

Class-X

Assignment

Carbon & its Compounds

1. What is the term used for the compounds which have same molecular formula but different structures.
2. Why are unsaturated hydrocarbons more reactive than saturated hydrocarbons?
3. What is meant by a functional group?
4. Name the type of bond formed between the non-metals.
5. What is the reactive site in the hydrocarbon $\text{H}_3\text{C} - \text{CH}_2 - \text{CH} = \text{CH} - \text{CH}_3$.
6. How many valance electrons are there in valance shell of carbon atom?
7. Define catenation.
8. Name the cyclic unsaturated hydrocarbon containing three double bonds.
9. What is scum?
10. Write the color of flame produced by unsaturated hydrocarbons on complete combustion.
11. What is the difference in no. of carbon & hydrogen atoms between two successive numbers of a homologous series?
12. Why acetic acid is known as glacial acetic acid?
13. In your science laboratory, how will you convert soft water into hard water?
14. What are detergents?
15. Name the functional group present in following compounds:
 - (i) $\text{C}_2\text{H}_5\text{OH}$
 - (ii) $\text{CH}_3\text{CO C}_2\text{H}_5$
16. Name the type of hydrocarbon taking part in an addition reaction.
17. The molecular mass of two hydrocarbons A & B are $16u$ & $44u$ respectively. Do they belong to same homologous series?
18. What is the difference in molecular masses of any two successive homologous series?
19. Name the gas evolved when sodium carbonate or sodium bio-carbonates reacts with ethanoic acid.
20. Substitution reactions are given by which type of hydrocarbons?
21. Name the products obtained from the complete combustion of saturated hydrocarbon.
22. Name the catalysts commonly used in the process of conversion of vegetables oils into fats.
23. Which type of flame is produced by saturated hydrocarbons on incomplete combustion?
24. Draw electron dot structure for H_2 , O_2 , H_2O & CH_4 .
25. Which hydrocarbons from the following undergoes addition reactions; why?
 C_3H_8 , C_3H_6 C_2 , H_6 , C_2H_2 ,
26. Write the two factors because of which carbon compounds exists in large numbers.
27. Explain why saturated hydrocarbon gives non-sooty clear flame on the complete combustion.
28. Differentiate between saturated & unsaturated hydrocarbons giving one example of each.
29. Write the chemical formula & structural formula of:
 - (a) Benzene



- (b) Propanoic acid
30. What are the structural isomers? Illustrate possible isomers of Butane (C_4H_{10}).
31. Write name of following compounds as per nomenclature:
- (i) CH_3CH_2COOH
- (ii) $CH_3CH_2C=CH$
32. Name the functional group & select one heteroatom present in the following compounds:
- (1) C_4H_9Br
- (2) $CH_3COC_2H_5$
33. What is hydrogenation? Write its industrial application.
34. What is hydrocarbon? Write the general formula of the hydrocarbons.
- (a) Alkane
- (b) Alkene
- (c) Alkyne
35. Write an activity to show the acidic nature of ethanol. Give the chemical equation of the reaction taking place.
36. Write the common name of the ethanoic acid. What is its dilute solution (5-8%) in water known as?
37. A, B & C are members of a homologous series, melting points are $-183^\circ C$, $-138^\circ C$ & $-130^\circ C$ respectively. Among these:
- (1) Which member will have least no. of carbon atoms?
- (2) Which member will have maximum no. of carbon atoms?
38. A hydrocarbon compound A is active ingredient of wine & cough syrups A on oxidation with acidified $K_2Cr_2O_7$ forms compound B. Identify the compound A & B & write the chemical equations involved.
39. Which type of reaction takes place when saturated hydrocarbons react with chlorine in presence of sunlight? Write the chemical equation if the saturated hydrocarbon is methane (CH_4).
40. Draw the structural isomers of pentane.
41. Explain the following terms with related chemical equations:
- (a) Dehydration
- (b) Esterification
- (c) Saponification
42. Write the chemical formula & structure of the following:
- (1) Cyclohexane
- (2) Propanal
- (3) Chlorobutane
43. Explain formation of micelles with the help of suitable diagram.
44. Draw the electron dot structure of the following:
- (i) C_2H_6 (iii) C_2H_2
- (ii) C_2H_4



45. Write the chemical equation for the following chemical reactions:
- Conversion of oils (unsaturated hydrocarbon) into fats (saturated hydrocarbon).
 - Oxidation of ethanol with alkaline potassium permanganate.
46. How would you name the following compounds:
- $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{Cl}$
 - $\text{CH}_3 \text{CHO}$
 - $\text{CH}_3 \text{CH}_2 \text{CH} = \text{CH}_2$
47. Write its homologous series. Write the homologous series of alloy upto four carbon atoms.
48. Write three differences between soaps & detergents.
49. What are soaps? Explain the mechanism of the cleaning actions of soaps? Soaps form scum (insoluble substance) with hard water. Explain why? How this problem is overcome by use of detergents?
50. Differentiate between ethanol & ethanoic acid on basis of the following:
- Blue litmus
 - Reaction with sodium bicarbonate
 - Sodium metal test
51. How can you obtain the following from pure ethanol:
- Ethane
 - Ethanoic acid
 - Ester
- Write the chemical equation of the reaction.
52. Giving chemical equation of the reactions write what happens when:
- Ethanol is heated with excess of concentrated sulphuric acid.
 - Ethanoic acid reacts with ethanol in presence of an acid.
 - Ester, with molecular formula $\text{CH}_3 \text{COO C}_2 \text{H}_5$, reacts with sodium hydroxide.
53. A hydrocarbon 'X' having molecular formula $\text{C}_2 \text{H}_4 \text{O}_2$ reacts with sodium bicarbonate gives compound 'Y' of water & an effervescence which turns lime water milky. Compound 'X' reacts with ethanol in presence of concentrated sulphuric acid to form a sweet smelling substance 'Z' which is used in making perfumes: Identify the compound X, Y and Z.
54. Write the balanced chemical equation to represent the conversion of:
- Compound X to compound Y and,
 - Compound X to compound Z.
55. Identify the compounds A, B, C, D & E in the following chemical reactions:
- $\text{CH}_3 \text{CH}_2 \text{OH} + \text{A} \xrightarrow[\text{Heat}]{\text{Alkaline (KMnO}_4\text{)}} \text{A}$
 - $\text{CH}_3 \text{CH}_2 \text{OH} + \text{A} \xrightarrow[2, 4]{\text{Hot Con CH}_2 \text{SO}} \text{B} + \text{H}_2\text{O}$
 - $\text{B} + \text{NaOH} \longrightarrow \text{C}_2 \text{H}_5 \text{OH} + \text{C}$
 - $\text{C} + \text{Na}_2\text{CO}_3 \longrightarrow \text{CH}_3\text{COONa} + \text{D} + \text{H}_2\text{O}$
 - $\text{D} - \text{Ca(OH)}_2 \longrightarrow \text{E} + \text{H}_2\text{O}$

