

CLASS 10

SCIENCE

REVISION NOTES

Revision Notes: Class 10 Science Chapter 4 Carbon and its Compounds

A fast, one-glance recap of Class 10 Science Chapter 4 (Carbon and its Compounds) — for full worked explanations, see the Solutions.

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A fast, one-glance recap of Class 10 Science Chapter 4 (Carbon and its Compounds) — for full worked explanations, see the [Solutions](#).

Why This Chapter Matters

Carbon and its Compounds is one of the standard chapters in the CBSE/NCERT Class 10 Science syllabus and questions from it appear regularly in board exams, in formats ranging from 1-mark objective questions to longer 3-5 mark descriptive or numerical questions. Because the concepts here often build on earlier chapters (and feed into later ones), a solid grip on this chapter also makes the rest of the Science syllabus easier to follow.

Revision Notes: Carbon and its Compounds

Covalent bonding: carbon has 4 valence electrons, shares electrons (rather than gaining/losing 4) to complete its octet, forming strong covalent bonds

Allotropes of carbon: diamond (rigid tetrahedral network, hardest natural substance), graphite (hexagonal layers, soft, conducts electricity), fullerenes

Saturated hydrocarbons (alkanes): C–C single bonds only, general formula C_nH_{2n+2}

Unsaturated hydrocarbons: alkenes ($C=C$, C_nH_{2n}), alkynes ($C\equiv C$, C_nH_{2n-2})

Homologous series: same general formula, similar chemical properties, each member differs by $-CH_2-$ (14u)

Functional groups: $-OH$ (alcohol), $-COOH$ (carboxylic acid), $-CHO$ (aldehyde), $>C=O$ (ketone), $-X$ (halide)

Test for unsaturation: bromine water decolourised = unsaturated; no change = saturated

Combustion: complete (blue flame, CO_2+H_2O) vs incomplete (yellow sooty flame, CO + soot)

Oxidation: alcohols $\rightarrow$ carboxylic acids (using alkaline $KMnO_4$ or acidified $K_2Cr_2O_7$)

Addition reaction (hydrogenation): unsaturated + H_2 (Ni catalyst) $\rightarrow$ saturated (vegetable oil $\rightarrow$ vanaspati ghee)

Substitution reaction: saturated hydrocarbons + halogen (sunlight) $\rightarrow$ halogen replaces H atoms one by one

Esterification: alcohol + carboxylic acid (acid catalyst) $\rightarrow$ ester (sweet smell) + water

Soap: sodium/potassium salt of a long-chain fatty acid; hydrophilic head + hydrophobic tail; forms micelles to trap dirt

Hard water + soap $\rightarrow$ scum (insoluble Ca/Mg salts of fatty acids); detergents work even in hard water

How to Use These Notes

These revision notes are meant for quick recall in the last few days before an exam or unit test — they are not a substitute for first reading the full chapter and working through examples in the NCERT textbook. A good routine is: read the chapter once, solve the in-text and end-of-chapter questions using the linked Solutions, then come back to this page a day or two before the exam to refresh the key definitions and formulas without re-reading the whole chapter.

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