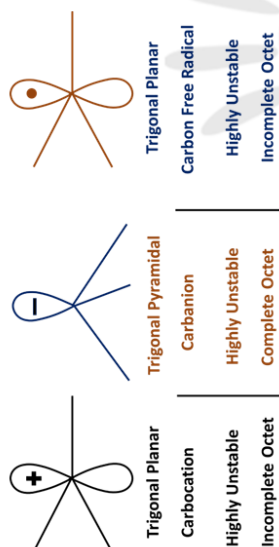


Electronic Displacement Effect (EDE) Effect due to displacement of electron is known as EDE.

Intermediates

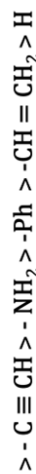
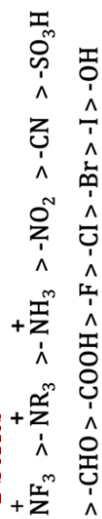
Species obtained between reactant and product during reaction.



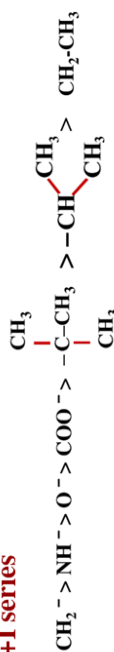
Inductive Effect

Partial displacement of σ - bond electrons toward more electronegative atom is known as inductive effect.

-I-Series



+I series



MIND MAP

General Organic Chemistry

S.No.	Aromatic	Anti-aromatic	Non-aromatic
1.	Planarity	Planarity	Non-planarity (presence of sp^3 atom)
2.	Complete cyclic resonance or conjugation	Complete cyclic resonance or conjugation	Not complete resonance in cyclic ring
3.	Compound should follow Huckel's Rule. $(4n+2)\pi$ delocalized e^- $n = 0$ to ∞	Compound should not follow Huckel's Rule. $4n\pi$ delocalized electron. $n \neq 0$	—

[D N P]

Distance

Power

No. of groups

Resonance

It is due to the delocalization of electrons within the molecule.

All the contributing structures in the resonance are called resonating structures or canonical structures.

1. System must be planar.
2. System must be in conjugation (i.e. parallel p orbitals are required)

Rules Stability Of Resonating Structure

1. Neutral or non-polar resonating structure (R.S.) is more stable than polar-resonating structure.



Stability of (I) > (II)

2. Resonating structure with complete octet of all atom is more stable than incomplete octet

R.S.



Carbon octet (Incomplete) (Incomplete) < (complete)

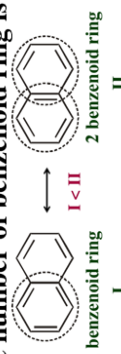
3. Negative charge on more E.N. atom is more stable, positive charge on less E.N. atom is more stable.



4. According to Coulomb's law like charges should be away from each other & unlike charges should be closer.



5. Fries rule : Resonating structure having more number of benzenoid ring is more stable.



MIND MAP

General Organic Chemistry

Mesomeric Effect or Resonance Effect

The atoms or groups which donate or withdraw electrons from conjugated system via resonance show resonance or mesomeric effect.

Group which show -M effect are -

$-\text{NO}_2$, $-\text{CN}$, $-\text{SO}_3\text{H}$, $-\text{CHO}$, $-\text{COR}$, $-\text{COOH}$, $-\text{COOR}$, $-\text{COX}$, $-\text{CONH}_2$ etc.

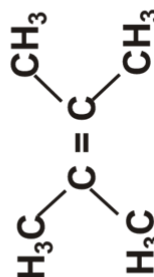
Hyperconjugation

1. Hyperconjugation In Carbocation

If there is one C-H σ bond and one positive charge at alternate position then there will be Hyperconjugation effect. All the structures are called as hyperconjugation structures.

2. Hyperconjugation In Free Radical

3. Hyperconjugation In Alkene

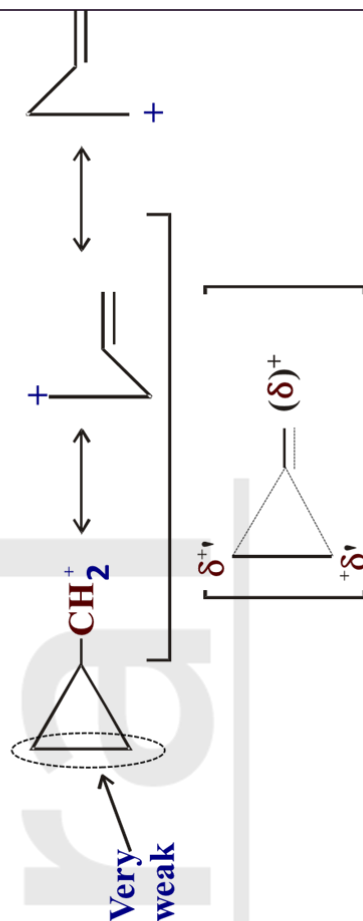


Bredt's Rule

According to this rule, planarity (sp^2 hybrid) can't be achieved at bridge head centre of bicyclic compound having less than 8C.

Sigma/Dancing Resonance

O^- , NH^- , $-\text{NR}_2$, $-\text{NHR}$, $-\text{NH}_2$, $-\text{OH}$, $-\text{OR}$, $-\text{SH}$
 $-\text{SR}$, $-\text{F}$, $-\text{Cl}$, $-\text{NHCOR}$, $-\text{O-COR}$ etc.



4. Heat of Hydrogenation



5. Heat of Combustion (HOC)

Enthalpy change when 1 mole of compound is oxidized.

$$\text{HOC} \propto \text{No. of C-atom} \propto \frac{1}{\text{stability}} \propto \text{strain}$$

