

LAB 9 – LAB EXAM II Review

Assignments:

Due before lab:

Quiz: Complete the Interactive Physiology exercises on urinary and digestive physiology on pages 92-97. The quiz will cover Water Homeostasis (pgs 94-95) and Digestive-Anatomy Review (pgs 96-97). The section on GFR will not be on the quiz or test.

Due next lab period:

Lab Exam II

Will cover Labs 5, 7, 8, 9, and Interactive Physiology CD ROM exercises of Respiratory, Digestive and Urinary Systems that were assigned.

View the Urinary, Fluid & Electrolyte and Digestive Physiology sections on the Interactive Physiology CD, to answer the questions. The one's assigned for the quiz will be included on Exam II.

Urinary System – Glomerular Filtration

1. What force drives filtration at the glomerulus? _____

2. Glomerular filtration is a process of _____ driven by the _____ of the blood.

3. Common components of the filtrate are divided into four categories on the CD program, these include:
 - a. _____
 - b. _____
 - c. _____
 - d. _____

4. Blood pressure in the glomerulus is about _____ mmHg.

5. What two pressures oppose filtration and what are their values?
 - a. _____
 - b. _____

6. What is the normal net filtration pressure? _____ mmHg

7. With a glomerular filtration rate of 125 ml/min, how much plasma would be filtered per day?
_____ in 24 hours

8. In an exercising individual the afferent arteriole will dilate or constrict (circle one) to avoid excess fluid loss.
9. Two mechanisms that provide autoregulatory control over renal processes include:
- a. _____
 - b. _____
10. High osmolarity (or high Na^+ and Cl^-) in the ascending loop of Henle will cause afferent arterioles to dilate or constrict (circle one) by releasing:
- _____
11. In periods of extreme stress, the sympathetic nervous system will override autoregulation. An increase in sympathetic flow to the kidney will result in what 2 important effects that will aid maintenance of blood pressure?
- a. _____
 - b. _____

Fluid, Electrolyte, & Acid/Base Balance – Water Homeostasis

1. Below are listed the four examples of disturbances in water homeostasis. List if there is an increase (\uparrow), decrease (\downarrow), or not change (\leftrightarrow) in volume and osmolarity. Also give an example of each.

Disturbance	Volume	Osmolarity	Example
<u>Hypervolemia</u>			
<u>Hypovolemia</u>			
<u>Overhydration</u>			
<u>Dehydration</u>			

2. What are the four primary mechanisms to regulate fluid homeostasis?

a. _____ c. _____

b. _____ d. _____

3. Answer the following questions on Antidiuretic Hormone (ADH):

a. What is the major stimulus? _____

b. What is the direct effect of the hormone? _____

c. What effect will this have on plasma volume and osmolarity?

d. What effect will this have on urine volume and osmolarity?

4. List three ways dehydration leads to increased thirst:

a. _____ c. _____

b. _____

5. Answer the following questions on the Renin-Angiotensin-Aldosterone System.

- a. What enzyme is released from the kidney in response to decreased blood pressure? _____
- b. What enzyme converts Angiotensin I to Angiotensin II?

- c. What are two effects of Angiotensin II? _____

- d. How does Aldosterone cause more sodium to be reabsorbed in the kidney?

- e. As a result, what happens to blood volume and blood pressure?

6. A decrease in blood volume and blood pressure will lead to a/an _____ in the sympathetic nervous system (SNS).

This will result in a decrease (\downarrow), and increase (\uparrow), or no change (\leftrightarrow) in the following:

- | | |
|---|------------------------|
| a. _____ afferent arteriolar constriction | c. _____ urine loss |
| b. _____ blood flow to the glomerulus | d. _____ renin release |

7. Diabetes Insipidus is due to _____.

What will happen to the following:

- | | |
|------------------------|----------------------------|
| a. _____ urine output | c. _____ plasma osmolarity |
| b. _____ plasma sodium | d. _____ thirst |

Digestive System: Anatomy Review

1. List the 4 layers (from innermost to outermost) of the gastrointestinal tract.

2. Hormones of the GI system are produced and secreted by which of the following cells?

- a. columnar epithelial
- b. goblet
- c. enteroendocrine

3. Name the three muscle layers found in the stomach. Which one is unique to the stomach?

- a. _____
- b. _____
- c. _____

4. The _____ plexus and the _____ plexus make up the enteric nervous system.

5. The _____ conveys a bolus of food to the stomach.

6. Partially digested food in the stomach is called _____. After the stomach, it moves into the _____.

7. The major site of digestion and absorption in the GI tract is the _____.

8. The circular folds found in the small intestine that increase absorption are called _____ . The finger-like projections called _____ also increase the surface area to increase absorption.
9. List the 4 regions of the stomach: _____

10. Name the three parts of the small intestine and state which one is only 8-11 inches long.

11. Which organ of the GI system absorbs water and electrolytes and produces some vitamins?

12. Which sphincter:
a. prevents reflux of gastric contents into the esophagus? _____
b. controls the rate of gastric emptying? _____
c. permits the flow of chyme into the large intestine? _____
13. Bile: Where is bile produced? _____
Where is bile concentrated and stored? _____
It is necessary for the digestion and absorption of: _____
14. The pancreas produces _____ to digest food stuff and _____ to neutralize acidic chyme from the stomach.