Name: _____ Period: _____ Date:_____

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Multiple Choice: Select the best answer.

1. Which of the following correctly defines a scientific law?

a) A concise statement which is true under all conditions.
b) An in-depth explanation of how or why something occurs.
c) A suggestion which is compatible with current research.
d) A widely accepted statement which is true under specific conditions.

2. Which of the following is used to decide to select a hypothesis?

a) Observation and experimentation
b) Background research
c) Peer review
d) Repeat trials

3. Which of the following statements is true regarding hydrogen bonds?

a) A hydrogen bond is stronger than an ionic bond.
b) A hydrogen bond has the same strength as a covalent bond.
c) The attraction between the hydrogen atom of one water molecule and the oxygen atom of another water molecule is an example of a hydrogen bond.
d) All of the above.

4. The process which changes chemical substances into others is a_____.

a) chemical bond
b) chemical reaction
c) chemical equation
d) chemical formula

5. Which of the following macromolecules forms the major component of cell membranes?

a) Carbohydrate
b) Lipid
c) Protein
d) Nucleic acid

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II. Complete the following sentences:

1. When a hypothesis has undergone rigorous _____ by independent researchers it may form part of a _____ and contribute to a wider pool of knowledge on a specific _____.
2. An _____is a scientific procedure that is carried out to validate whether a hypothesis is correct or not while an _____refers to any assessment that is used to judge the _____ of the data, results and observations.
3. _____and _____are the subatomic particles that found in the nucleus while _____ are the subatomic particles that found in the orbitals around the nucleus.
4. In _____ _____we design an experiment to determine the relationship between variables while in the _____ _____ _____we design a product to solve a problem.
5. Nucleic acids are polymers that made up of _____while proteins are polymers that made of _____ _____.

III. Decide if each statement is true (T) or false (F):

1. An atom is smaller than an element.
2. The cell wall of plant is made of glycogen.
3. Ions are atoms which have lost or gained electrons
4. Creating a prototype is usually the first step in the technological design process.
5. The abnormality of the boiling point of water is due to the presence of covalent bonds.

IV. Describe the structure of a fatty acid and distinguish between the three types of these molecules.

_____

_____

_____

_____

_____

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_____

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V. Draw a labeled diagram of the chemical structure of a nucleotide.

VI. The sentences in column A describe different steps in the scientific method. Match each sentence from column A with its correct name listed in column B.

Column A	Column B
1. Rene grew bacteria from the mouth on special plates in the laboratory. She placed drops of different mouthwashes on bacteria on each plate. _____ 2. Jose saw bats catching insects after dark. He wondered, "How do bats find the insects in the dark?" _____ 3. Susan said, "If I fertilize my geranium plants, they will blossom." _____ 4. Angela's experiment proved that earthworms move away from light. _____	A. Ask a question B. Form a hypothesis C. Test the hypothesis with an experiment D. Draw conclusions

VII. Compare and contrast ionic and hydrogen bonds.

_____

_____

_____

VIII. Compare the structure and function of DNA with RNA.