Every underlined topic is a leading node and the "+" labelled topics are the sub-nodes in a "consists of" relationship to their respective leading node. The "-" labelled sub points are the sub nodes of their respective "+" sub nodes.

Introduction to Organic Chemistry

+ Description: Study of carbon-containing compounds and their properties

Nomenclature

+ IUPAC Rules

- Rules for naming organic compounds

- 3 rules listed (e.g., names of complex substituents are enclosed in parentheses)

+ Functional Groups

- Definition: Atoms or groups of atoms that determine the chemical properties of an organic compound

- Examples: -OH (Hydroxyl), -COOH (Carboxyl), -CHO (Aldehyde), -CO- (Ketone)

Isomerism

+ Structural Isomerism

- Definition: Compounds with the same molecular formula but different structures

- Types: Chain Isomerism, Position Isomerism, Functional Isomerism, Metamerism

+ Stereoisomerism

- Definition: Compounds with the same molecular formula and bond order, but differing in 3D arrangement of atoms in space

- Types: Geometric Isomerism, Optical Isomerism

Chemical Bonding

+ Sigma (σ) Bond

- Definition: A covalent bond formed by end-to-end overlap of atomic orbitals

+ Pi (π) Bond

- Definition: A covalent bond formed by lateral overlap of atomic orbitals

+ Hybridization

- Definition: The process of mixing atomic orbitals to form new hybrid orbitals suitable for bonding

- Types: sp3, sp2, sp

Inductive and Electromeric Effects

+ Inductive Effect (I effect)

- Definition: A permanent polarity effect transmission through a σ-bond

- Types: +I effect, -I effect

+ Electromeric Effect (E effect)

- Definition: A temporary polarity effect transmission through a π-bond

- Types: +E effect, -E effect