Name:_____

Chemistry of Life Exam

Multiple Choice. Indicate the ***BEST RESPONSE*** on the ZipGrade form.

1. Water molecules are polar, with the
    A. oxygen and hydrogen being slightly positive.
    B. oxygen and hydrogen being slightly negative.
    C. oxygen side being slightly negative and the hydrogen side being slightly positive.
    D. oxygen side being slightly positive and the hydrogen side being slightly negative
2. Which of the following organic compounds is the main source of chemical energy for living things?
    A. carbohydrates
    B. DNA
    C. water
    D. proteins
3. When placed in the same container, oil and water do not mix because
    A. they are both polar.
    B. they are both nonpolar.
    C. water is polar and oil is nonpolar.
    D. water is nonpolar and oil is polar.
4. All organic compounds contain the element
    A. carbon.
    B. calcium.
    C. nitrogen.
    D. sodium.
5. Long chains of amino acids are found in
    A. carbohydrates.
    B. proteins.
    C. lipids.
    D. sugars.
6. Two types of nucleic acids are
    A. chlorophyll and retinal.
    B. lipids and sugars.
    C. DNA and RNA.
    D. glucose and glycogen.
7. Which of the following statements is true about enzymes?
    A. Catalysts slow down the rate of chemical reactions.
    B. All enzymes are made completely of sugars.
    C. Enzymes are used up during a chemical reaction.
    D. Enzymes speed up the rate of chemical reactions.

Listed are modest modifications of the learning targets from the Chemistry of Life unit. Your teacher will indicate THREE mandatory items and you will choose another ONE to compose strong responses using the non-negotiable writing rubric.

A. **Identify** and **describe** at least THREE properties of water or instances of water participating in the functioning of a life process.

B. **Explain** why the shape of an enzyme is important to its function and **describe** the role of an enzyme in a chemical reaction. **Identify** conditions that modify the enzyme's function.

C. **List** the FOUR groups of biological macromolecules and their components. **Identify** TWO functions of each group in living systems.

D. **Construct** a model of at least three water molecules with appropriate regions of charge and labeled attractions between and within the molecules; **explain** the polarity of water.

E. There are 118 elements in the universe. **Identify** the THREE most vital to Earthly life systems and **justify** your selection with evidence-based reasoning.

F. **Draw** THREE models, with labels, that show an enzyme, its substrate, and its active site at THREE points in time: before, during, and after its chemical reaction. **Describe** what is occurring at each point in time.

Before	During	After