

Name: _____ Date: _____

The Tetravalent Secret: An 11th Grade Organic Chemistry Intro

Why can a single element build millions of different molecules? Identify the fundamental patterns of carbon chains and functional groups in this introductory quiz.

1. Which unique property of carbon allows it to form the complex, stable backbones found in organic molecules like polymers and DNA?

- A. It has 2 valence electrons
- B. The ability to form four covalent bonds
- C. Its status as a noble gas
- D. The lack of an electron shell

2. True or False: Isomers are molecules that have the same molecular formula but different structural arrangements.

- A. True
- B. False

3. An organic compound that contains only carbon and hydrogen atoms is classified as a(n) _____.

- A. Carbohydrate
- B. Hydrocarbon
- C. Oxide
- D. Halogen

4. Which of these is a characteristic of saturated hydrocarbons like pentane?

- A. They contain at least one triple bond
- B. They contain only single bonds
- C. They are highly soluble in water
- D. They appear in ring shapes only

5. If you find a molecule with the suffix '-ol' (such as Methanol or Propanol), which functional group is likely present?

- A. Carboxyl group
- B. Amino group
- C. Hydroxyl group
- D. Carbonyl group

6. True or False: Organic chemistry only involves molecules produced by living organisms.

- A. True
- B. False

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7. The specific arrangement of atoms responsible for the characteristic chemical reactions of a molecule is called a _____.

- A. Polymer chain
- B. Functional group
- C. Atomic mass
- D. Catalytic center

8. Which of the following describes an 'unsaturated' hydrocarbon?

- A. It lacks hydrogen atoms entirely
- B. It has only single bonds
- C. It contains at least one double or triple bond
- D. It is dissolved in extra solvent

9. True or False: A fossil fuel like octane (common in gasoline) is an example of an organic compound.

- A. True
- B. False

10. In organic chemistry, the process of burning an organic compound in the presence of oxygen is known as _____.

- A. Distillation
- B. Combustion
- C. Hydration
- D. Filtration