

# GENERAL CONCEPTS OF

1.

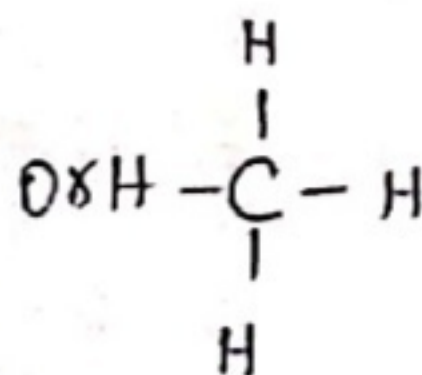
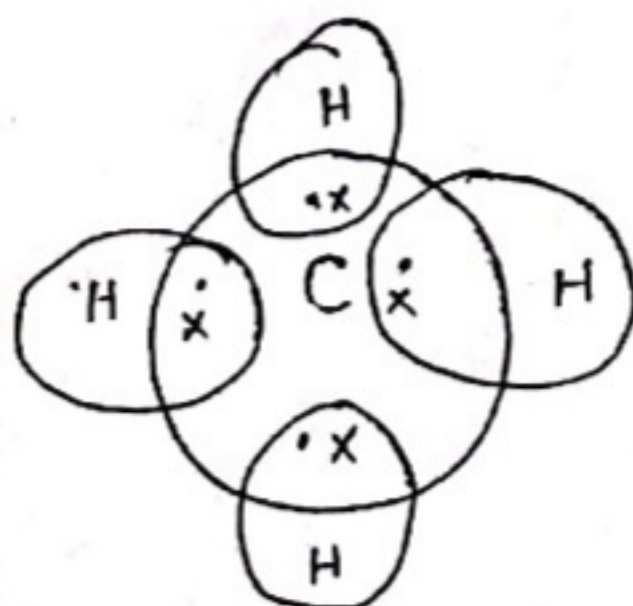
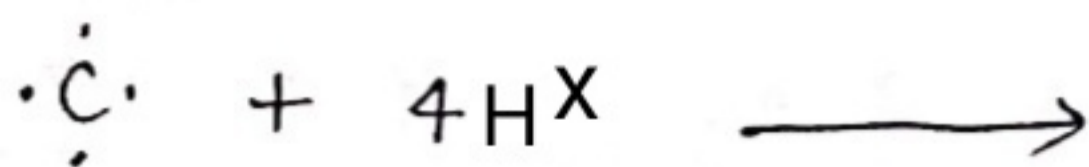
04 Dec.2020 **HYBRIDISATION**

**DEG-I (SUB.) ,SESSION 2020-23**

**Chapter-1 , Group-B ,Lecture-1**

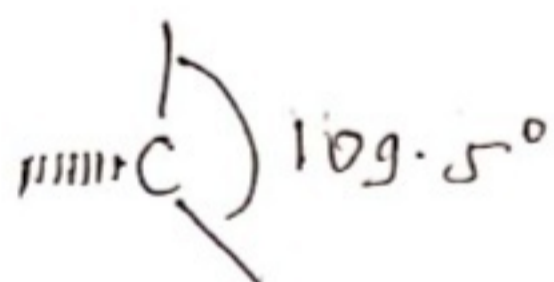
## Valence of Carbon

- \* The atomic number of carbon = 6
- \* Atomic weight of carbon = 12
- \* Electronic configuration =  $1s^2 2s^2 2p^2$
- \* It has four electrons in the last orbit and tends to gain four more electrons by forming four covalent bonds with other hydrogen atoms.
- \* Thus the structural formula of the simplest hydrocarbon methane ( $CH_4$ ) can be written as



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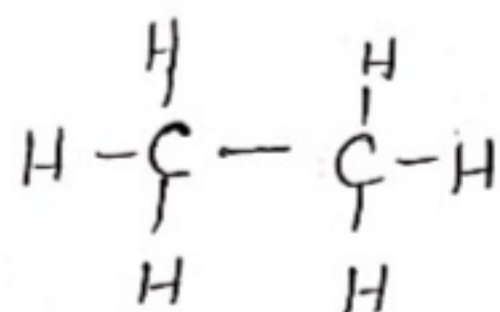
- \* Similarly in all organic molecules carbon atom is tetravalent. That is, it has a valency of 4.
- \* According to Le-Bel and Van't Hoff the four valencies of carbon do not lie in one plane.
- \* They are directed towards the corners of a regular tetrahedron so that the angle between any two valencies is  $109.5^\circ$ .



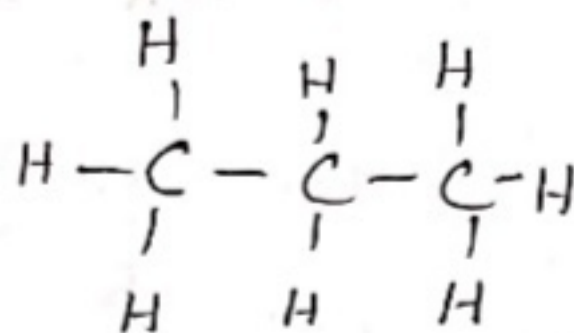
## Carbon-Carbon Single Bond

Carbon atom has the wonderful property of uniting with other carbon atoms through covalent bonds.

eg; ethane ( $C_2H_6$ )



Propane

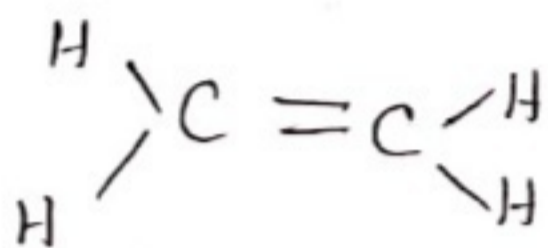


In these compounds all the carbon atoms linked by covalent bonds.

## Carbon-Carbon Double Bonds

In some compounds, two of the valencies of a carbon atom may be satisfied by union with the two valencies of another carbon atom.

eg; In ethene two carbons are united by two covalent bonds.



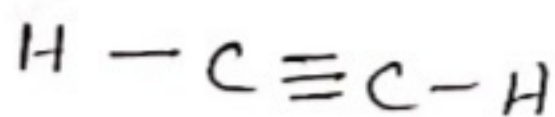
Ethylene → Common Name

Ethene ← IUPAC

Such a union involving two covalent bonds between adjacent carbon atom is called double bond.

## Carbon-Carbon Triple Bonds

Sometimes two adjacent carbon atom are linked together by three covalent bonds. Thus  $\text{C}_2\text{H}_2$  molecule has carbon-carbon triple bonds.



ethyne

(acetylene)

Tetravalent of Carbon

or,

Valence of Carbon

or

Tetravalency of Carbon

**Completed**