

Ch-4 Carbon and its Compounds

1. Name two allotropes of carbon.
2. Why covalent compounds have low melting and boiling points?
3. Give two properties of ethanol.
4. What are heteroatoms?
5. Define catalyst.
6. Name the peculiar/specific chemical property exclusive in case of saturated hydrocarbons and unsaturated hydrocarbons.
7. Why does carbon forms large number of compounds?
8. Write the structural formula for bromo-pentane and ethanoic acid.
9. How does ethanoic acid react with carbonates and hydrogen carbonates? Show it with the equation.
10. Draw the structures of two isomers of butane.
11. Differentiate between saturated and unsaturated hydrocarbons. Give one example for each.
12. Diamond and graphite show different physical properties although they are made up of carbon and shows same chemical properties. What is the property called?
13. What is denatured alcohol?
14. What is esterification and give its uses?
15. Give difference between soap and detergent.
16. Answer the following –
 - a. Complete the following equations –
 - i. $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{conc. H}_2\text{SO}_4 + \Delta}$
 - ii. $\text{CH}_3\text{COOH} + \text{NaHCO}_3 \rightarrow$
 - iii. $\text{CH}_4 + \text{Cl}_2 \xrightarrow{\text{Sunlight}}$
 - b. Write the name of the following –
 - i. $\text{CH}_3\text{CH}_2\text{COOH}$
 - ii. $\text{CH}_3\text{CH}_2\text{Br}$
 - c. Draw the electron dot structure of ethene (C_2H_4).
17. Answer the following –
 - a. Name the compound $\text{CH}_3\text{CH}_2\text{OH}$ and identify its functional group.
 - b. Give a chemical test to distinguish between ethanol and ethanoic acid.
 - c. Name the product formed when an organic acid reacts with an alcohol in presence of an acid catalyst. What is the name assigned to this type of reaction?
18. Answer the following –
 - a. Name the compound CH_3COOH and identify its functional group.
 - b. Give a chemical test to identify this compound.
 - c. Name the gas evolved when this compound acts on solid sodium carbonate. How would you identify this gas?
19. Answer the following –
 - a. Give a chemical test to distinguish between saturated and unsaturated hydrocarbons.
 - b. Name the products formed when ethanol burns in air. What two forms of energy are liberated on burning alcohol?

c. Why is the reaction between methane and chlorine considered a substitution reaction?



20. Give reason for the following observations –

- The element carbon forms a very large number of compounds.
- Air holes of a gas burner have to be adjusted when the heated vessels get blackened by the flame.
- Use of synthetic detergents causes pollution of water.

21. Answer the following –

- What is vinegar?
- Describe with a chemical equation, what happens when sodium hydrogen carbonate reacts with ethanoic acid.

22. Write the names of the functional groups in –

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23. Answer the following –

- Describe a chemical test to distinguish between ethanol and ethanoic acid.
- Write a chemical equation to represent what happens when hydrogen gas is passed through an unsaturated hydrocarbons in the presence of nickel as a catalyst.

24. Answer the following –

- Why does carbon form compounds mainly by covalent bonding?
- List any two reasons for carbon forming a very large number of compounds.
- An organic acid 'X' is a liquid which often freezes during winter time in cold countries, has the molecular formula, $C_2H_4O_2$. On warming it with ethanol in the presence of a few drops of concentrated sulphuric acid, a compound 'Y' with a sweet smell is formed.
 - Identify 'X' and 'Y'.
 - Write a chemical equation for the reaction involved.

25. Answer the following –

- What is homologous series of compounds? List any two characteristics of a homologous series.
- What would be observed on adding 5% solution of alkaline potassium permanganate solution drop by drop to some warm ethanol taken in a test tube? Write the name of the compound formed during the chemical reaction.
- How would you distinguish experimentally between an alcohol and a carboxylic acid on the basis of a chemical property?

26. Answer the following –

- What is a functional group in a carbon compound? Identify the functional group present in CH_3COOH and C_2H_5OH .
- State the principle on which the cleansing action of soap is based.

27. What will happen if ethanoic acid reacts with ethanol in the presence of an acid as a catalyst? Name the reaction. Write the chemical reaction for this reaction. Why are soaps ineffective in hard water?

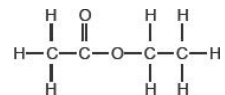
28. Answer the questions given below –

- Distinguish between esterification and saponification reactions of organic compounds.

- b. With a labelled diagram describe an activity to show the formation of an ester.

29. Answer the following –

- a. The structural formula of an ester is



Write the structural formula of the corresponding alcohol and the acid.

- b. Mention the experimental conditions involved in obtaining ethene from ethanol. Write the chemical equation for the above reaction.
- c. Explain the cleansing action of soap.

30. Give the electron dot structure of CO_2 .

31. What is hydrogenation? What is its industrial application?

32. What is functional group? Identify the functional group present in CH_3COOH and $\text{C}_2\text{H}_5\text{OH}$.

33. Explain the mechanism of cleaning action of soaps.

34. Answer the following –

- a. What are hydrocarbons?
- b. Give difference between saturated and unsaturated hydrocarbons.
- c. Why does carbon form large number of compounds?