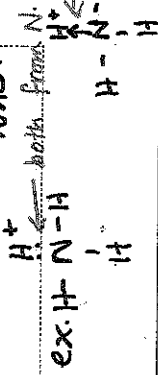


## Chapter 8 - Covalent Bonding

### Coordinate Covalent Bonding

- A covalent bond where 1 atom donates both electrons to make the bond.
- found in a few polyatomic ions.



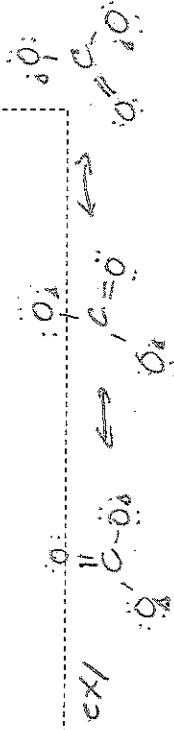
### Bonding Theories

#### Resonance



occurs in structures with both single & double bonds.

molecules can be drawn with more than 1 viable Lewis dot structure.



### Molecular Orbital

overlapping atomic orbitals; areas where shared electrons are found.

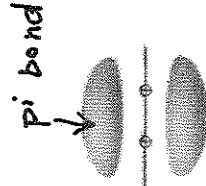
#### Sigma bond

molecular orbital where shared e<sup>-</sup>s are located between nuclei



#### Pi Bond

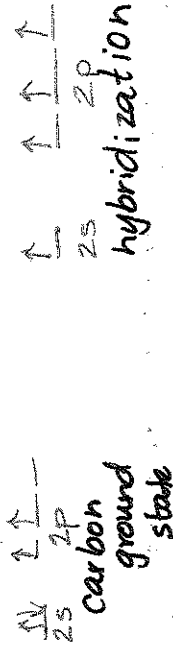
molecular orbital where e<sup>-</sup>s shared are located in regions above or below a sigma bond (in p-orbitals)



Hybridization - When atomic orbitals merge to become hybrids, areas where electrons will be shared.

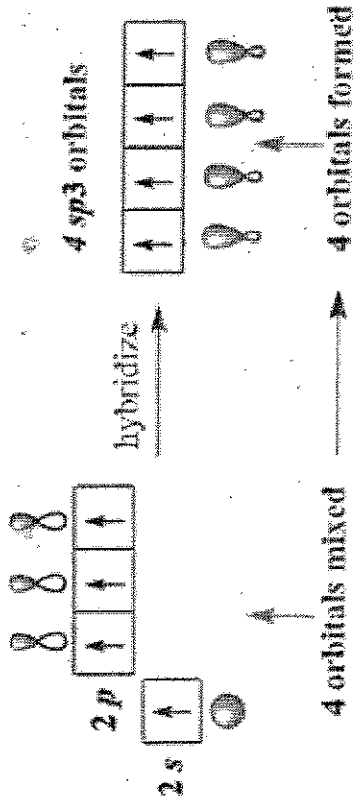
- dictates molecular shape.

# SP<sub>3</sub> HYBRIDIZATION



the s orbital and 3p orbitals hybridize to make hybrid orbitals.

this is found in tetrahedral, bent & trigonal pyramidal structures.



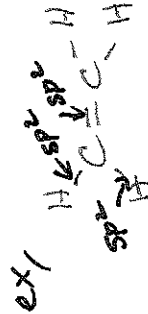
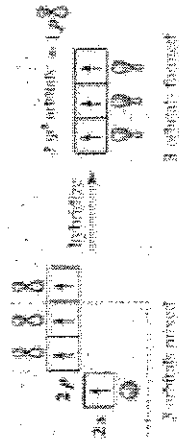
# SP<sub>2</sub> Hybridization

one s orbital is hybridized with 2 p orbitals.

produces 3 sp<sup>2</sup> hybrid orbitals 120° apart.

one p orbital is not hybridized

this involves molecules that are trigonal planar.



# sp hybridization

one s and 1 p is hybridized - two sp hybrid orbitals produced.

these hybrid orbitals will be 180° apart.

2 p orbitals not hybridized - these are for linear molecules

