

CHEMISTRY STUDY MATERIALS FOR CLASS 10

(NCERT Based: Questions with Answers)

GANESH KUMAR

DATE:- 20/07/2020

CARBON AND ITS COMPOUNDS

SHORT ANSWER TYPE QUESTIONS II (3 MARKS)

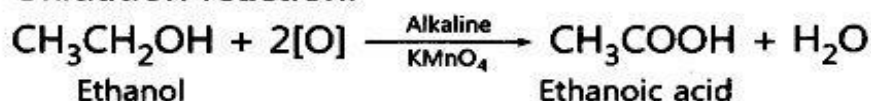
1. Write a chemical equation in each case to represent the following types of chemical reactions of organic compounds:

(i) Oxidation reactions (ii) Addition reactions

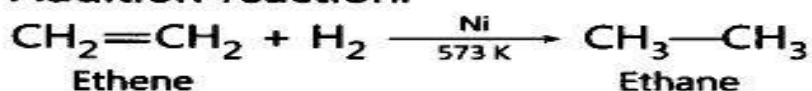
(iii) Substitution reactions

Answer.

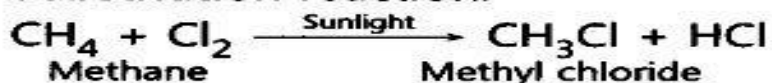
(i) Oxidation reaction:



(ii) Addition reaction:



(iii) Substitution reaction:



2. Write chemical equations for what happens when

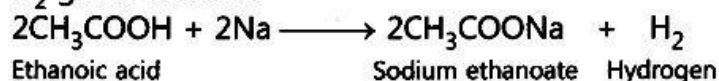
(i) sodium metal is added to ethanoic acid.

(ii) solid sodium carbonate is added to ethanoic acid.

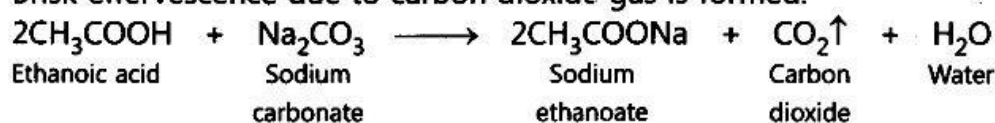
(iii) ethanoic acid reacts with a dilute solution of sodium hydroxide.

Answer.

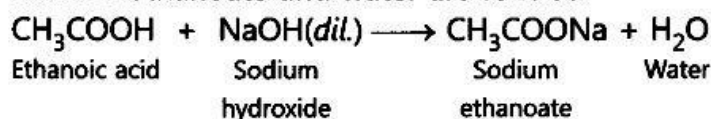
(i) H_2 gas is evolved.



(ii) Brisk effervescence due to carbon dioxide gas is formed.



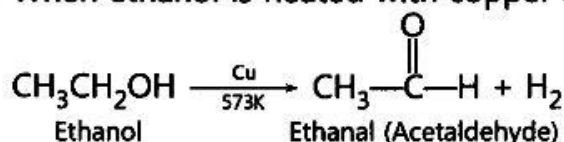
(iii) Sodium ethanoate and water are formed.



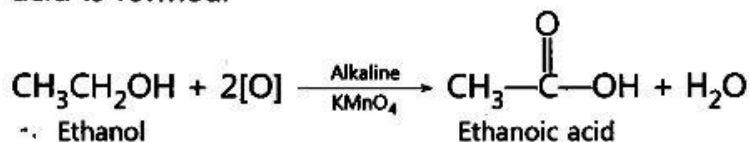
3. Describe two examples of different oxidations of ethanol. Name the products obtained in each case.

Answer.

(i) When ethanol is heated with copper at 573 K, ethanal is formed.

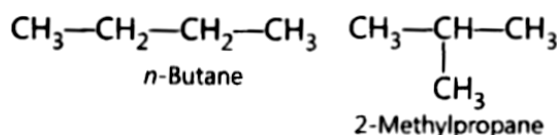


(ii) When ethanol is oxidised with alkaline potassium permanganate solution, ethanoic acid is formed.



4. What are isomers? Draw the structures of two isomers of butane, C_4H_{10} . Why can't we have isomers of first three members of alkane series?

Answer. Those compounds, which have same molecular formula but different structural formulae are called isomers.



In first three members of alkane series, branching is not possible.

Therefore, we cannot have isomers.

5. Define homologous series of organic compounds. List its two characteristics. Write the name and formula of the first member of the series of alkenes.

Answer. The series of organic compounds having same functional group and similar chemical properties is called homologous series.

Each member differs from successive member by $\text{—CH}_2\text{—}$ group. The difference in molecular weight between two successive members is 14 u.

Characteristics:

- (i) It has same general formula, from which, all members can be derived.
- (ii) They have similar chemical properties.

C_2H_4 , $\text{CH}_2=\text{CH}_2$, Ethene is first member of alkene series.

6. Why homologous series of carbon compounds are so called? Write chemical formula of two consecutive members of a homologous series and state the part of these compounds that determines their (i) physical properties, and (ii) chemical properties.

Answer. The series consists of members of same family with similar physical and chemical properties, therefore, called homologous series

(i) CH_3OH , and (ii) $\text{CH}_3\text{CH}_2\text{OH}$ are two consecutive members of homologous series.

Alkyl group —CH_3 and $\text{—CH}_3\text{CH}_2$ part determines physical properties.

Functional group —OH determines chemical properties of the compounds.

7. Name the oxidising agent used for the conversion of ethanol to ethanoic acid. Distinguish between ethanol and ethanoic acid on the basis of (i) litmus test, (ii) reaction with sodium hydrogen carbonate.

Answer. Alkaline potassium permanganate or Acidified potassium dichromate.

(i) Ethanol will not affect litmus paper.

Ethanoic acid will turn blue litmus ' paper red.

(ii) Ethanol will not react with sodium hydrogen carbonate. Ethanoic acid will give brisk effervescence due to colourless, odourless carbon dioxide gas.
