their major functions.
2. Describe the histology of the digestive tract (all 4 layers and modifications along the way).
3. Explain the processes by which materials move through the digestive tract.
4. Describe the anatomy of the oral cavity.
5. Discuss the functions of the major structures and regions of the oral cavity (teeth, salivary glands, saliva)
6. Describe the anatomy and functions of the pharynx.
7. Describe the anatomy and functions of the esophagus.
8. Describe the anatomy of the stomach, its histological features and its roles in digestions and absorption (What is made here and what does it activate or digest? What is the role of mucus?)
9. What types of cells are found in the lining of the stomach? What do each type of cell secrete? Describe the pathway of the activation of pepsin.
10. Describe the anatomical and histological characteristics of the small intestine.
11. Explain the functions of the intestinal secretions and discuss the regulation of those secretions.
12. Describe the structure, functions and regulation of the accessory digestive organs. (liver-secretin, gallbladder-CCK, and pancreas-CCK, enzymes, buffers and secretin)
13. Describe the gross and histological structure of the large intestine.
14. Explain the significance of the large intestine in the absorption of nutrients.
15. List the regions of the large intestine.
16. Describe the chemical events responsible for the digestion of organic nutrients.
17. Describe the mechanisms involved in the absorption of organic and inorganic nutrients.

**Ch 23 Nutrition, Metabolism and Temperature Regulation**

1. Define metabolism and explain why cells need to synthesize new organic components.
2. Describe the basic steps in glycolysis, the TCA cycle, and the electron transport chain. (What do you start with and produce, where does most ATP production occur)
3. Summarize the energy yield of glycolysis and cellular respiration.
4. Describe the pathways involved in lipid metabolism. (lipolysis—beta-oxidation)
5. Know what an essential fatty acid is.
6. Summarize the main features of protein metabolism and the use of proteins as an energy source (transamination vs. deamination)
7. Know the difference in an essential vs. nonessential amino acid. Be able to identify an essential amino acid.
8. Differentiate between the absorptive and postabsorptive metabolic states and summarize the characteristics of each. (For example, what would happen to glycerol or glucose in each state)
9. Know the difference between fat-soluble and water-soluble vitamins and examples of each.
10. Describe how our body maintains temperature homeostasis.