

BIOLOGY—MIDTERM STUDY GUIDE

Intro to Science (Ch. 1)

1. Know and understand the steps to the scientific method.
2. How do you write a hypothesis?
3. What did the following scientists do? Know their experiments! Spallanzani-Pasteur-Redi
4. What are the 8 properties of life?
5. The basic unit of mass, length, and volume in the metric system are:
6. The freezing and boiling points of water in the metric system are:
7. What kind of microscopes can be used in lab and for what kind of work?

Chemistry of Life (Ch. 2)

1. Draw and label the atomic model
2. Define the following:
 - a. Molecule
 - b. Element
 - c. Compound
 - d. Mixture
 - e. Atom
 - f. Ion
 - g. Isotope
3. Describe the location of these subatomic particles: proton, neutron, electron
4. Use your periodic table to answer the next four questions...
 - a. How many protons does an atom of carbon have?
 - b. How many neutrons does an atom of helium have?
 - c. How many electrons will calcium have in each of its shells?
 - d. How many valence electrons does one silicon have?
5. What type of electron is available to form bonds?
6. Compare and contrast ionic and covalent bonds
7. On the pH scale, what is an acid, base, neutral?
8. Acids taste _____ and bases taste _____.
9. Fill in the blanks:
 - a. Simple sugars are made of _____.
 - b. A _____ is made of fatty acids and glycerol.
 - c. RNA molecules are made up of _____.
 - d. Amino acids make up _____.
10. Which organic compound is the main source of energy for living things?
11. Enzymes affect the reactions in living cells by _____.

ECOLOGY (Chaps. 3, 4, 5 and 6.2)

10. Describe a food web.
11. What is a third level consumer?
12. All of the members of a particular species that live in one area are called a(n):
13. Only 10% of energy stored in an organism is passed on to the next trophic level. What happens to the rest of the energy?
14. What nutrients are recycled in the biosphere?
15. Describe a limiting nutrient.
16. What is a niche?
17. Describe these interactions:
 - a. Mutualistic
 - b. Commensalistic
 - c. Parasitic
 - d. Predator-Prey
18. What is ecological succession? Are there different types? Explain.

19. Define biome.
20. What must occur in a population for it to grow in number?
21. If a population grows larger than the carrying capacity of the environment, what will happen?
22. Give examples:
 - a. Density dependent limiting factor
 - b. Density independent limiting factor
23. Biodiversity is valuable because...
24. Provide the definition of and an example of: An endangered species. A keystone species.

CELLS (Chaps. 7 & 10)

25. Structures found ONLY in plants cells are:
26. Structures found in BOTH plant and animal cells are:
27. Describe the structure AND function of the cell membrane.
28. What are the three main nutrients needed by a typical cell?
29. What are the tenets of the cell theory?
30. Know the **structure and function of all cell organelles**.
31. Why is the inner membrane of a mitochondrion folded?
32. Describe the inner structure of a chloroplast.
33. Describe the Cell Cycle
34. What is Mitosis and what happens during this time?
35. What is cancer and how does it occur?
36. Define the following:
 - a. Diffusion
 - b. Osmosis
 - c. Exocytosis
 - d. Endocytosis
 - e. Pinocytosis
 - f. Phagocytosis
 - g. An isotonic environment
 - h. A hypertonic environment
 - i. A hypotonic environment
 - j. Plasmolysis
 - k. Deplasmolysis

ENERGY (Chaps. 8 & 9)

44. Photosynthesis—What is/are...Light/Dark Rxns., stomata, equation for Photosynthesis
 - Know the structure and function of a chloroplast and how photosynthesis occurs in the chloroplast
 - if you see the green wavelength, what energy is being absorbed and what energy is being reflected?
 45. Cellular Respiration—What is/are...equation for cell resp., anaerobic/aerobic, produced from equation
 - Know the structure and function of mitochondria and how ATP is made
- USE YOUR NOTES TO ANSWER ALL QUESTIONS, then the BOOK, and then STUDY ALL NOTE CARDS!!