

Study Guide for Exam #1

1. List and describe the basic characteristics that all living organisms have in common.
2. Describe the basic hierarchy of living systems from atoms to ecosystems.
3. What are chemical elements? Which ones are particularly prevalent in living organisms?
4. Define each of the following: Molecule, Ion, Isotope, Proton, Electron, Neutron
5. Name and describe the three type of chemical bonds discussed in class.
6. Draw a pH scale with 0, 7 and 14 marked. Indicate where the acids would be. Indicate where the bases would be. Provide 2-3 examples of acids and bases and write them in where they would be on the scale.
7. Name and briefly describe the four macromolecules discussed in class. Know what the monomer is for each and be able to recognize them given a diagram.
8. What are the basic tenets of the cell theory? Why are cells considered the smallest units of life?
9. Name and describe the three domains of biological organization. What are the five kingdoms and what kinds of organisms are in each one?
10. Describe the conventions that are used in naming organisms. What is the difference between a genus and a species and how do we designate each in the name? How do you indicate italics when handwriting an organism's name?
11. Describe the basic characteristics of prokaryotic cells. Describe the basic characteristics of eukaryotic cells. What are the major differences between them?
12. List and describe the basic functions that all cells carry out. Give a couple of examples of specialized cell functions.
13. Describe the functions of each of the organelles/cell structures discussed in class. Cell membrane, cilia, flagella, cell wall, nucleus, RER, SER, golgi, mitochondria, lysozomes (and other vesicles), cytoskeleton
14. What are the two primary components of the fluid mosaic model of the cell membrane?
15. List and describe all (diffusion, osmosis, active transport, endo/exocytosis) the ways in which substances can cross cell membranes. In each case describe what

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types of substances use that method to cross membranes. Be sure to discuss the roles of protein channels and pumps.

16. Define the terms isotonic, hypotonic and hypertonic. Use diagrams if necessary.
17. Describe the process by which cells divide for the purpose of growth and repair (mitosis). List each phase and discuss what occurs in each phase.