Ch - carbon and its compound

class – 10

- **Introduction to Carbon:**
  - Carbon is a unique element with the ability to form a vast number of compounds.
  - All living organisms are carbon-based.
- **Tetravalency of Carbon:**
  - Carbon has four valence electrons, allowing it to form four covalent bonds.
  - Tetravalency contributes to the diversity of carbon compounds.
- **Hybridization in Carbon Compounds:**
  - Carbon undergoes sp3 hybridization, resulting in tetrahedral geometry.
  - Hybridization allows carbon to form strong and stable bonds.
- **Allotropes of Carbon:**
  - Diamond and graphite are two common allotropes.
  - Graphene and carbon nanotubes are other noteworthy carbon structures.
- **Saturated and Unsaturated Hydrocarbons:**
  - Hydrocarbons consist of carbon and hydrogen only.
  - Saturated hydrocarbons (alkanes) have single bonds; unsaturated hydrocarbons (alkenes, alkynes) have double or triple bonds.
- **Functional Groups:**
  - Functional groups determine the chemical properties of organic compounds.
  - Examples include hydroxyl (-OH), carboxyl (-COOH), and amino (-NH2) groups.
- **Isomerism in Organic Compounds:**
  - Structural isomerism involves different structural arrangements with the same molecular formula.
  - Stereoisomerism includes cis-trans isomerism and optical isomerism.
- **Nomenclature of Organic Compounds:**
  - IUPAC rules govern the systematic naming of organic compounds.