

What is Organic Chemistry?

Worksheet

Organic chemistry is the branch of chemistry that studies compounds containing carbon (usually bonded to hydrogen, oxygen, nitrogen or halogens), focusing on their structure, properties, and reactions.

Questions

1. What is the general formula for alkanes?

- A) C_nH_{2n}
- B) C_nH_{2n+2}
- C) C_nH_{2n-2}
- D) C_nH_n

2. Which functional group defines alcohols?

- A) $-COOH$
- B) $-OH$
- C) $-NH_2$
- D) $-CHO$

3. A triple bond between carbon atoms is found in:

- A) Alkanes
- B) Alkenes
- C) Alkynes
- D) Aromatics

4. Two compounds with the same molecular formula but different structures are called:

- A) Isotopes
- B) Isomers
- C) Allotropes
- D) Polymers

5. Name the compound $CH_3-CH_2-CH_3$.

6. Identify the functional group in CH_3-CH_2-OH (ethanol).

7. Classify C_2H_4 as saturated or unsaturated, and explain why.

8. Define: What is organic chemistry?

9. Define: Why is carbon special?

10. Define: What is a functional group?

Answer Key

1. B) C_nH_{2n+2} - Saturated hydrocarbons (alkanes) follow the formula C_nH_{2n+2} .
2. B) -OH - The hydroxyl group (-OH) attached to a carbon chain defines an alcohol.
3. C) Alkynes - Alkynes contain a CC triple bond, by definition.
4. B) Isomers - Isomers share a formula but differ in structural arrangement and often in properties.
5. It has 3 carbons in a chain, all connected by single bonds it's an alkane Suffix is '-ane'; the prefix for 3 carbons is 'prop-' Name: propane
6. The -OH group attached to the carbon chain is a hydroxyl group Compounds containing -OH are classified as alcohols Ethanol is a 2-carbon alcohol
7. C_2H_4 fits the formula C_nH_{2n} with $n = 2$ This matches the alkene pattern, which contains one C=C double bond Therefore C_2H_4 (ethene) is unsaturated
8. The study of carbon-containing compounds, usually bonded to hydrogen, oxygen, nitrogen, or halogens.
9. It forms four stable covalent bonds and can chain, branch, and ring extensively, creating huge molecular diversity.
10. A specific group of atoms within a molecule that determines its characteristic chemical behavior.

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