**Unit 2 Review- Cellular Biology –Campbell’s 8the ed.:**

**Ch 6, 7, 11**

1. What is the Endosymbiosis Theory?
2. What is the cell theory (3 parts)
3. Why are cells so small?
4. What are the three basic features of all cells?
5. What is the difference between prokaryote and eukaryote cells?
6. What structures are found in a prokaryote cell? - be able to label one
7. What is the function of the nucleus? What structures are found within the nucleus?
8. What is the function of the endoplasmic reticulum? What is the difference between rough and smooth ER?
9. What is the Golgi apparatus? What does it do? Define cis, trans, cisternae, and vesicle.
10. What are ribosomes? What is the structure of a ribosome (large and small subunit)? What message does the ribosome read?
11. What is the relationship between ribosomes, amino acids, proteins, and vesicles?
12. What are the steps of protein synthesis in the cell? What organelles are involved?
13. What does the mitochondrian do? Describe the structure of the mitochondria.
14. How do mitochondria and chloroplasts support the endosymbiosis theory?
15. What is the structure of a chloroplast? What do chloroplasts do?
16. What is the cytoskeleton? What functions does it serve?
17. What is a centriole? What types of cells are they found in?
18. What are cilia and flagella? What are they made from ( 9 + 2 arrangement?)
19. What are vacuoles?
20. What are the differences between plant and animal and bacteria cells? What are the similarities?
21. Describe the cell membrane. - Be able to label a cell membrane
22. What are some other names for the cell membrane?
23. Describe the hydrophobic and hydrophilic interactions of the phospholipid bilayer.
24. What are the proteins embedded in the cell membrane and what is their function?
25. What are the types of passive transport? Active transport?
26. Define diffusion and osmosis.
27. How does osmosis affect the turgor pressure of plants?
28. Describe the reaction of a cell when placed in hypertonic, hypotonic, and isotonic solutions.
29. What is a contractile vacuole? What organisms have them?
30. Compare endocytosis to exocytosis.
31. Describe how the sodium-potassium pump works.
32. Describe cell to cell communication (tight junctions, desmosomes, plasmodesmata, gap junctions

**Sample Essays**

1. A laboratory assistant prepared solutions of 0.8 M, 0.6 M, 0.4 M, and 0.2 M sucrose, but forgot to label them. After realizing the error, the assistant randomly labeled the flasks of these four unknown solutions as Flask A, Flask B, Flask C, and Flask D.

Design an experiment, based on three principles of diffusion and osmosis,that the assistant could use to determine which of the flasks contains each of the four unknown solutions. Include in your answer: a) a description of how you will set up and perform the experiment b) the results you would expect c) an explanation of those results based on the principles involved.

2. Membranes are important structural features of cells.

a) Describe how membrane structure is related to the transport of materials across a membrane. Discuss both active and passive transport.
b) Describe the role of membranes in the synthesis of ATP in either cellular respiration or photosynthesis.