Semester 1 final exam study guide

Your final exam covers information from the entire first semester. Start by reviewing the reading assignments, chapters 1, 2, 7, 8 and 10. Review all the vocabulary and pay attention to diagrams as I will use the text illustrations primarily as exam illustrations.

Chapter 1:

- Biology is the study of _____
- 2. The sum of all the chemical reactions that happen in a cell to build things or break things down is referred to as
- 3. List the steps of the Scientific method in order, and explain each step.
- 4. List the characteristics of life, how many characteristics from the list must you have to be considered alive?
- 5. What is the smallest thing we know of that can carry out all the activities needed to be considered alive?
- 6. Define homeostasis and give me at least on example.

Chapter 2

- 7. Explain the difference between organic and inorganic molecules.
- 8. What is the difference between a monomer and a polymer?
- 9. What elements are found in all of the organic molecules we studied in ch 2?
- 10. For each of the biomolecules we covered in ch 2, describe the monomers used to make them, their functions, and give examples of each.
- 11. What is an enzyme? How do they work?
- 12. How does temperature, pH and substrate concentration affect an enzyme?

Chapter 7

- 13. Know the parts of a cell. Study the diagrams in your book. You will need to know what each organelle looks like so you can find it on a diagram. You'll need to know their names and functions as well as the type of cells they can be found in. (plant or animal/ prokaryote or eukaryote)
- 14. How is a prokaryote different from a eukaryote? What organelles / structures does one have and other lack? Give one example of each type.
- 15. How does DNA, diffusion and the surface area to volume ratio limit the maximum size of a cell? What problems will cells face as they get bigger?
- 16. Define and show examples of each term: hypotonic, hypertonic, and isotonic.
- 17. Draw a small section of the cell membrane and use that to explain how it controls what goes into and out of a cell.
- 18. Draw a picture that explains each of the following types of cell transport: passive transport, diffusion/ osmosis/facilitated diffusion, and the types of active transport. Be familiar with what is going on in each situation and be able to apply this to diagrams/ examples.

Chapter 8

- 19. What is the difference between an autotroph and a heterotroph?
- 20. What is the source of energy for all life?
- 21. Why are plants green? Why is chlorophyll green?
- 22. Using what you've learned in class, explain the phrase, "Color is nothing more than light reflected from a pigment"
- 23. What does a plant need in order to carry out photosynthesis? What is made at the end of the process?
- 24. Draw a picture of a chloroplast and use it to explain where the light reaction and light independent reactions occur. Make sure to include what goes into each reaction, what comes out, and any connections between the two reactions.
- 25. Where does the oxygen come from that is given off by photosynthesis?

Chapter 9

- 26. Draw out the equation for cellular respiration and photosynthesis, how are they related?
- 27. Draw a mitochondria and label it's parts.
- 28. Using your drawing from #27 add the parts of cellular respiration to your picture. Highlight what goes in and what comes out of each stage.
- 29. What are the two types of fermentation? When would they happen?
- 30. What is the difference between aerobic and anaerobic respiration? Give examples of each.
- 31. Draw the ATP/ ADP cycle and explain where energy comes from and how energy is used in the cycle.