

TDC-I
P.G-I

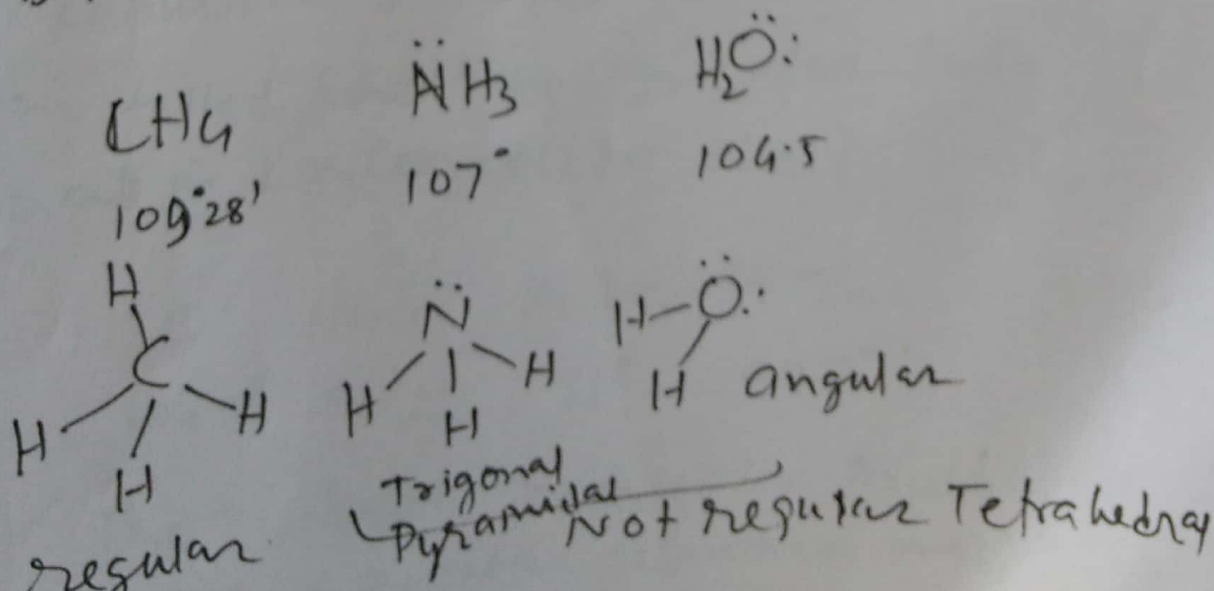
VSEPR Theory = Valence Shell Electron-pair Repulsion Theory

By Gillespie & Nyholm

According to this Theory, The geometry of a molecule depends upon the number of bonding and non bonding (Lone pair) electron pair in the central atom which arrange themselves in such a way that there is a minimum repulsion between them so that molecule has minimum energy and maximum stability.

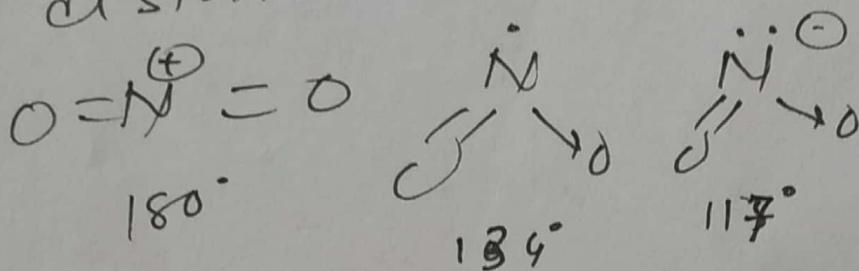
① If electron pairs surrounding the central atom are not equivalent then molecule may have distorted or irregular geometry as repulsion exerted by lone pair and bonded pair are not same.

$$\text{B.P.} - \text{B.P} < \text{B.P} - \text{L.P} < \text{L.P.} - \text{L.P}$$



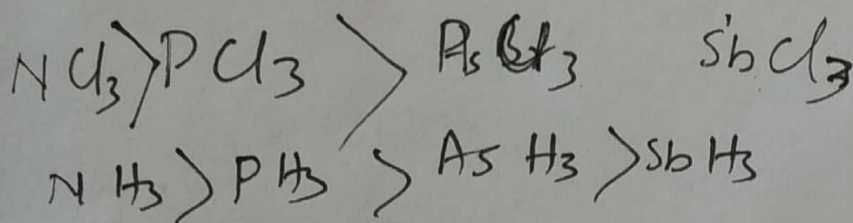
(ii)

Greater the no. of electron pairs on central atom, the greater be the tendency of bond angles to contract hence more be the distortion in the geometry

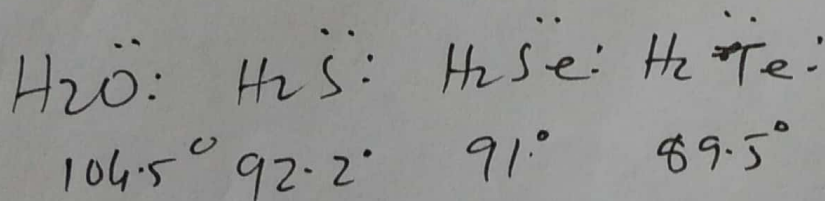


(iii)

The smaller the electronegativity of central atom, the smaller is the bond angle and hence smaller is the distortion in the regular shape.

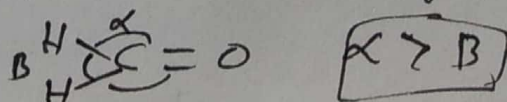


(iv) Repulsion between electron pair in filled shell is greater than that in incomplete shell



(v)

The repulsion exerted by multiple bonds is greater than those involving only single bonds.



$\times > \text{B}$