

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
- protons, neutrons, and isotopes.
 - neutrons, isotopes, and electrons.
 - positives, negatives, and electrons.
 - protons, neutrons, and electrons.
- ____ 2. The nucleus is made of
- protons and electrons.
 - electrons and neutrons.
 - protons and neutrons.
 - protons, neutrons, and electrons.
- ____ 3. Isotopes are atoms of the same element with the same number of protons and
- a different number of electrons.
 - a different number of molecules.
 - a different number of neutrons.
 - 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
- transferring electrons.
 - sharing electrons.
 - transferring protons.
 - sharing protons.
- ____ 6. Water molecules are polar, with
- the oxygen side being slightly positive and the hydrogen side being slightly negative.
 - the oxygen and hydrogen sides being slightly positive.
 - the oxygen and hydrogen sides being slightly negative.
 - 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?
