1. Since the oxygen in H₂O has two free electron pairs and each H has a partial positive charge, it can be concluded that each H₂O molecule in water can form a maximum of
A) one hydrogen bond.
B) two hydrogen bonds.
C) three hydrogen bonds.
*D) four hydrogen bonds.
E) five hydrogen bonds.

2. Which of the following is NOT one of the properties of water resulting from its tendency to form hydrogen bonds:
*A) the polar nature of the water molecule itself
B) cohesion
C) moderation of temperature
D) the fact that water dissolves sugar

3. Which of the properties of water listed below best explains the transport of water up a tree?
*A) the fact that water molecules stick together by cohesion
B) the fact that water dissolves salts
C) the fact that water molecules do not mix with oil
D) the fact that water moderates the temperature of the tree

4. Which of the following effects is caused by the high surface tension of water?
A) Trees are able to take up water from a pond.
B) Water can act as a solvent.
C) Organisms resist temperature changes.
D) Lakes typically don’t freeze solid in winter, despite low temperatures.
*E) A water strider is able to walk across the surface of a small pond.

5. When water dissolves table salt into Na⁺ and Cl⁻
A) the O atoms with their partial positive charge surround the Na⁺ particles.
*B) the O atoms with their partial negative charge surround the Na⁺ particles.
C) the H atoms with their partial positive charge surround the Na⁺ particles.
D) the H atoms with their partial negative charge surround the Na⁺ particles.

6. Nitrogen (N) is much more electronegative than hydrogen (H). Which of the following statements is correct about the atoms in ammonia (NH₃)?
*A) Each hydrogen atom has a partial positive charge.
B) The nitrogen atom has a strong positive charge.
C) Each hydrogen atom has a slight negative charge.
D) The nitrogen atom has a partial positive charge.
E) There are covalent bonds between the hydrogen atoms.
7. When two atoms are equally electronegative, they will interact to form
   A) equal numbers of isotopes.
   B) ions.
   C) polar covalent bonds.
   *D) nonpolar covalent bonds.
   E) ionic bonds.

8. Many mammals control their body temperature by sweating. Which property of water is most
directly responsible for the ability of sweat to lower body temperature?
   A) water's change in density when it condenses
   B) water's ability to dissolve molecules in the air
   C) the release of heat by the formation of hydrogen bonds
   *D) the absorption of heat by the breaking of hydrogen bonds
   E) water's high surface tension

9. Hydrophobic substances such as vegetable oil are
   *A) nonpolar substances that repel water molecules.
   B) nonpolar substances that have an attraction for water molecules.
   C) polar substances that repel water molecules.
   D) polar substances that have an affinity for water.
   E) charged molecules that hydrogen-bond with water molecules.

10. An example of a hydrogen bond is the bond between
    A) C and H in methane (CH4).
    *B) the H of one water molecule and the O of another water molecule.
    C) Na+ and Cl- in salt.
    D) the two hydrogen atoms in a molecule of hydrogen gas (H2).
    E) Mg+ and Cl- in MgCl2.