LAB 9 – LAB EXAM II Review

Assignments:

Due before lab:

Quiz: *Complete the Interactive Physiology Urinary animations on GFR, Reabsorption and Secretion and Processing of Salt and Water on pages 92-95.*

Due next lab period:

Lab Exam II
Will cover Labs 5, 7, 8, 9, and Interactive Physiology exercises

Urinary System – Glomerular Filtration (Lab 9)

View this animation in Mastering A&P.
(Mastering A&P> study area>A&P Fix>Interactive Physiology> Urinary System)

1. The filtration membrane consists of what three layers?

   _____

   _____

   _____

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

3. _____ molecules pass freely through the membrane while large _____ and blood cells are kept out of the capsular space. The fluid and solutes that are filtered and collect in the capsular space is called: _____.

4. Common components of the filtrate are divided into four categories on the program, these include:
   a. _____
   b. ions (such as _____, _____ & _____)
   c. _____
   d. organic molecules (such as _____ & _____)

5. Blood pressure in the glomerulus is about _____mmHg.
6. What two pressures oppose filtration and what are their values?
   a. _____ = _____ mmHg
   b. _____ + _____ mmHg and is due to _____ in the blood.

7. What is the normal net filtration pressure? ____mmHg

Reabsorption and Secretion in the Proximal Tubule (Lab 9)

View this animation in Mastering A&P.

(Mastering A&P> study area>A&P Fix>Interactive Physiology> Urinary System)

1. What are the two reabsorption pathways through the tubular cell barrier?

   _____

   _____

2. How can we cause water to diffuse from the lumen into the interstitial space?

   _____

3. Transport of what ion (and where is the transport?) would cause the water to diffuse in #2?

   _____

4. Summarize reabsorption in the proximal tubule in three steps:

   1. (basolateral membrane) _____

      _____

   2. (water) _____

      _____

   3. (luminal membrane) _____

      _____

5. For most actively reabsorbed solutes, the amount reabsorbed in the proximal tubule is limited only by the _____.
   This limit is called the _____

   If the amount of a specific solute exceeds the number of carriers, what happens to the excess solute? _____

Processing of Salt & Water in the Nephron (Lab 9)

View this animation in Mastering A&P.

(Mastering A&P> study area>A&P Fix>Interactive Physiology>Urinary System)

1. The permeability of principal cells to sodium and water is controlled by two hormones:
   1. _____ from the _____ gland
   2. _____from the _____ gland

2. Aldosterone is stimulated by a ↓ in ____ ions or an ↑ in ____ ions.
   As a result of Aldosterone secretion, the number of Na+ ions reabsorbed will _____ and the number of K+ secreted will _____.
   What does Aldosterone due to cause this?
   _____
   _____

3. ADH increases the number of _____ in the luminal membrane resulting in a/an _____ in water reabsorption.

4. Describe what moves out of the tubule and what the osmolarity would be in the following nephron segments:

Region of nephron	**What moves out?**	**Osmolarity (mOsm)**
Proximal tubule		
Descending limb of Loop		
Ascending limb of Loop		
Late Distal tubule		

5. Urea is responsible for what percentage of the interstitial osmolarity of the medulla? _____ % What hormone increases the permeability of the collecting duct to urea? _____

6. Under the following conditions report the levels of ADH (high. low or moderate) and subsequent levels of urine osmolarity and urine volume (high, low or moderate):

Hydration	ADH levels	Urine Osmolarity	Urine Volume
Normal			
Dehydration			
Overhydration			