



Carbon and Its Compounds

Grade 10

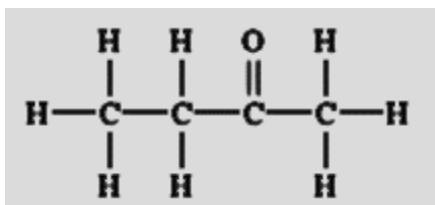
Worksheet

Multiple Choice Questions

- Ethane, with the molecular formula C_2H_6 has
 - 6 covalent bonds.
 - 7 covalent bonds.
 - 8 covalent bonds.
 - 9 covalent bonds.
- Butanone is a four-carbon compound with the functional group
 - Carboxylic acid.
 - Aldehyde.
 - Ketone.
 - Alcohol.
- While cooking, if the bottom of the vessel is getting blackened on the outside, it means that
 - The food is not cooked completely.
 - The fuel is not burning completely.
 - The fuel is wet.
 - The fuel is burning completely.
- The chemical reaction shows the addition of chlorine to methane in the presence of sunlight. $CH_4 + Cl_2 \rightarrow X$
What is likely to be the product of the reaction represented by "X"?
 - $CH_4 + H_2SO_4$
 - $CH_3Cl + HCl$
 - $CHCl_3 + HCl$
 - $CH_3Cl + H_2SO_4$
- When ethanol is oxidized using potassium dichromate and Sulphuric acid. Which option represents the product "X"?
 $CH_3CH_2OH \xrightarrow{K_2Cr_2O_7/H_2SO_4} X$
 - CH_2O
 - CH_3CH
 - CH_3H_2O
 - CH_3COOH
- The chemical reaction shows the addition of chlorine gas to hydrocarbon in the presence of sunlight.
 $CHCl_3 + Cl_2 \rightarrow CCl_4 + HCl$

How does chlorine react to a hydrocarbon compound in the presence of sunlight?

- (a) It adds hydrogen into the compound
 - (b) It adds an oxygen atom into the compound
 - (c) It substitutes hydrogen atom from the compound
 - (d) It breaks double and triple bonds into a single bond
7. A student studies that vinegar, which is a diluted form of ethanoic acid, freezes during winter. What does this suggest about the physical properties of pure ethanoic acid?
- (a) It has a low boiling point
 - (b) It has a low melting point
 - (c) It has a very high boiling point
 - (d) It has a very high melting point
8. Which of the following is the molecular formula of Cyclobutane?
- a) C_4H_{10}
 - b) C_4H_6
 - c) C_4H_8
 - d) C_4H_4
9. A student studies that a soap molecule has two ends, one of which is an ionic end and the other is the carbonic chain. Which option explains the interaction of a soap molecule with oil?
- (a) The ionic end of the soap interacts with the oil
 - (b) The closest end of the soap interacts with the oil
 - (c) The carbonic chain end of the soap interacts with the oil
 - (d) Ends of the soap randomly interact with the oil
10. Methane, ethane, and propane are said to form a homologous series because all are-
- (a) Hydrocarbons
 - (b) Saturated compounds
 - (c) Aliphatic compounds
 - (d) Differ from each other by a CH_2 group
11. The following is (are) the property (ies) of ionic compounds.
- (a) They have high melting and boiling points
 - (b) They conduct electricity in solution or molten state
 - (c) Both (a) and (b)
 - (d) None of the above
12. The following image represents a carbon compound.



Which functional group is present in the compound?

- (a) Alcohol
- (b) Aldehyde
- (c) Carboxylic acid
- (d) Ketone

13. The following represents the formulae of a few hydrocarbon compounds.

- (a) C_2H_2
- (b) C_2H_4
- (c) C_2H_6
- (d) C_3H_4

Which of these compounds can be classified as alkynes?

- (a) Only (a)
- (b) Only (b)
- (c) Both (a) and (d)
- (d) Both (b) and (c)

14. Which of the following is the molecular formula of cyclobutane?

- (a) C_4H_{10}
- (b) C_4H_6
- (c) C_4H_8
- (d) C_4H_4

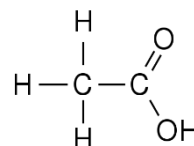
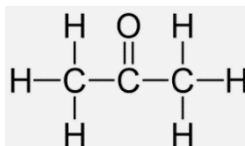
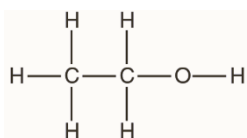
15. The number of isomers of pentane is

- (a) 2
- (b) 3
- (c) 4
- (d) 5

Answer the Following

16. Give the names of the following functional groups:

- (i) $-OH$
- (ii) $-CHO$
- (iii) $-COOH$



17. Write the IUPAC names of the following compounds.

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18. Vapours of a hydrocarbon were passed through bromine dissolved in carbon tetrachloride. The yellow colour of bromine got discharged? Predict the nature of the hydrocarbon.
19. What is the role of soap in the cleansing of clothes?
20. Which organic compound is added to make ethanol unfit for drinking purposes? What is the name of the mixture formed?
21. Which element exhibits the property of catenation to maximum and why?
22. How will you convert Ethene into Ethanol? Give the chemical reaction involved.
23. . Explain with the help of chemical equations, the following properties of carbon.
- (i) Combustion
 - (ii) Oxidation
24. Give a chemical test to distinguish between:
- (i) Ethane and Ethene
 - (ii) Ethanol and ethanoic acid
 - (iii) Soaps and detergents.
25. Give reasons for the following observations:
- (a) The element carbon forms a very large number of compounds.
 - (b) Air holes of a gas burner have to be adjusted when the heated vessels get blackened by the flame.
 - (c) Use of synthetic detergents causes pollution of water.
26. What is a homologous series? Which two of the following organic compounds belong to the same homologous?
- CH_3 , C_2H_6 , $\text{C}_2\text{H}_6\text{O}$, $\text{C}_2\text{H}_6\text{O}_2$, CH_4O
27. (i) An unknown compound has the smell of vinegar. Identify it.
- (ii) What do we get when ethanoic acid reacts with ethanol in the presence of concentrated Sulphuric acid?
 - (iii) Give a test to identify the presence of ethanoic acid.