Biology 670 Physiology Review Sheet chapters 20 21

Chapter 20
What are the major routes by which water is gained or lost from the body?
What are the body fluid compartments? Compare them. Compare the constituents of extracellular and intracellular fluids. Explain the indicator-dilution principle for measuring body fluid volumes.
Describe the effects of isotonic, hypotonic, and hypertonic solutions on cell volume.
What is edema? What causes the extracellular and intracellular edema?
Describe the safety factors that normally prevent edema.
If you were a doctor, how would you treat a patient with extracellular and intracellular edema?

Chapter 21
1. Define Glomerular filtration, peritubular capillaries, juxtagolomerular apparatus, proximal tubule, distil tubule, loop of Henle
2. What are the processes of filtration, reabsorption, secretion, and excretion. At what region on a nephrons does each occur.
3. Summarize the forces that cause filtration at the glomerulus.
What determines the filterability of a substance? Give examples.
4. Define the following terms: Hematocrit- Osmolarity- Osmolalilty – Hoff’s law.
5. Describe the microscopic and macroscopic anatomy of the kidney?
6. What steps are involved in urine formation.
7. Describe the specializations of the portions of the kidney tubule and their functions.
What ions are moved across the tubule in each portion? Consider the proximal and distil tubules, ascending, descending, thick and thin loops of Henle and the collecting duct.
8. What factors affect glomerular filtration?
9. What physiological control is there over the glomerular filtration and renal blood flow.
What physiological mechanisms control each process?
10. Explain tubuloglomerular feedback.
11. How is active tubular reabsorption different than passive tubular reabsorption?

Chapter 22
1 How does the kidney generate 1: a concentrated urine, 2: a dilute urine.
2. How is the mechanism of countercurrent exchange involved in these processes? How does this “multiply”?
3. Explain how the renin-angiotensin-systems control the fluid level in your body?