

2018 Feb

Topic - Carbon and its Compound (Imp Ques)

Ques

① Define Allotropy.

Ans - Allotropy - It is a property of Some chemical Element to be able to take two or more different form where the atoms are arrange differently by Chemical bond the form are known as allotropes and this phenomena is known as allotropy.

2017

Ques

② Describe all the allotropes of Carbon-

Ans - Allotropes of Carbon - Carbon has 3 allotropes
① Diamond ② Graphite ③ Buckminsterfullerene

Diamond

① It is a Colourless transparent Substance having extraordinary brilliance

② Made up of Carbon only
On burn turn completely into CO_2

③ It does not Conduct electricity

Graphite

① It is greyish black Opaque - Substance

② It is also made up of Carbon only.

③ It Conduct electricity

2019

Ques - Define hydrocarbon. Describe its types.

Ans - Hydrocarbon - A compound made up of hydrogen and Carbon at only is known as hydrocarbon.

Types of Hydrocarbon - Two types of hydrocarbon

(i) Saturated hydrocarbon (ii) Unsaturated hydrocarbon

Saturated hydrocarbon - Hydrocarbon in which Carbon atoms are connected by single bond is known as Saturated hydrocarbon. It is generally known as Alkane. Its general formula is C_nH_{2n+2} .

Ex - Methane - CH_4 , Ethane - C_2H_6

Unsaturated hydrocarbon - Hydrocarbon in which Carbon atoms are connected by double or triple bond is known as Unsaturated hydrocarbon. It can be classified in two ways

Alkene

In which Carbon atoms are connected by double bond. Its general formula is C_nH_{2n} .

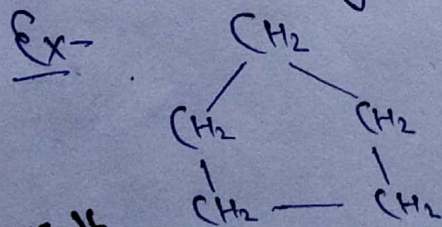
Ex - Ethene - C_2H_4

Alkyne

In which Carbon atoms are connected by triple bond. Its general formula is C_nH_{2n-2} .

Ex - Ethyne - C_2H_2

Cyclic Hydrocarbon - There are some other hydrocarbon in which carbon atoms are connected in the form of ring known as Cyclic Hydrocarbon.



Cyclo Butane

2013, 16
Ques 4 - Define homologous Series. Describe its properties also.

Ans - Homologous Series - It is a series of compounds with same functional group and similar chemical properties.

- Properties
- ① Its members have same chemical properties.
 - ② Its members are differ by CH_2 group
 - ③ Its members are differ by atomic mass 14 unit
 - ④ Physical properties different

Iupac - Used to Name Compound

Prefix + Suffix

Prefix

No. of C atom

C_1

C_2

C_3

C_4

C_5

C_6

C_7

C_8

C_9

C_{10}

prefix

Meth

Eth

Prop

But

Pent

Hex

Hept

Oct

Non

Dec

Suff

ane

ene

yne

Suffix

ol

al

③ Carboxylic Acid $-\text{COOH}$

suffix
oic acid

④ Ketone $-\text{C}(=\text{O})-$

One

⑤ Halogen group - As prefix

$-\text{Cl} \rightarrow$ Chloro

$-\text{Br} \rightarrow$ Bromo

$-\text{I} \rightarrow$ Ido

$-\text{F} \rightarrow$ Fluoro

Alkyl group - It is formed by removal one hydrogen from alkane

Ex - $-\text{CH}_3 \rightarrow$ Methyl

Ques - Name (Iupac) for following

① $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$ Butane

② $\text{CH}_3 - \text{CH} = \text{CH}_2$ Propene - 1

③ $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{OH}$ Propanol

④ $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{CHO}$ Pentanal

⑤ $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{Cl}$ Chloro propane

⑥ $\text{CH}_3 - \text{CH}_2 - \text{CH}(\text{CH}_3) - \text{CH}(\text{CH}_3) - \text{CH}_3$
2,3-dimethyl Pentane

functional group -

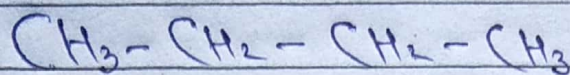
① Alcohol group $-\text{OH}$

② Aldehyde group $-\text{CHO}$

2017

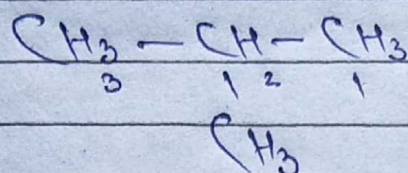
Isomers Example

① Butane - C_4H_{10}



Butane

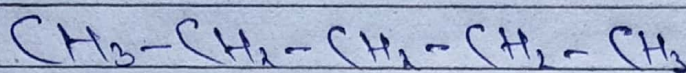
2 Isomers



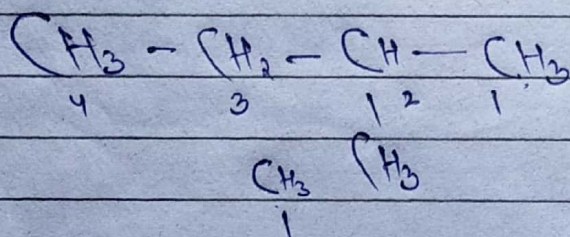
2-Methyl, Propane

2016

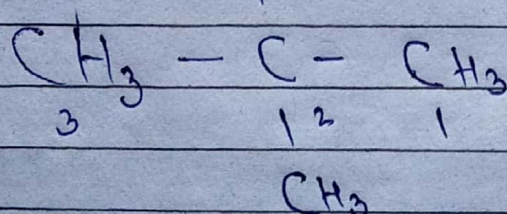
② Pentane - C_5H_{12}



Pentane



2-Methyl Butane



2,2-di Methyl propane

3 isomers

Isomerism - The organic compound have same molecular formula but different structure are known as isomers. And this phenomena is known as isomerism.

Carbon

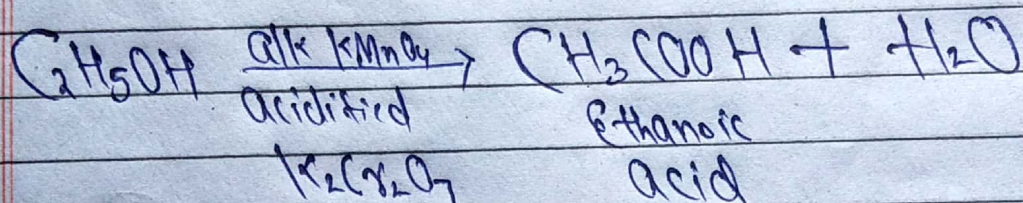
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Some Imp Compound And their rxn

Ethanol (Ethyl alcohol) (C_2H_5OH)

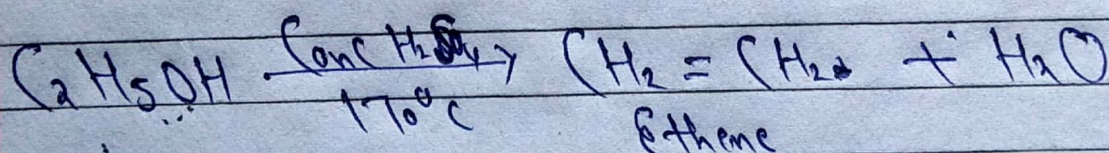
Rxn

- ① Ethanol is heated in presence of acidified $KMnO_4$ or acidified $K_2Cr_2O_7$ - (Oxidation)



2020

- ② Ethanol is heated at $170^\circ C$ in presence of Conc H_2SO_4 -



Ethanoic Acid (Acetic Acid) (CH_3COOH)

2017

Esterification Rxn - When an acid react with alcohol in presence of some drops of Conc H_2SO_4 it will form ester. Rxn is known as Esterification.

