UNIT 1: CHEMISTRY OF LIFE

Multiple-Choice Questions for Topic 1:
Chemistry of Life: Teacher's Manual

1. B
View A shows the sequence of amino acids or the primary structure of the protein. View B shows the alpha helices and pleated sheets of the secondary structure of the protein.

2. D
Organic molecules have a strong carbon center. They have at least one carbon to carbon or carbon to hydrogen bond. These carbon-carbon and carbon-hydrogen bonds are very strong.

3. D
The high specific heat is due to hydrogen bonding because they break and reform allowing the solution temperature to remain steady. Alpha helices and pleated sheets of the secondary structure are reinforced by hydrogen bonding. The two strands of DNA are held together by hydrogen bonds. Disulfide bridges are covalent bonds in the tertiary structure of the protein formed between sulfhydryl groups.

4. C
Lipids are nonpolar and contain mostly carbon and hydrogen atoms. They are generally hydrocarbons.

5. B
Lipids are nonpolar and contain mostly carbon and hydrogen atoms. Proteins are made up of amino acids that have carbon, hydrogen, oxygen, nitrogen, and sulfur atoms present.

6. D
Water striders glide on top of the surface tension at the surface of the water. This surface tension is due to hydrogen bonding between the water molecules.

7. C
RNA has many functions. It can act as intermediate between DNA and protein as mRNA. As tRNA, it can bring amino acids to the ribosome during protein synthesis. It is expected that RNA was the genetic material in the very first cells. No currently living organism has RNA as the genetic material. Some viruses do have it, but not actual cells.

8. A
DNA is mostly double-stranded while RNA is mostly single-stranded. DNA has deoxyribose while RNA has ribose sugar. DNA uses thymine as a nitrogenous base and RNA uses uracil.

9. D
Van der Waal's interactions are very weak and temporary. They are unpredictable and can occur between any type of molecule, including nonpolar ones. Hydrogen bonds occur between polar molecules only. Covalent bonds are very strong and form when two atoms share one or more pairs of electrons. Ionic bonds can only occur between two ions of differing charge.