

CLASS 10 CHEMISTRY : CARBON AND ITS COMPOUNDS

- Q1. State the exact valency of a carbon atom in its ground state.
- Q2. Explain why covalent carbon compounds are generally poor conductors of electricity.
- Q3. Name the specific crystalline allotrope of carbon that possesses a layered structure and acts as a solid lubricant.
- Q4. Why is silicon incapable of forming long, stable, catenated chains matching the extent of carbon, despite belonging to the same valency group?
- Q5. Write down the general mathematical chemical formula used to identify any member of the alkane family.
- Q6. Explain why consecutive members of a homologous series exhibit a steady, gradual increase in their boiling points.
- Q7. State the molecular formula of the third chemical member belonging specifically to the alkyne series.
- Q8. Determine whether the hydrocarbons C_3H_8 and C_4H_8 belong to the same homologous series. Provide a brief reason for your structural deduction.
- Q9. State the exact IUPAC suffix used to denote the presence of an aldehyde functional group in a carbon chain.
- Q10. Provide the correct IUPAC name for a compound formed when one terminal hydrogen atom of propane is substituted by a carboxylic acid group.
- Q11. Identify the specific functional group embedded within the structural formula: $CH_3-CO-CH_2-CH_3$.
- Q12. Explain why the nomenclature "2-methylethane" violates IUPAC rules, and provide its structurally correct alternative name.
- Q13. Which gas is rapidly evolved with brisk effervescence when ethanoic acid reacts directly with sodium carbonate?
- Q14. Explain why a hot, alkaline solution of potassium permanganate ($KMnO_4$) loses its distinct purple colour when dropped into warm ethanol.
- Q15. State the mandatory environmental condition required for a substitution reaction to initiate between methane and chlorine gas.
- Q16. Why do saturated hydrocarbons burn with a clean blue flame, whereas unsaturated hydrocarbons tend to burn with a yellow, smoky flame?
- Q17. Name the alkaline hydrolysis reaction process by which commercial soap is manufactured from vegetable oils and sodium hydroxide.
- Q18. Explain from a molecular standpoint why a greasy, hydrophobic oil stain cannot be cleared by plain water but is easily lifted upon adding soap.
- Q19. Identify the chemical nature of the hydrophilic, ionic head present in a synthetic detergent molecule.
- Q20. Explain the chemical reason behind the formation of a sticky, white precipitate (scum) when soap is mixed with hard water.