

Board – CBSE

Class – 10

Topic – Carbon & its Compounds

1. Why does carbon forms compounds mainly by covalent bonding?
2. Name the three allotropes of carbon.
3. Give the names of one saturated cyclic hydrocarbon and one unsaturated cyclic hydrocarbon.
4. Write the molecular formula and structure of benzene.
5. Write the electron dot structure for the following compounds:
 - (a) H_2
 - (b) C_4H_8
 - (c) C_5H_8
 - (d) C_7H_{12}
 - (e) C_5H_{10}
 - (f) Cyclopropane
 - (g) Cyclobutane
 - (h) Cyclopentane
6. Write the IUPAC Name of the following:
 - (i) $CH_3 - CH_2 - CH_2 - Cl$
 - (ii) C_3H_7Br
 - (iii) $CH_3 - CH_2 - OH$
 - (iv) $CH_3 - CH - CH_2 - CH_3$
 - (v) $CH_3 - COOH$
 - (vi) $CH_3 - CH_2 - COOH$
7. Explain briefly the substitution reaction of methane with chlorine?
8. Name two catalysts which can be used in the hydrogenation of unsaturated compounds.
9. What happens when vegetable oils are hydrogenated?
10. State two disadvantages of incomplete combustion.
11. Explain why, ethene decolorizes bromine water whereas ethane does not?
12. What is hydrogenation? What is its industrial application?
13. What is meant by a substitution reaction? Give an example (with equation) of the substitution reaction of an alkane.
14. How is ethanoic acid obtained from ethanol? Write down the chemical equation of the reaction involved.

15. A neutral organic compound is warmed with some ethanoic acid and a little of conc. H_2SO_4 vapors having sweet smell (fruity smell) are evolved. What type of functional group is present in this organic compound?
16. Explain why, methanol is much more dangerous to drink than ethanol?
17. What is meant by denatured alcohol? What is the need to denature alcohol?
18. An organic compound A is a constituent of wine and beer. This compound on heating with alkaline potassium permanganate forms takes place to form the compound B. Name the compound B.
19. An organic compound X of molecular formula $\text{C}_2\text{H}_4\text{O}_2$ gives brisk effervescence with NaHCO_3 . Give the name of the formula of X?
20. Explain the cleansing action of soap?
21. Describe the structure of a soap molecule with the help of a diagram.
22. Explain the formation of scum when hard water is treated with soap?
23. What is the advantage of detergent over soaps for washing clothes? Also state one disadvantage?
24. A solution of sugar in water does not conduct electricity. Why?
25. Why does carbon not form C^{4+} or C^{4-} ions?
26. Out of all the known elements, only carbon forms a very large number of compounds. Why?
27. Give reason for the fact that the bonds formed by carbon are strong leading to exceptionally stable compounds.
28. What name is given to the hydrocarbons having:
 - (a) Single covalent bonds
 - (b) Double covalent bonds
 - (c) Triple covalent bonds
29. What are isomers?
30. Make structures of all isomers of
 - (a) C_4H_{10}
 - (b) C_5H_{12}
 - (c) C_6H_{14}
31. What is the difference between cyclohexane and benzene even though both have 6 carbon atoms each in their molecule? Draw the structure also.
32. What is a functional group?
33. Which part of an organic compound decides its physical and which decides its chemical properties?
34. What is homologous series? Write its four characteristics.
35. Write the formulae of the predecessor and successor of the following:

- (a) C_2H_5OH (b) C_2H_5CHO (c) CH_3COOH
36. Write the IUPAC names of the following:
- (a) C_2H_5Cl (b) C_3H_7OH (c) CH_3CHO
- (d) CH_3COCH_3 (e) C_2H_5COOH (f) C_4H_8 (g) C_3H_4
37. Saturated hydrocarbons burn with a clean blue flame while unsaturated ones burn with a sooty flame. Why?
38. What is the difference between substitution and addition reactions? Explain with an example.
39. Write 3 uses of ethanol. Is ethanol drinking harmful? Explain its ill effects.
40. A piece of sodium metal moves swiftly up & down when dropped into ethanol in test tube. Explain this observation with equation.
41. What happens when hot and conc. H_2SO_4 is added to ethanol? Write equation.
42. Write the name of the chemical substance that is used as a preservative in pickles.
43. Define the term 'esterification'. Write uses of esters.
44. Why is soap an ineffective cleansing agent in hard water?
45. Write a chemical equation in each case to represent the following types of chemical reactions of organic compounds:
- Oxidation reactions
 - Addition reactions
 - Substitution reaction