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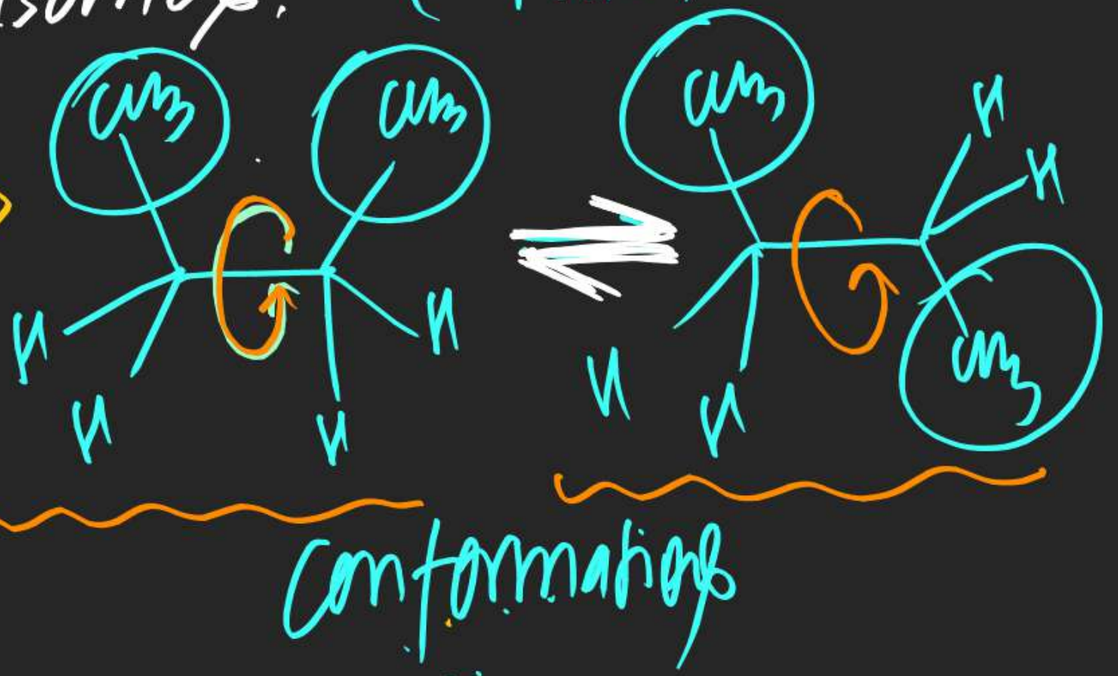
Conformational Isomerism

Representations having same molecular formula & same structural formula But different arrangement of atom & groups in space & representation which are interconvertible are known as conformational isomers.

(C_4H_{10}) mol. formula

Ex: $H_3C-CH_2-CH_2-CH_3$ ⟹

Butane



Conformations

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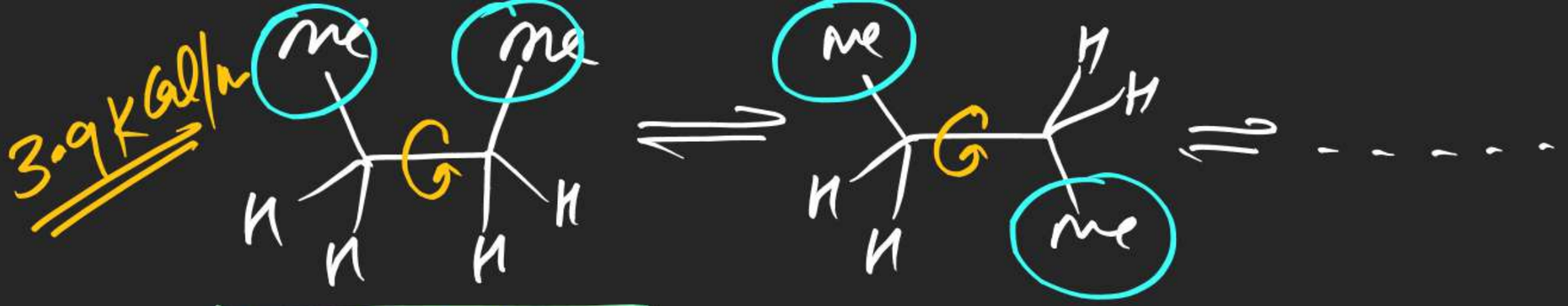


(*) Free Rotation

(*) Intraconvertible

(*) Can't be isolated at Room Temp

(*) Conformational isomers

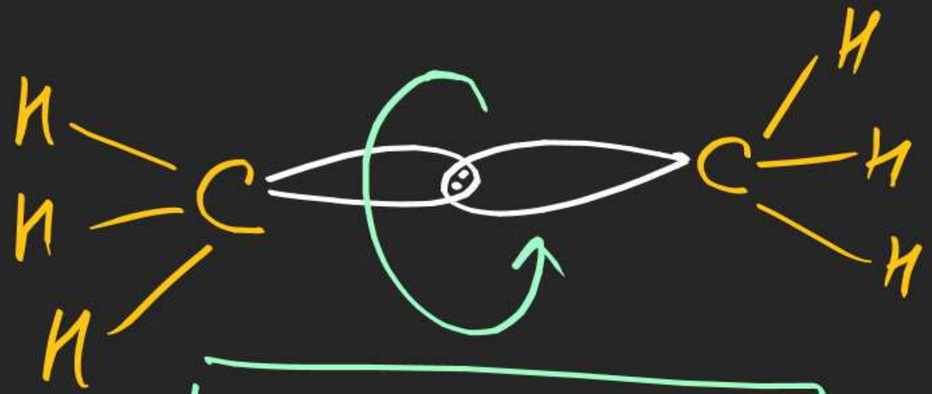
(*) Rotamers

(*) Not True isomers

Note (1) Each organic molecule contains 25 KCal available Energy at Room Temp.

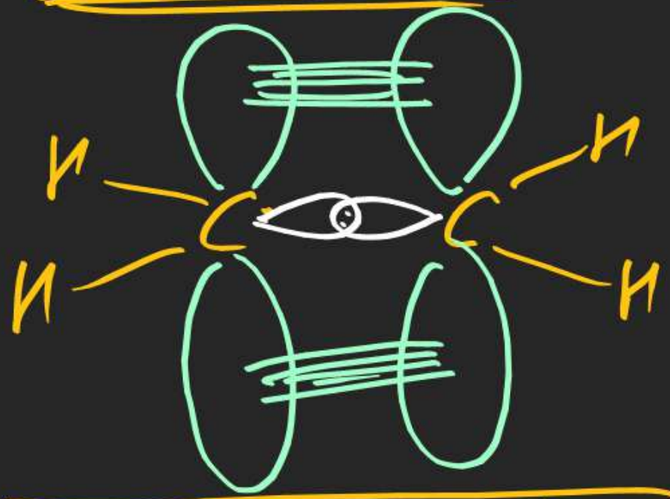
(ii) There are infinite possible conformation for any compound having conformational phenomena.

(iii) In Simple Bond

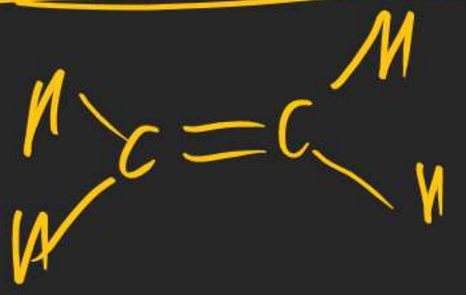


Free Rotation

In double Bond



Restricted Rotation



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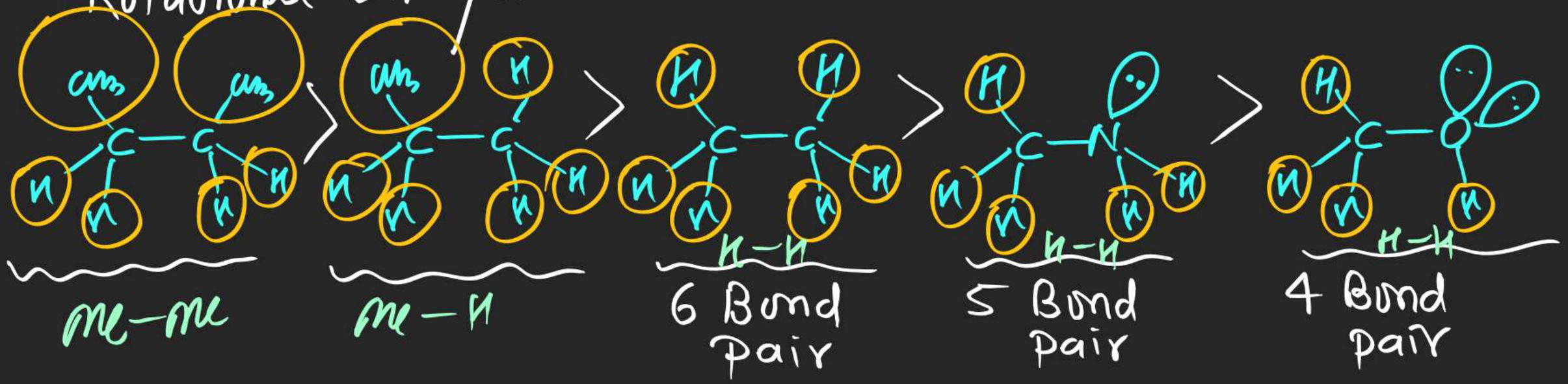
Ex: Arrange following in ↓ order of Bond Rotational Enery Barries.



Note Bond pair occupies more space than lone pair

(#) Representation Formula:

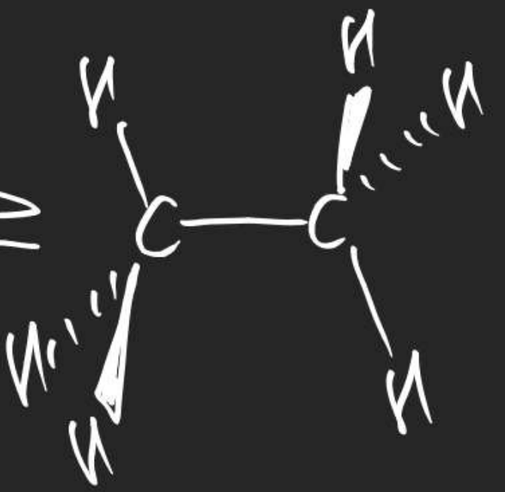
(1) Wedge-Dash Formula:-

Wedge Bond  or  ⇒ Bond towards observer

Dash Bond  ⇒ Bond away to observer

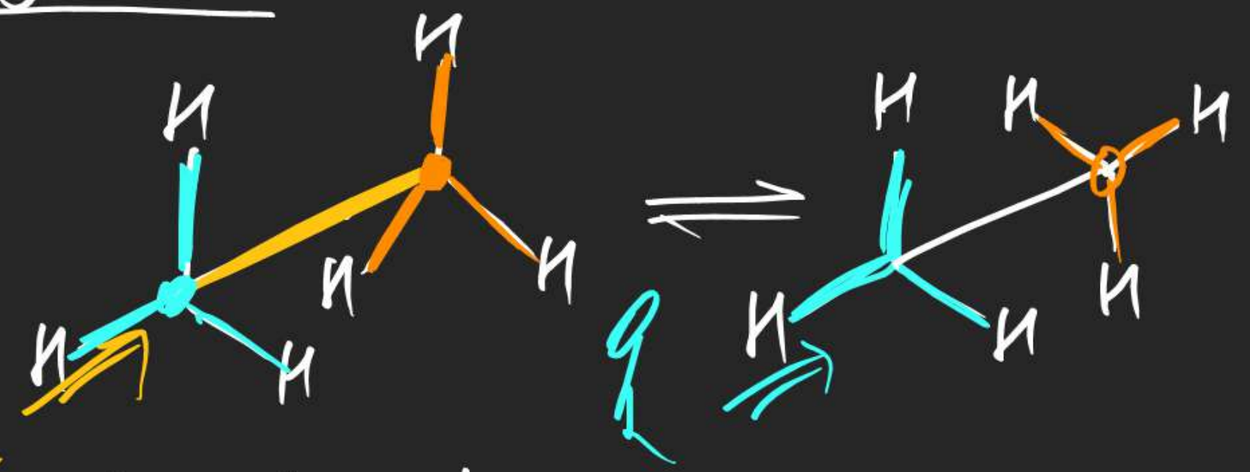
Simple Bond  ⇒ Bond in the plane of paper

नागिन Bond  ⇒ Variable Bond.

Ex-1: Ethane CH_3-CH_3 ⇒  ⇌ 

(2) Sawhorse Projection Formula :-

Ex: Ethane CH_3-CH_3



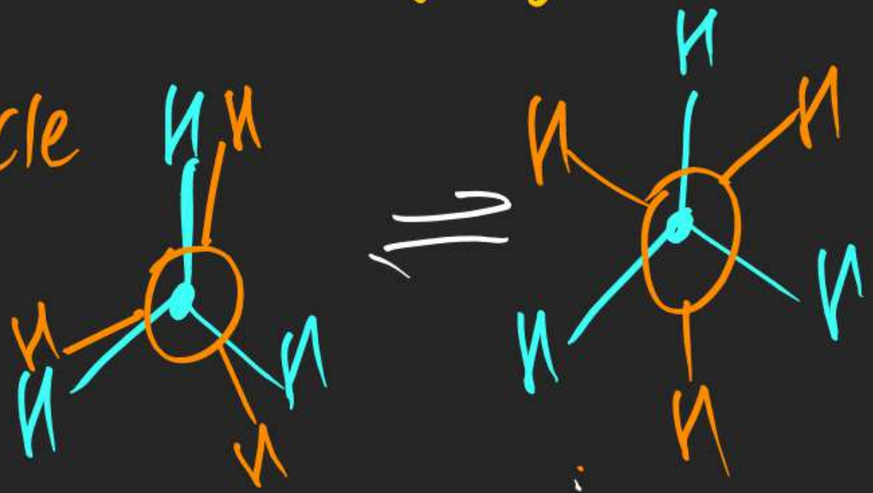
(3) Newmann Projection Formula :-

⇒ Select a Bond across which molecule is going to be observed.

Front atom "•" dot

Back atom ○ Circle

Ex: Ethane CH_3-CH_3



(#) Few important Terms of Conformational analysis !-