

# Biology 112

## Exam 1 Questions

### Chapter 1

1. Define: anatomy; physiology.
2. Identify the major structural levels of organization of living things, from smallest structure to largest.
3. Define: cell; tissue; organ; organ system.
4. Identify 5 characteristics of life shared by living things.
5. Identify 5 major requirements of organisms that help maintain life.
6. Define: metabolism; homeostasis.
7. Identify the basic components of a homeostatic control mechanism & the function of each component.
8. Define: negative feedback; positive feedback.
9. Give 2 examples of: a negative feedback mechanism; a positive feedback mechanism.
10. Identify the 2 major body cavities, and 2 cavities contained within each. What structures separate the cavities?
11. List the cavities contained within the thoracic cavity, and the major organs within each cavity.
12. Identify the 2 layers of a serous membrane and the location of each layer with respect to the associated organs & body cavity.
13. Identify the 3 major serous membranes in the body and the organ(s) enclosed & protected by each.
14. Identify the basic function of the following organ systems: skeletal system, muscular system, nervous system, endocrine system.
15. Identify the basic function of the following organ systems: circulatory system, lymphatic system, respiratory system, digestive system, urinary system.
16. Define anatomical position.
17. Define & give an example of the following directional terms: superior, inferior, anterior, posterior, medial, lateral.
18. Define & give an example of the following directional terms: proximal, distal, superficial, deep.
19. Define: frontal plane; transverse plane; oblique plane.
20. Define: sagittal plane; midsagittal plane; parasagittal plane.
21. Identify the relative positions of the nine abdominopelvic regions.

### Chapter 2

22. Identify the composition of each of the following (what is each composed of?): matter; elements; atoms.
23. Define: atomic number; atomic mass; atomic weight; isotope.
24. Given an element on the periodic table, be able to identify the number of : protons; electrons; neutrons.
25. Given an element on the periodic table, be able to identify the number of valence electrons.

26. Identify the maximum number of electrons contained by the: first energy level; second energy level.
27. What is the major rule governing the bonding of atoms?
28. Define: ionic bond; covalent bond.
29. Which of the above (ionic or covalent bonds) dissociates in water? Why?
30. For each of the following types of molecules, indicate whether they exhibit ionic or covalent bonds: organic molecules; inorganic molecules; salts; acids; bases.
31. Define: polar covalent bond; hydrogen bond. Give an example of a molecule that exhibits both types of bonding.
32. Given a metal and nonmetal from the periodic table, give the chemical formula of the compound they produce through ionic bonding.
33. Give an example of each of the following reaction types: synthesis; decomposition; exchange.
34. Define: catalyst; enzyme; chemical equilibrium.
35. Define: acid; base; salt; electrolyte.
36. For the pH scale, identify: the overall numerical pH range; the range for acids; the range for bases.
37. Given a hydrogen ion concentration (as a decimal or power of 10), identify the equivalent pH value.
38. Define: buffer; hydrogen ion; hydroxide ion.
39. Define: organic molecule; inorganic molecule. What type of bonds are found in organic molecules.
40. Given a chemical formula for a molecule, be able to classify the molecule as organic or inorganic.
41. Identify the 4 major organic macromolecules in cells.
42. Be able to distinguish the major monosaccharides, disaccharides.
43. Be able to distinguish the major polysaccharides.
44. Define: triglyceride; fat; oil. What are the major components of a triglyceride?
45. Distinguish saturated fatty acids from unsaturated fatty acids. Identify 2 differences between a saturated fatty acid and a monounsaturated fatty acid with the same number of carbon atoms.
46. How does a phospholipid differ from a triglyceride? Where are phospholipids found in a cell?
47. What molecule is used as the basic building block for steroids? Give 3 examples of steroids in cells.
48. What molecule is used as the basic building block for proteins? What is the basic core structure (the major subunits) of this building block?
49. What types of bonds are used to build a polypeptide from its building blocks?
50. Define: dehydration synthesis (condensation); hydrolysis.
51. Distinguish among the four levels of protein structure (primary, secondary, tertiary & quaternary).
52. Define denaturation. What types of molecules can be denatured?
53. What are the major subunits of a nucleotide? Give one example of a nucleotide (triphosphate).
54. For DNA, identify: the pentose sugar; the 4 bases used; the overall structure.
55. For RNA, identify: the pentose sugar; the 4 bases used; the overall structure.