

Chapter 2 The Chemistry of Life**Chapter Test B****Multiple Choice**

Write the letter that best answers the question or completes the statement on the line provided.

- _____ 1. The three particles that make up an atom are
a. protons, neutrons, and isotopes.
b. neutrons, isotopes, and electrons.
c. positives, negatives, and electrons.
d. protons, neutrons, and electrons.
- _____ 2. The nucleus is made of
a. protons and electrons.
b. electrons and neutrons.
c. protons and neutrons.
d. protons, neutrons, and electrons.
- _____ 3. Isotopes are atoms of the same element with the same number of protons and
a. a different number of electrons.
b. a different number of molecules.
c. a different number of neutrons.
d. the same number of neutrons.
- _____ 4. Which of the following terms describes a substance formed by the combination of two or more elements in definite proportions?
a. compound c. nucleus
b. isotope d. enzyme
- _____ 5. A covalent bond is formed as the result of
a. transferring electrons.
b. sharing electrons.
c. transferring protons.
d. sharing protons.
- _____ 6. Water molecules are polar, with
a. the oxygen side being slightly positive and the hydrogen side being slightly negative.
b. the oxygen and hydrogen sides being slightly positive.
c. the oxygen and hydrogen sides being slightly negative.
d. the oxygen side being slightly negative and the hydrogen side being slightly positive.

- ____ 7. A solution is a(an)
- breaking of a chemical bond.
 - chemical reaction.
 - evenly distributed mixture of two or more substances.
 - combination of two or more liquids.
- ____ 8. Suspensions are mixtures
- of water and nondissolved material.
 - in which the components are evenly distributed throughout the solution.
 - both a and b
 - neither a nor b
- ____ 9. Solutions that contain concentrations of H^+ ions lower than pure water
- have pH values below 7.
 - are acids.
 - are bases.
 - are enzymes.
- ____ 10. Which of the following organic compounds is the main source of energy for living things?
- carbohydrates
 - lipids
 - nucleic acids
 - proteins
- ____ 11. Which of the following is NOT a function of proteins?
- store and transmit heredity
 - help to fight disease
 - control the rate of reactions and regulate cell processes
 - used to form bones and muscles
- ____ 12. What is the process that changes one set of chemicals into another set of chemicals?
- cohesion
 - adhesion
 - chemical reaction
 - dissolving
- ____ 13. What is the term used to describe the energy needed to get a reaction started?
- adhesion energy
 - activation energy
 - cohesion energy
 - chemical energy
- ____ 14. Chemical reactions that release energy
- will not occur.
 - will never explode.
 - will always explode.
 - often occur spontaneously.
- ____ 15. A substance that speeds up the rate of a chemical reaction is called a(an)
- catalyst.
 - lipid.
 - molecule.
 - element.

Completion

Complete each statement on the line provided.

16. The subatomic particles that make up atoms are protons, neutrons, and _____.
17. Because they have the same number of protons and electrons, all isotopes of an element have the same _____ properties.
18. A chemical bond formed by the transfer of electrons is a(an) _____ bond.
19. A water molecule is polar because there is an uneven distribution of electrons between the oxygen and _____ atoms.
20. The elements or compounds produced by a chemical reaction are known as _____.

Short Answer

In complete sentences, write the answers to the questions on the lines provided.

21. What is a molecule?

22. What are the main types of chemical bonds?

23. What is a mixture?

24. What are the four groups of organic compounds found in living things?

25. What is one of the most important factors in determining whether a chemical reaction will occur?

Using Science Skills

Use the table below to answer the following questions on the lines provided.

Element	Symbol	Protons	Neutrons	Electrons	Atomic Number	Mass Number
Hydrogen	H	1			1	
Helium	He	2				4
Carbon	C		6		6	
Oxygen	O		8	8		
Neon	Ne			10	10	20
Aluminum	Al	13				27
Zinc	Zn			30	30	65

Figure 2-1

26. **Calculating** Based on Figure 2-1, what is the mass number of carbon?

27. **Applying Concepts** Based on Figure 2-1, what is the atomic number of oxygen?

28. **Applying Concepts** Using Figure 2-1, how many electrons does an atom of aluminum contain?

29. **Applying Concepts** According to Figure 2-1, an atom of which element contains two neutrons?

30. **Applying Concepts** From Figure 2-1, which element has a mass number of 16?
