Essay List for Exams

Chapter 6
1. What are the steps in order of endochondral ossification? Name one difference between intramembranous and endochondral ossification.
2. A 75-year-old woman and her 9-year-old granddaughter were victims of a train crash. In both cases, trauma to the chest was sustained. X-rays of the grandmother revealed several fractured ribs, but her granddaughter had none. Explain these different findings.

Chapter 9
1. Explain the sequence of events of the sliding filament theory. Describe what happens to the individual parts of the sarcomere during contraction.
2. Robert, a chronic couch potato, decided very unexpectedly to walk his dog. The dog had other ideas and turned a slow walk into a race for over an hour, leaving Robert out of breath. The next day Robert complained of soreness and stiffness in his legs. What caused this problem?

Chapter 11, 13, and 14
1. Name and describe the five parts of reflex arc. What is the difference between somatic reflexes and visceral reflexes?
2. Compare the parasympathetic and sympathetic nervous systems.
3. Explain the steps in a neuron action potential, make sure to include where the ions are, the membrane potential and what gates are opened and closed. Describe the all-or-none principle.

Chapter 16
1. Use the hormone of your choice, describe the negative feedback cycle of your hormone’s action. Make sure to include what type of stimulus starts the hormones production, the gland it comes from, the hormone, its target organ(s), and its response and effect.
2. Name and explain the similarities and differences between the two mechanisms of hormone action.

Chapter 17
6. Describe the process of erythropoiesis. Name the hormone that stimulates erythrocyte production and two dietary requirements for erythrocyte production.
8. Describe the neural and chemical effects exerted on the cardiovascular system (heart and blood vessels) when one is fleeing from a mugger.

Chapter 19
3. Describe how the short-term control of baroreceptor-initiated reflexes affects blood pressure.
4. Explain how the long-term mechanism of Renal Regulation affects blood pressure.
7. A man walks into the emergency room with an elevated blood pressure of 210/100. Explain some of the causes of his condition as it relates to blood pressure and the three major factors that affect blood pressure.
Chapter 18
5. Draw an ECG (EKG) wave and label all of its parts. Include what each wave stands for in regards to cardiac muscle depolarization, repolarization, and hyperpolarization of the ventricles.
8. Describe the neural and chemical effects exerted on the cardiovascular system (heart and blood vessels) when one is fleeing from a mugger.

Chapter 21
1. Differentiate between humoral and cell-mediated adaptive immunity.
2. Describe the difference between the primary humoral response and the secondary humoral response.
3. Name and define the three lines of defense.

Chapter 22
1. Explain the sequence of event in inspiration and expiration. Describe the difference between quiet inspiration/expiration and forced inspiration/expiration.
2. Describe the differences between external and internal respiration. Make sure to include pressure gradients and where each happens. Name two structural factors that influence gas exchange.
3. Explain in reference to the respiratory system and its mechanisms as to why our Olympic athletes train in Colorado Springs, Colorado.

Chapter 23
1. Explain where each of the following nutrients first breaks down, where and what enzymes affect them; carbohydrates, lipids, proteins, nucleic acids.
2. Name the three phases of digestion, where they happen, and their stimulatory events.

Chapter 25
4. Explain the role of the Renin-angiotensin mechanism in its control of blood pressure through the kidneys.
5. Name and explain what happens in each of the three steps of urine formation. Where does filtrate become urine?
6. Explain the formation of dilute versus concentrated urine. What role does ADH play in this event?

Chapter 26
3. Overall, why are chemical buffer systems so important? What do they control? Name one and describe how and where it works.
4. What are the differences between respiratory acidosis and metabolic acidosis? What causes each of them and what happens to control them?
Chapter 27

5. Describe the three phases of the menstrual cycle, based on a normal 28 day cycle. Be sure to include ovarian hormone levels, ovarian cycle, and uterine cycle. What happens in each phase to the above?

6. Describe the differences between mitosis and meiosis, and how spermatogenesis is different from oogenesis.

7. What do spermatogenesis and oogenesis produce? What are the differences between the two?