

Organic Chemistry

Chapter 12: Organic Chemistry · Topic 1

Key Concept

Carbon's unique ability to form four bonds and chain with itself (catenation) allows for the vast diversity of organic compounds.

Alkanes (C_nH_{2n+2}) are saturated hydrocarbons with single bonds only, alkenes (C_nH_{2n}) have at least one double bond, and alkynes (C_nH_{2n-2}) have at least one triple bond.

IUPAC nomenclature provides systematic names for organic compounds based on the longest carbon chain and functional groups present.

Homologous series are groups of compounds with the same general formula and similar chemical properties, differing by a CH_2 unit between consecutive members.

Quick Revision Notes

- Carbon forms four bonds; catenation with itself.
- Alkanes (C_nH_{2n+2}): saturated, single bonds only.
- Alkenes (C_nH_{2n}): at least one double bond.
- Alkynes (C_nH_{2n-2}): at least one triple bond.
- IUPAC nomenclature gives systematic names.
- Based on longest chain and functional groups.
- Homologous series: same general formula.
- Members differ by a CH_2 unit.

Practice Questions

- 1 Write the molecular formula for ethane, ethene, and ethyne.
- 2 Name a simple alkane using IUPAC rules.
- 3 Discuss catenation and why carbon compounds are so diverse.
- 4 Research the homologous series of alkanes.
- 5 Compare alkanes, alkenes and alkynes.
- 6 Explain organic chemistry basics in your own words.