1. Which of the following statements is false?
  a. Molecules with the formulas CH3CH2COOH and C3H6O2 could be structural isomers.
  b. Molecules must have a double bond to be cis-trans isomers.
  c. To be enantiomers, a molecule must have at least three different atoms or groups connected to a central carbon.
  d. To be enantiomers, a molecule must have at least four different atoms or groups connected to a central carbon.

2. If xenon has an atomic number of 54 and a mass number of 108, how many neutrons does it have?
  a. 54
  b. 27
  c. 100
  d. 108

3. Atoms that vary in the number of neutrons found in their nuclei are called _____.
  a. ions
  b. neutrons
  c. neutral atoms
  d. isotopes

4. Potassium has an atomic number of 19. What is its electron configuration?
  a. shells 1 and 2 are full, and shell 3 has nine electrons
  b. shells 1, 2 and 3 are full and shell 4 has three electrons
  c. shells 1, 2 and 3 are full and shell 4 has one electron
  d. shells 1, 2 and 3 are full and no other electrons are present

5. Which type of bond represents a weak chemical bond?
  a. hydrogen bond
  b. atomic bond
  c. covalent bond
  d. nonpolar covalent bond

6. Which of the following statements is not true?
  a. Water is polar.
  b. Water stabilizes temperature.
  c. Water is essential for life.
  d. Water is the most abundant molecule in the Earth's atmosphere.

7. When acids are added to a solution, the pH should _____.
  a. decrease
  b. increase
  c. stay the same
  d. cannot tell without testing

8. A molecule that binds up excess hydrogen ions in a solution is called a(n) _____.
  a. acid
  b. isotope
  c. base
  d. donator

9. Which of the following statements is true?
  a. Acids and bases cannot mix together.
  b. Acids and bases will neutralize each other.
  c. Acids, but not bases, can change the pH of a solution.
  d. Acids donate hydroxide ions (OH-); bases donate hydrogen ions (H+).

10. Each carbon molecule can bond with as many as_____ other atom(s) or molecule(s).
  a. one
  b. two
  c. six
  d. four
11. Which of the following is not a functional group that can bond with carbon?
  a. sodium
  b. hydroxyl
  c. phosphate
  d. carbonyl

12. What makes ionic bonds different from covalent bonds?

13. Why are hydrogen bonds and van der Waals interactions necessary for cells?

14. Discuss how buffers help prevent drastic swings in pH.

15. Why can some insects walk on water?

16. What property of carbon makes it essential for organic life?

17. Compare and contrast saturated and unsaturated triglycerides.