

Module 15

Assignment #1

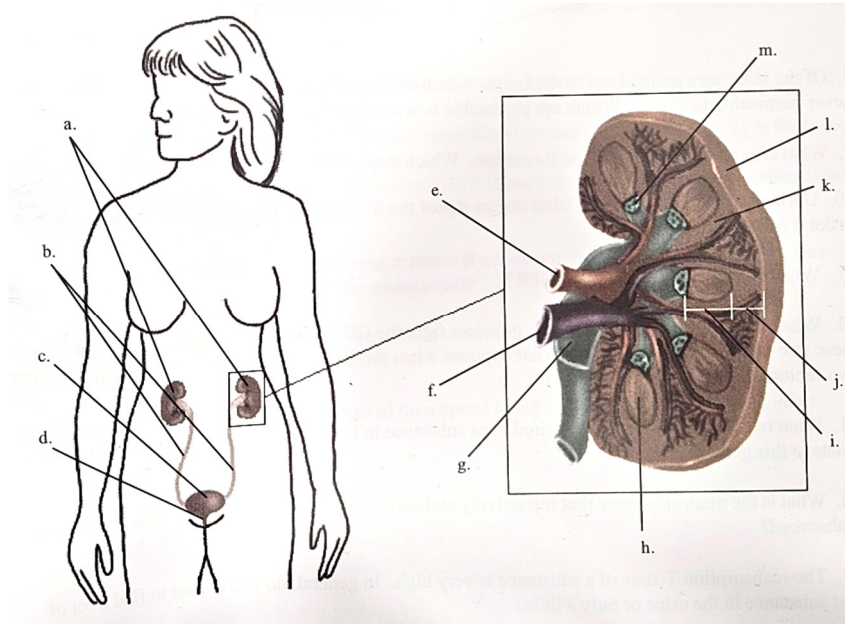
Write the answers on your own paper, not on this sheet.

A & P

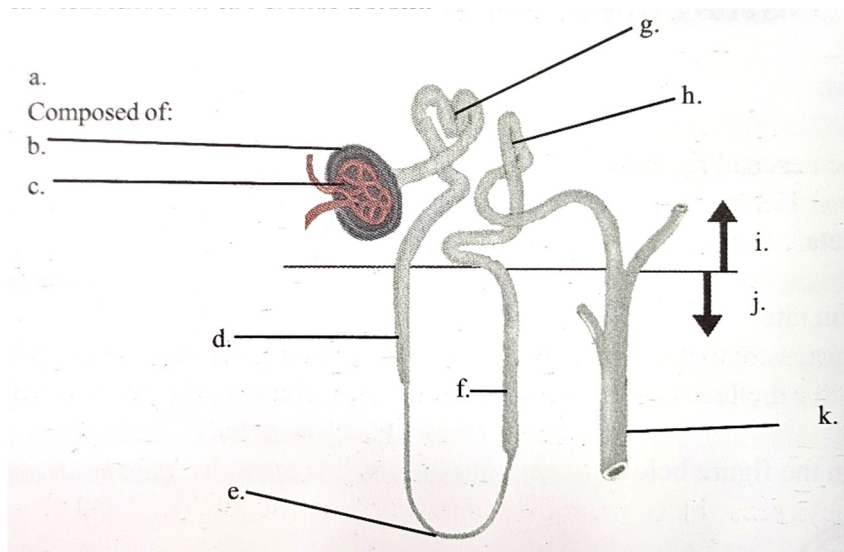
Read pages 453 – 468.

1. Define the following terms:
 - a. Retroperitoneal
 - b. Erythropoiesis
 - c. Glomerular filtration rate
 - d. Tubular maximum

2. Identify the structures in the figures below:



3. List the seven functions of the urinary system.
4. Label the structures in the figure below:



5. Of the structures pointed out in the figure above, which ones are always permeable to water? Which is never permeable to water? Which are permeable to water based on the amount of ADH present?
6. What are the four steps of urine formation.
7. During glomerular filtration, what makes it past the filter and into the nephron? What doesn't make it past the filter?
8. What causes a high GCP? What two factors fight the GCP? What is the difference between these two pressures and the GCP? What happens when the GCP gets lower than the sum of the other two factors?
9. What two things are usually required for a substance to be actively reabsorbed? What exception exists to this general rule?
10. What is the main substance that is passively reabsorbed? What other major substance is passively reabsorbed?
11. The reabsorption T-max of a substance is very high. In general, do you expect to find a lot of that substance in the urine or only a little?
12. When a substance is secreted by the nephron, does its concentration in the blood increase or decrease?
13. Using the solute concentrations listed in Figure 15.5 on page 466, compare the concentration of solutes in the filtrate to that of blood plasma (about 300 mOsm/kg) at the following locations:
 - a. The proximal tubule
 - b. The lower portion of the descending limb of the loop of Henle
 - c. The bottom of the loop of Henle
 - d. The upper portion of the ascending limb of the loop of Henle
 - e. The distal tubule

14. Define the following term: Buffer system
15. What part of the urethra is controlled automatically by the parasympathetic division of the ANS for urination? What part of the urethra can be controlled consciously so that we can decide when to urinate?
16. What cells in the kidneys sense blood pressure and sodium levels in the blood and act to correct any large changes?
17. What hormone is stimulated by the secretions of the cells in the previous question?
18. What hormone discussed in this chapter decreases blood pressure and sodium levels in blood?
19. What is it called when blood pH drops below 7.35? What is it called when blood pH rises above 7.45?
20. In the bicarbonate buffer, which substance reacts when a base enters the blood? In the phosphate buffer, which substance reacts when a base enters a cell?
21. What are the three regulation processes which control blood pH? List them in terms of their effectiveness, starting with the least effective one.
22. List the pH control processes in terms of their speed in regulation, starting with the slowest.