Quiz: Chemical Bonds and Reactions

Read each question. Circle the letter of the correct answer.

1. Atoms connected by covalent bonds share _____.

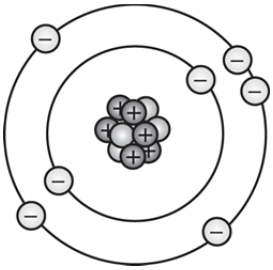
A. hydrogen ions

B. ionic compounds

C. pairs of electrons

D. carbon and oxygen

2. The diagram shows the particles that make up an atom.



What is the name of the negatively charged particles shown in this model of an atom?

A. prions **C.** neutrons

B. protons **D.** electrons

3. From the information that two atoms have two different proton counts, you can conclude that the atoms _____.

A. belong to two entirely different elements

B. represent different isotopes of one element

C. are likely to react violently with each other

D. might be different ions of the same element

4. Which of these describes the charges in a water molecule?

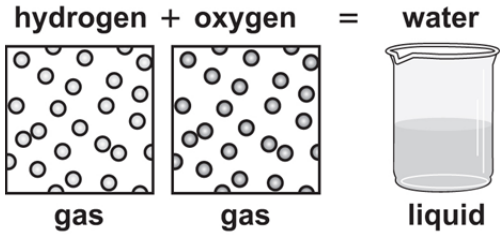
A. oxygen – strong positive
hydrogen – slight positive

B. oxygen - slight negative
hydrogen – strong negative

C. oxygen – slight negative
hydrogen – slight positive

D. oxygen – slight positive
hydrogen – slight negative

5. The diagram shows both a chemical change and a physical change.



Which statement is supported by the diagram?

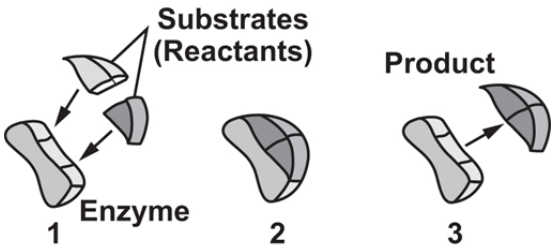
A. Atoms of most elements become less stable when they bind to form compounds.

B. Compounds can most easily form between elements that have full outer energy levels.

C. Compounds can have different properties than the elements that make up the compound.

D. Two elements will always combine in the same ratios when they react to form a compound.

6. The diagram shows a catalyzed reaction.



In the lock-and-key model of enzyme function shown in the diagram, what is happening in step 2?

A. The catalyzed reaction is releasing a product.

B. The active sites are restructuring the enzyme.

C. The substrates are beginning to bind to the enzyme.

D. The enzyme is causing new bonds to form between the substrates.

7. Water is a polar molecule because _____.

A. it has a charge

B. it does not have a charge

C. it contains two hydrogen atoms for each oxygen atom

D. different parts of the molecule have slightly different charges

8. Changes in temperature and pH can decrease an enzyme's activity by breaking _____.

A. amino acids

B. peptide bonds

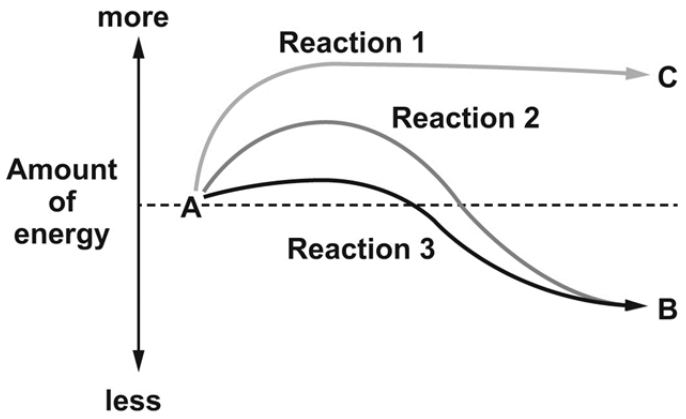
C. hydrogen bonds

D. sulfur-sulfur bonds

Directions: Read the passage, then answer the questions that follow.

Energy of a Reaction

The graph shows the energy involved in three chemical reactions.



9. Which statement accurately describes the graph?

A. Reaction 2 occurs faster than Reaction 3 because Reaction 2 requires more energy than Reaction 3.

B. Product B contains more energy at the end of the reaction than reactant A has at the beginning of the reaction.

C. Reactant A contains more energy at the beginning of the reaction than product C has at the end of the reaction.

D. The data plotted for Reaction 2 and Reaction 3 indicate a difference in the activation energy of these reactions.

10. Reaction 3 in the graph _____.

A. is slower than Reaction 2

B. is the same as Reaction 1 but faster

C. probably occurred in the presence of an enzyme

D. requires more activation energy than Reaction 2

Read each statement. Write your answer on the lines.

11. Describe how an enzyme speeds up a chemical reaction within a cell.

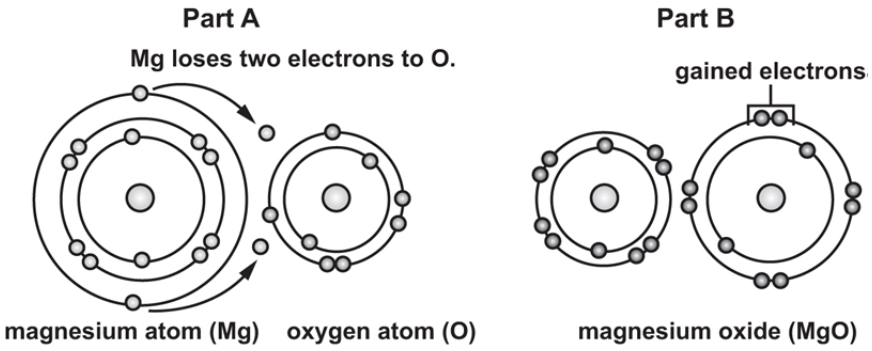
12. What makes a water molecule polar?

13. How does an atom become an ion?

Directions: Read the passage, then answer the questions that follow.

Magnesium Oxide

The diagram shows the reaction between magnesium (Mg) and oxygen (O) to form magnesium oxide (MgO).



14. Which pair of atoms are ions?

15. How would the interaction of the atoms and their electrons differ in a diagram of a covalent bond?