HYDROXY ACID & DICARBOXYLIC ACID

Topic - Preparation & Properties Of Dicarboxylic Acid

15-05-2020

Deg-II (Sub.)
Chapter-2
Group-'C'

Lecture-1

Dicarboxylic Acid

General formula of saturated dicarboxylic acids is

$C_nH_{2n}(COOH)_2$, $n = 0, 1, 2, 3, ----$ etc.

(where $n=0$ for oxalic acid)

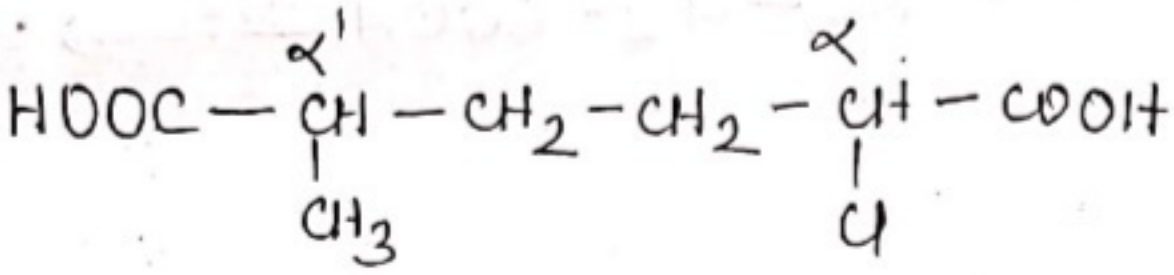
Nomenclature

The dicarboxylic acids are commonly known by names which indicate their source.

eg. $HO-\overset{O}{\overset{\|}{C}}-\overset{O}{\overset{\|}{C}}-O-H$ Oxalic acid; this occurs in plants of the oxalic group.

* In this trivial system of nomenclature, the position of side chains or substituents are indicated by Greek letters

eg.



α-Chloro-α'-methyl adipic acid

According to the IUPAC system, the class suffix is -dioic. eg;

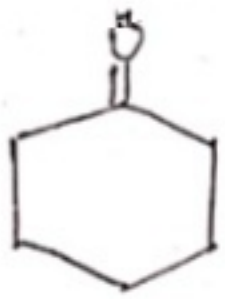
$HOOC-CH_2-COOH$

IUPA :- Propane dioicacid

Common :- Aalonic Acid

METHODS Of PREPARATION

1. By Oxidation of Cyclic Ketones



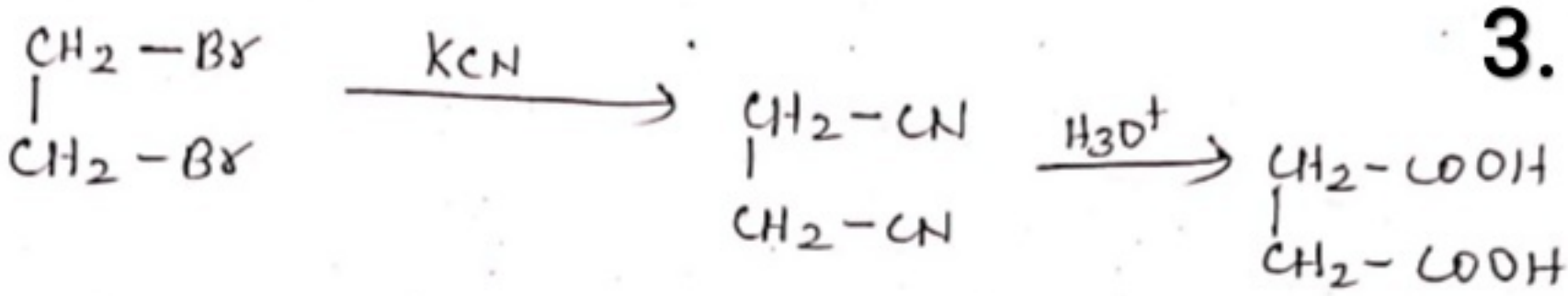
$\xrightarrow{HNO_3}$ $HOOC-(CH_2)_4-COOH$

Adipic acid

2. By Cyanide Synthesis

The starting material may be either a halogen acid or a polymethylene dibromide.

$Cl-CH_2-COOH \xrightarrow{NaCN} NC-CH_2-COOH \xrightarrow{H_3O^+} HOOC-CH_2-COOH$



PHYSICAL PROPERTIES

1. Dicarboxylic acids are crystalline solids, their melting points being much higher than the corresponding monocarboxylic acid.

2. The lower members dissolve readily in water but the solubility falls with the increase of molecular weight.

3. The melting points of dicarboxylic acids show alternation or oscillation from one member to the other.

* The melting points of even acid (having even no. of carbon) is always higher than that of the Odd acid lying immediate above and below it.

To be continued in next lecture...