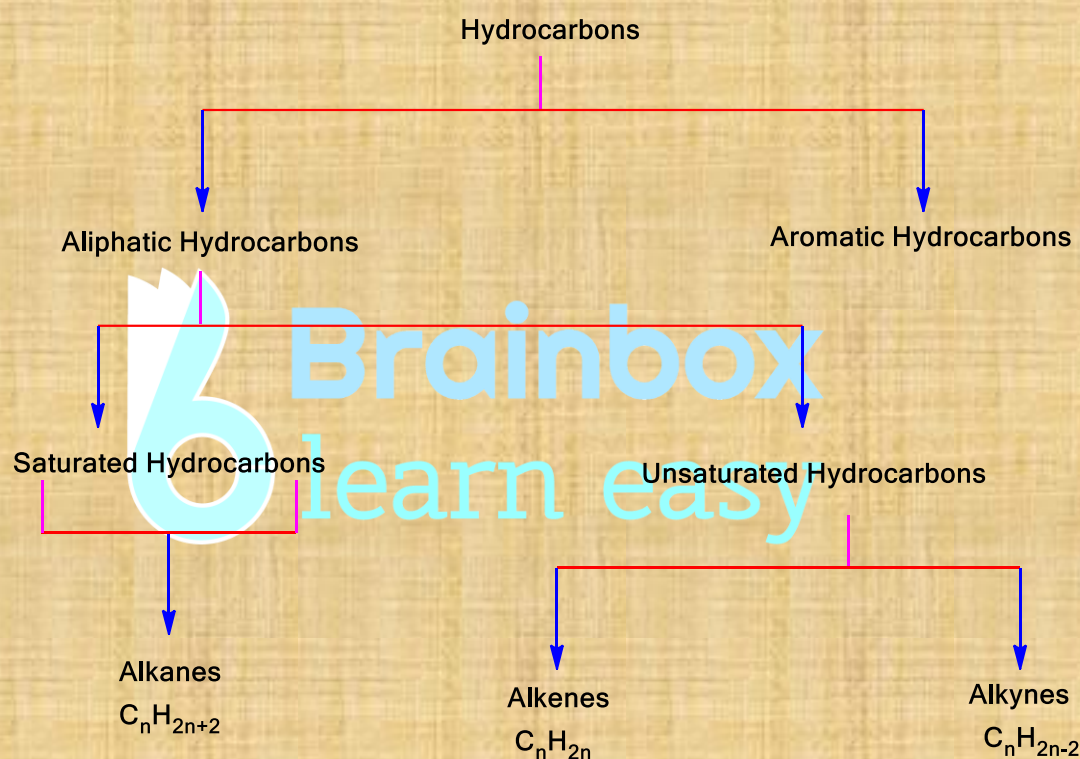


CHAPTER 13

HYDROCARBONS

- The organic compounds containing carbon and hydrogen only are called Hydrocarbons.

Classification:



- Alkanes are saturated hydrocarbons having only carbon – carbon single bonds.
- They are generally inert towards many reagents hence called as paraffins.
- In alkane, all carbons are SP^3 hybridised with tetrahedral geometry.

Conformations:

The spatial arrangement of atoms which arise due to rotation about carbon, carbon single bond are called conformations (or) conformers.

- Alkanes can have infinite number of conformations.
- The repulsive interaction between the adjacent bonds is called torsional strain.

- The conformation in which bonded atoms as close as possible are called eclipsed conformation.
- The conformation in which bonded atoms as far as possible are called staggered conformation.
- All other intermediate conformation are called skew conformations.
- Conformations can be represented by sawhorse projections or Newman projections.

Sawhorse projections:

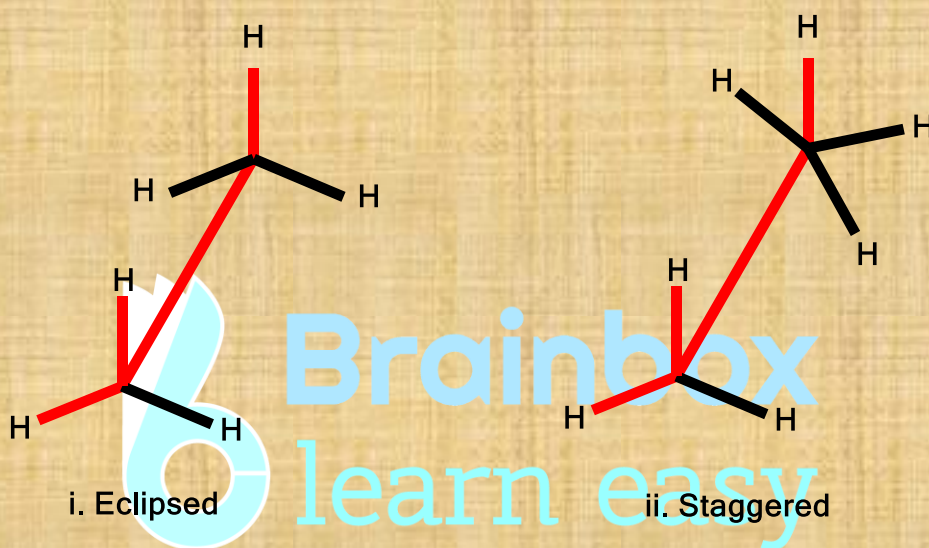
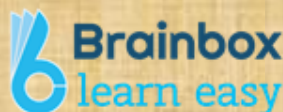


Fig. Sawhorse projections of ethane

Carbon-carbon bond is shown as a slant line to which bonded atoms projected at 120° angle to each other.

Newman projections:

Front carbon is represented by point and rear carbon is represented by circle bonded atoms are drawn at 120° angle to each other.

Staggered form of ethane has least torsional strain & hence is more stable among all conformations.

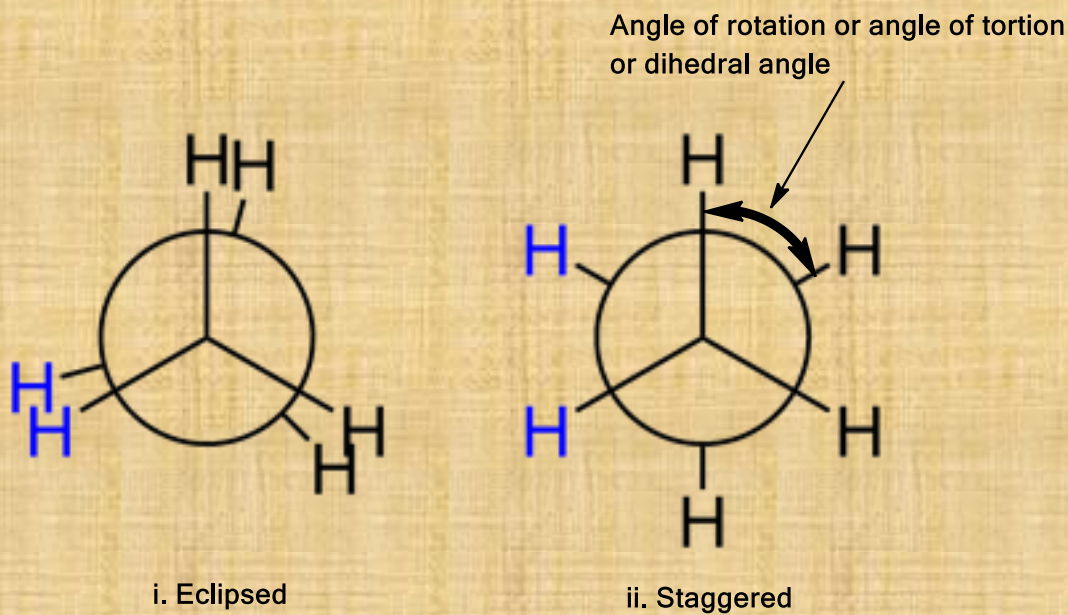


Fig. Newman's projections of ethane