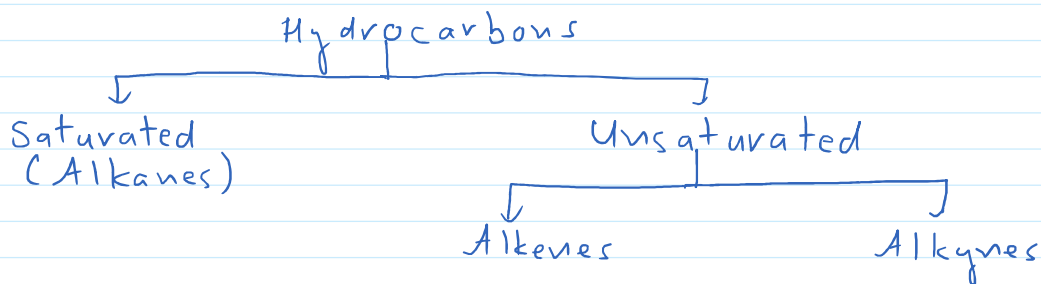


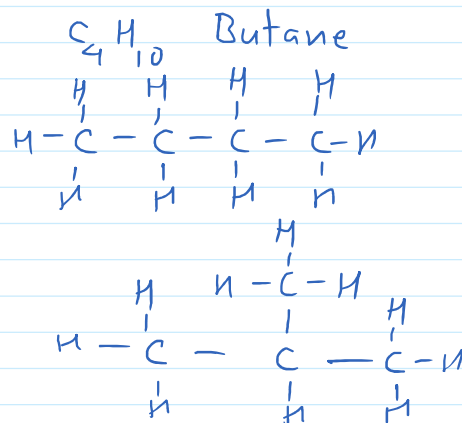
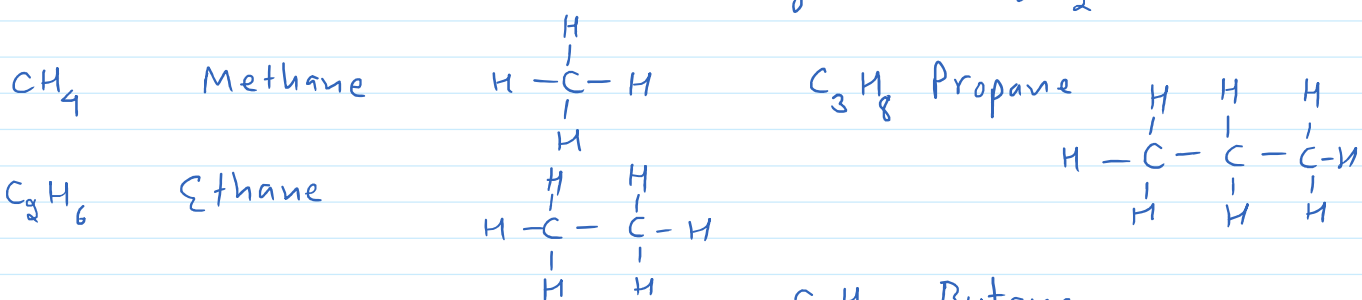
## Classification of hydrocarbons



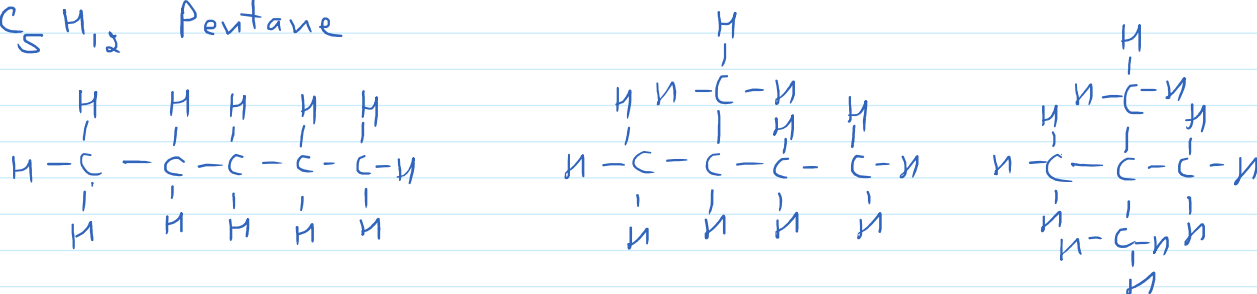
### Saturated hydrocarbons

Compounds of carbon, which are linked by only single bonds between the carbon atoms are called saturated compounds. These are also called alkanes.

General formula of alkanes (acyclic):  $C_n H_{2n+2}$  ( $n=1,2,3,...$ )



$C_5H_{12}$  Pentane

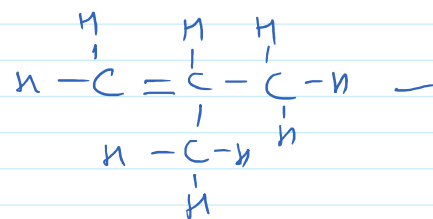
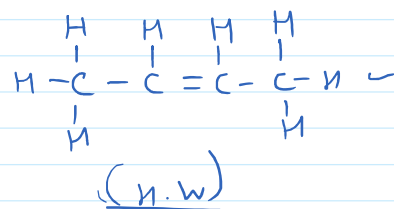
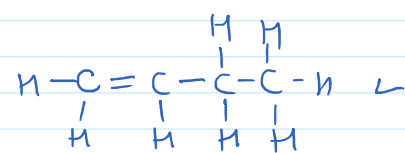
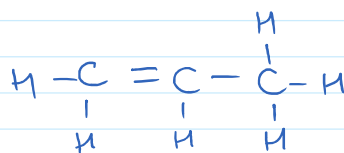
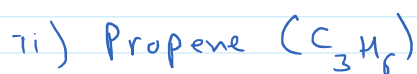
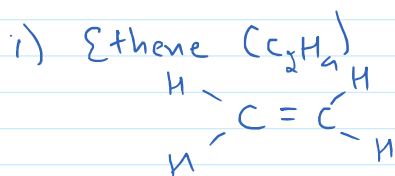


### Unsaturated hydrocarbons

## i) Alkene

Compounds of carbon having atleast one double bond between carbon atoms are called alkenes.

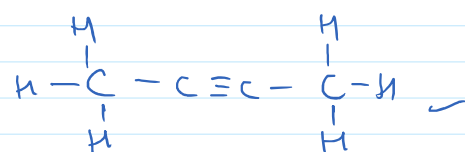
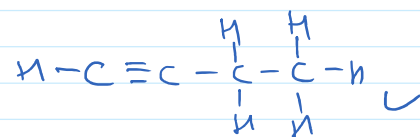
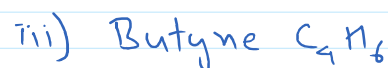
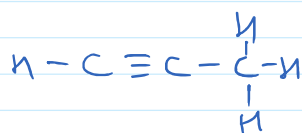
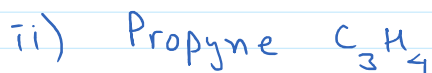
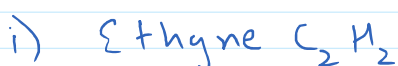
General formula of alkenes with only one double bond (acyclic)  
 $C_nH_{2n}$  ( $n \neq 1$ ) ( $n = 2, 3, 4 \dots$ )



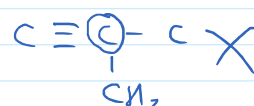
## ii) Alkynes

Compounds of carbon having atleast one triple bond between carbon atoms are called alkynes.

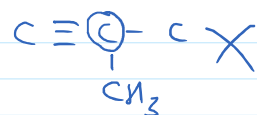
General formula of alkynes with one triple bond (acyclic)  
 $C_nH_{2n-2}$  ( $n \neq 1$ ) ( $n = 2, 3, 4 \dots$ )



Structural isomers



## Structural isomers

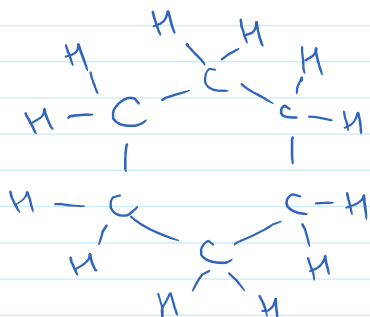


Compounds with identical molecular formula but different structures are called structural isomers.

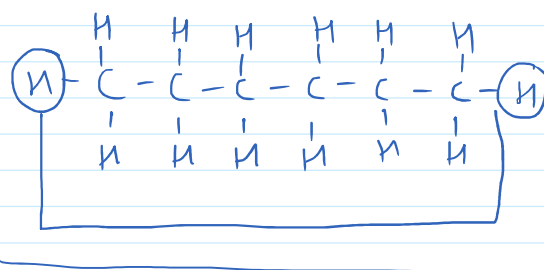
## Cyclic hydrocarbons

Carbon compounds in which carbon atoms form a closed chain are called cyclic hydrocarbons. These can be saturated/unsaturated.

eg. Cyclohexane ( $\text{C}_6\text{H}_{12}$ )  
(saturated)

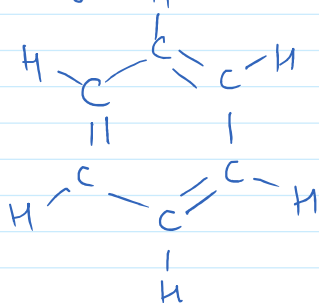


Hexane ( $\text{C}_6\text{H}_{14}$ )



General formula of saturated cyclic alkanes:  $\text{C}_n\text{H}_{2n}$

eg. Benzene ( $\text{C}_6\text{H}_6$ )  
(unsaturated)



## Heteroatoms

In a hydrocarbon chain, one or more hydrogens can be replaced by elements such as halogens, oxygen, nitrogen, sulphur etc. The element replacing hydrogen is called heteroatom.