2020/21 Academic Year 1st Quarter Chemistry Lesson Note One for Grade 8

Unit One
Classification of Compounds

Introduction

Compounds are classified as organic and inorganic chemists classified compounds based on their sources as organic compound and Inorganic compound.

Organic compounds:- are compounds obtained from living organisms.

Inorganic compounds:- are compounds obtained from the constituents of the earth in the form of minerals.

These chemists believed that nature possessed certain vital force (life force) 'Vis Vitalis' which accrue only in living things. According to Vis Vitalis theory organic compounds produced only from living things (plants and animals).

This thought disproved in 1828 by Fridrich Wohler, a German Chemist who prepared Urea ($(NH_2)_2$ CO) from the reaction between solution of inorganic compounds.

NH_4 Cl (aq) + Ag CNO (aq) $\longrightarrow$ NH_4 CNO (aq) + Ag Cl (s)

Ammonium Chloride Silver Cyanate Ammonium Cyanate Silver Chloride

NH_4 CNO (aq) $\xrightarrow{\text{eat}}$ $(NH_2)_2$ CO

Ammonium Cyanate Urea

Organic compounds:- are compounds obtained from living things and carbon containing compounds except CO, CO_2, CO_3, HCO_3, CN and CNO

Inorganic compounds:- are non-carbon containing compounds and also includes carbon containing compounds such as CO, CO2, CO_3, HCO_3, CN, CNO

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Ex 1.1

Organic Compounds

- Based on their composition organic compounds classified into two:
- Hydrocarbon: e.g. alkane, Alkene, Alkyne, Aromatic hydrocarbon
- Derivative hydrocarbon: e.g. Alcohol, Aldehyde, ketone Carboxylic acid

Hydrocarbons

- are organic compounds containing hydrogen and carbon.

E.g. Alkane, Alkene, Alkyne

Alkane (Paraffins)

- Are saturated hydrocarbons that contain carbon - carbon single bond (-c-c) except methane CH_4.
- Homologous series: a group of compounds each differing from the next member by constant group (CH_2).
- Functional group: the part of compound that determines the physical and chemical properties of compound.
- Alkane contain functional group carbon - carbon single bond c-c or

-General formula of Cn H_{2n+2} n=1,2,3….

E.g. C1 $H_{2\,(1)\,+2}$ = CH_4 > CH_2

C_2 $H_{2\,(2)\,+2}$ = C2 H_6 > CH_2

C_3 $H_{2\,(3)\,+2}$ = C3 H_8

- Nomenclature of Alkane contains prefix and suffix.

  Prefix: indicate the number of carbon (meth, eth, prop, But, pent, Hex).

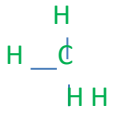
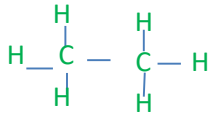
  Suffix: indicate functional group (one).

- Structure: classified into two.

  Condensed structure: shows simplest structure of hydrocarbon.

  E.g. CH_4, C_2H_6, C_3H_8

  Detailed structure: shows each bond of carbon and hydrogen.

  E.g.   or $CH_3 - CH_3$

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Ex 1.2