1. Oxygen can bond to another atom by all of the following, except _____.

(A) sharing one electron with two other oxygen atoms
(B) taking two electrons from an atom trying to give away two electrons
(C) sharing two electrons with another oxygen atom
(D) sharing one electron with two different hydrogen atoms

2. Two atoms with an electronegativity difference between 0.5 and 2.0 usually share their electrons _____.

(A) ionically
(B) covalently
(C) polar covalently
(D) metallically

3. In a water molecule, which statement is untrue?

(A) The hydrogen side of the water molecule is more negative than the oxygen side.
(B) The water molecule is dipolar.
(C) The electronegativity difference between oxygen and hydrogen is more than 0.5 and less than 2.0.
(D) Oxygen overpowers hydrogen's pull on its electron because oxygen has more protons than hydrogen.

4. Water molecules are liquid at room temperature because of all of the following, except _____.

(A) hydrogen bonding
(B) London dispersion forces
(C) their polarity is not great enough to make them stick to each other for more than a brief moment
(D) collisions with other water molecules billions of times a second

5. Why is water (H_2O) liquid at room temperature but hydrogen sulfide (H_2S) is a gas even though sulfur is right below oxygen in the periodic table?

(A) Hydrogen sulfide molecules are more polar than water molecules
(B) The intermolecular forces between hydrogen sulfide molecules are stronger than those between water molecules
(C) Sulfur has a greater electronegativity value than oxygen
(D) It takes less energy to pull hydrogen sulfide molecules apart than water molecules

6. Even though a molecule may consist of one atom bonded with polar bonds to two or more identical atoms, the molecule itself can still be made nonpolar by all of the following, except _____.

(A) by placing the nonpolar intramolecular bonds on opposite sides of the molecule
(B) by arranging the nonpolar intramolecular bonds symmetrically around a central atom
(C) by using unshared electrons to widen the bond angles

7. Which of these statements about electrons is untrue?

(A) Electrons orbit the nucleus in pairs.
(B) In each pair of electrons orbiting the nucleus, both electrons spin in the same direction.
(C) An unshared pair of electrons has more repulsive power than a shared pair of electrons.
(D) A pair of unshared electrons can narrow the bond angle between two intramolecular bonds

8. The four intramolecular bonds around carbon's nucleus point _____.

(A) at the four corners of an "X"
(B) north, south, east, and west in 3-dimensional space
(C) north, south, east, and west in a single plane
(D) at the four corners of a pyramid

9. Narrowing the bond angle between two intramolecular bonds in a molecule _____.

(A) does not affect the polarity of the molecule
(B) increases the polarity of the molecule
(C) decreases the polarity of the molecule
(D) flips the polarity of the molecule

10. Ammonia's single pair of unshared electrons makes ammonia _____.

(A) more polar than water molecules
(B) more polar than hydrogen fluoride molecules
(C) more polar than methane at room temperature
(D) a liquid at room temperature

11. Hydrogen bonding _____.

(A) helps fold proteins
(B) can occur between hydrogen atoms and calcium atoms
(C) can occur between hydrogen atoms and molecules of nitrogen gas
(D) increases London dispersion forces