UNITED ARAB EMIRATES
MINISTRY OF EDUCATION

الإمارات العربية المتحدة
وزارة التربية والتعليم

Grade 9 Elite stream -Term 1

Name		**Teacher**	
Grade		**Subject**	**Biology**
Section	**Ch1: Section 3-4** **Ch2: Section 1**	**Date**	
Assignment	**Homework 1**		
SLO Covered	- Describe how water associates with other molecules in solution. - Describe why the properties of water are important to life. - Analyze how water's solid, liquid, and vapor states allow life to exist on Earth. - Distinguish between an acid and a base. - Explain the relationship between H+ or OH− concentration and pH. - Analyze how buffers prevent large pH changes in solutions. - Explain how the properties of carbon enables production of diverse organic molecules. - Understand and explain the relationship between functional groups and the chemical reactivity of an organic molecule.	**Pages**	**6 - 19**

Assignment Completeness /25%	**Deadline /25%**	**Demonstrated Knowledge /50%**

Total Grade /100%	

I. **Circle the letter of the choice that provides the best answer.**

1. **Which of the following statements about water is NOT true?**
   a) Water is a polar molecule
   b) Water is a non-polar molecule
   c) Atoms in water share the distribution of electrons equally
   d) Both b and c are correct

2. **Which of the following best describes a buffer?**
   a) A buffer makes a substance more acidic
   b) A buffer makes a substance more basic
   c) A buffer can resist a change in pH as acids or bases are added.
   d) None of the above

3. **Why is it important that solid water is less dense than liquid water?**
   a) It is not important.
   b) This statement is incorrect, liquid water is less dense than solid water.
   c) If solid water was denser, it would sink in water and make the entire body of water freeze over.
   d) None of the above.

4. **Carbon reacts with hydrogen by forming covalent bonds. How many hydrogen atoms would bond with the compound ($_6{}^{12}C$)?**
   a) 1
   b) 2
   c) 0 (they would not bond)
   d) 4

5. **Which of the following best describes an acid?**
   a) An acid is a substance that fully dissociates in water to form H^+ ions.
   b) An acid is a substance that fully dissociates in water to form OH^- ions.
   c) An acid is a substance with a pH between 8-14.
   d) Both a and c are correct.

6. **H_2CO_3 is a buffer system in the body. What effect will the addition of an acid have on the pH of a solution that is buffered?**

   a) The pH will rise

   b) The pH will lower

   c) The pH will not change

   d) All of these are correct

7. **Which of the following statements is true?**

   a) Acids and bases cannot mix together.
   b) Acids and bases will neutralize each other.
   c) Acids, but not bases, can change the pH of a solution.
   d) Acids donate hydroxide ions (OH–); bases donate hydrogen ions (H+).

8. **Which of the following functional groups is not polar?**

   a) Carbonyl
   b) Hydroxyl
   c) Methyl
   d) Sulfhydryl

II. Answer the following questions

Q9) **Living organisms depend on water to maintain cellular structure and function.**

a. Name the two fundamental properties of water molecules that contribute to its other special properties. *(2 marks)*

b. Identify and explain three of these other special properties. *(6 marks)*