Date ____________

CHAPTER 3
ONE PAGE NOTES

VSEPR THEORY

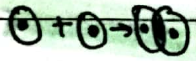
- Electrons pairs are far apart
- Lone pair occupy more space
- Lone & bond pair determine geometry
- Double & triple bond behave like single bond in geometry

lone pair – lone pair > lone – Bond pair > Bond – Bond pair

- AB_2
- AB_3
- AB_2E
- AB_4
- AB_3E
- AB_2E_2
- AB_5
- AB_6

SIGMA BOND

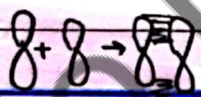
- "Any first bond"
- Stronger (σ)



- By head on overlap btw
- partially filled atomic orbitals

Pi BOND

- "π"
- It is not the first bond
- "By side wise overlap"



BOND ENERGY

- Amount of Energy required to break all bonds of particular type in 1 mole of substance
- more the energy, stronger the bond

HYBRIDISATION

mixing of atomic orbitals of different Energy & shape to form same energy & shape orbitals

- $Sp^3 \rightarrow CH_4, NH_3, H_2O$
- $Sp^2 \rightarrow BF_3$, Ethene,
- $Sp \rightarrow BeCl_2, C_2H_2$

MOT

Atomic orbitals combine to form "BMO" Bonding molecular orbital which has lower Energy and anti-bonding molecular orbital which has greater energy

BOND ORDER

$$\text{Bond order} = \frac{\text{No of Electrons in BMO} - \text{ABMO}}{2}$$

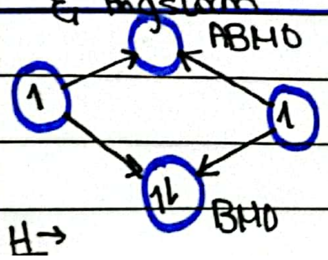
$$H = \frac{2-0}{2} = 1$$

Dipole moment

- Degree of polarity product of charge & distance
- $\mu = q \times r$
- Coulombs meter & Debye

BOND LENGTH

- Distance btw nuclei of atoms joined by covalent bond
- Bond length $\propto \frac{1}{\text{Strength}}$
- Half of Bond length in same atoms = covalent radii
- Unit = picometer & Angstrom



Electronegativity

Electronegative difference $\propto$ Bond Energy

EFFECT OF BONDING

IONIC	& Covalent compounds
Soluble in polar solvents	Like dissolve like
Non-directional & rigid	Directional
	Not rigid
fast speed	slow reaction rate
less volume	
more density	less density
No isomerism	isomerism

SIZE & Stability

- Smaller the size, the shorter bond length & thus more strength
- Lower the stability, higher the energy