Chemistry Study Materials for Class 10

(NCERT Based: Questions with Answers)

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Carbon and its Compounds

Very Short Answer Type Questions (1 Mark)

1. **Butanone is a four carbon per molecule compound. Name the functional group present in it.**

   Answer. Ketone

2. **Name the functional group present in each of the following organic compounds: (i) C_2H_5Cl** (ii) **C_2H_5OH**

   Answer:- (i) (—Cl) Halogen (Chloro) (ii)(—OH) Alcohol

3. **Name the functional group present in each of the following compounds:**

   (i) HCOOH (ii) C_2H_5CHO

   Answer:- (i) —COOH (Carboxylic acid) (ii) —CHO (Aldehyde)

4. **Name the functional group present in each of the following organic compounds: (i)CH_3COCH_3** (ii) C_2H_5COOH

   Answer.

   (*i*) Ketone (—C(=O)—)

   (*ii*) Carboxylic acid (—COOH)

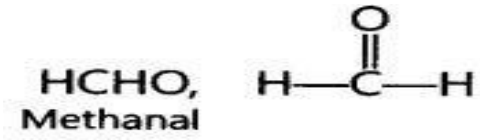
5. **Write the name and formula of the second member of the carbon compounds having functional group —OH.**

   Answer.

   $CH_3—CH_2—OH$, Ethanol; $H—C(H)(H)—C(H)(H)—OH$

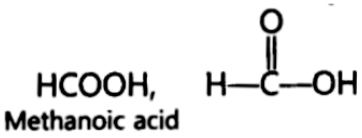
6. **Write the name and formula of the first member of the carbon compounds having functional group —CHO.**

Answer.



7. **Write the name and formula of the first member of the carbon compounds having functional group —COOH.**

Answer.



8. **Write the name and formula of the 2nd member of the series of carbon compounds whose general formula is $C_nH_{2n+1}OH$**

Answer. Ethanol, C_2H_5OH or CH_3CH_2OH

9. **Write the name and formula of the 2nd member of the series of carbon compounds whose general formula is CnH_{2n}.**

Answer. **C_3H_6, $H_2C=CH—CH_3$**

Propene is second member of series whose general formula is C_nH_{2n}.

Short answer Type Questions (2 Marks)

10. **(a) Give a chemical test to distinguish between saturated and unsaturated hydrocarbons.**

(b) (i) Name the products formed when ethanol burns in air. ‘

(ii) What two forms of energy are liberated on burning alcohol?

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

Answer.

(*a*) Add bromine water. Saturated hydrocarbons do not react whereas unsaturated hydrocarbon will decolourise bromine water.

(*b*) (*i*) CO_2 and H_2O are formed.

$$C_2H_5OH\ (l) + 3O_2(g) \longrightarrow 2CO_2\ (g) + 3H_2O\ (l) + \text{Heat} + \text{Light}$$

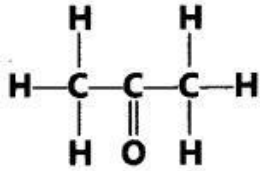
(*ii*) Heat energy and light energy

(*c*) It is because 'Cl' atom substitutes 'H' atom of methane to form chloromethane and hydrogen chloride.

$$\underset{\text{Methane}}{CH_4(g)} + \underset{\text{Chlorine}}{Cl_2(g)} \xrightarrow{\text{Sunlight}} \underset{\text{Chloromethane}}{CH_3Cl(g)} + HCl(g)$$

11. (a) Why are covalent compounds generally poor conductors of electricity?

(b) Name the following compound:



(c) Name the gas evolved when ethanoic acid is added to sodium carbonate. How would you prove the presence of this gas?

Answer.

(*a*) It is because they do not form ions.

(*b*) Propanone

(*c*) Carbon dioxide gas. It turns lime water milky.

$$2CH_3COOH(l) + Na_2CO_3(aq) \longrightarrow 2CH_3COONa(aq) + H_2O(l) + CO_2(g)$$

$$\underset{\text{Calcium hydroxide}}{Ca(OH)_2(aq)} + \underset{\text{Carbon dioxide}}{CO_2(g)} \longrightarrow \underset{\text{Calcium carbonate}}{CaCO_3(s)} + H_2O(l)$$

12. **Write the name and molecular formula of an organic compound having its name suffixed with '-ol and having two carbon atoms in the molecule. With the help of a** balanced chemical equation indicate what happens when it is heated with excess of r cone.$H_2S_{04.}$

Answer.

It is ethanol, its molecular formula is C_2H_6O.

Ethanol forms ethene, when heated with conc. H_2SO_4.

$$\underset{\text{Ethanol}}{CH_3CH_2OH} \xrightarrow[\text{heat}]{\text{Conc. } H_2SO_4} \underset{\text{Ethene}}{CH_2{=}CH_2} + H_2O$$

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