# Resonance Energy, Sigma Resonance, Stearic Inhibition of Resonance Effect (SIR Effect)

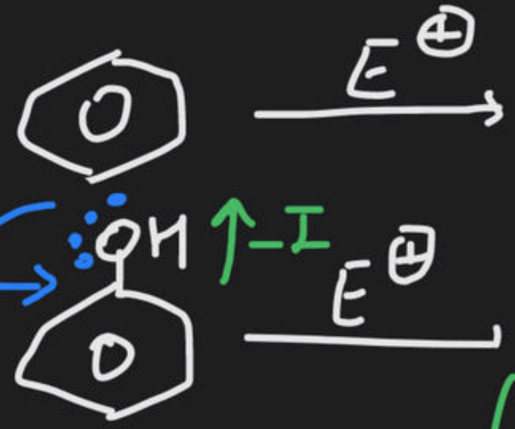
Course on General Organic Chemistry for Class XI

SURENDRA K MISHRA • Lesson 10 • Aug 24, 2021

(#)

(a)

(b)




$\gamma_b >> \gamma_a$

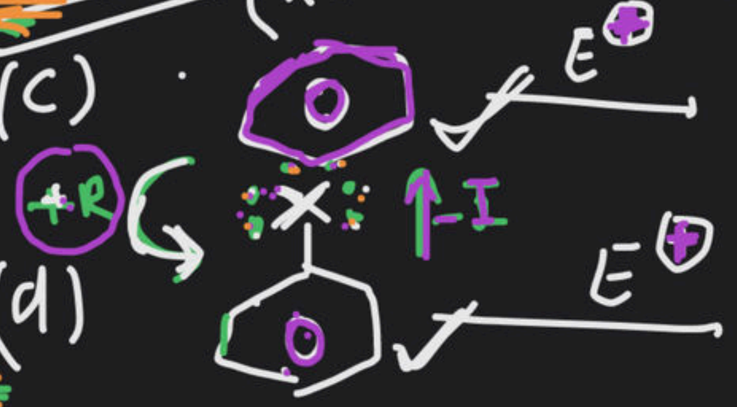
(b is more electron dense than "a")

(+R >> -I)

M.I.P (πe⁻ + σ) Manish

(c)

(d)



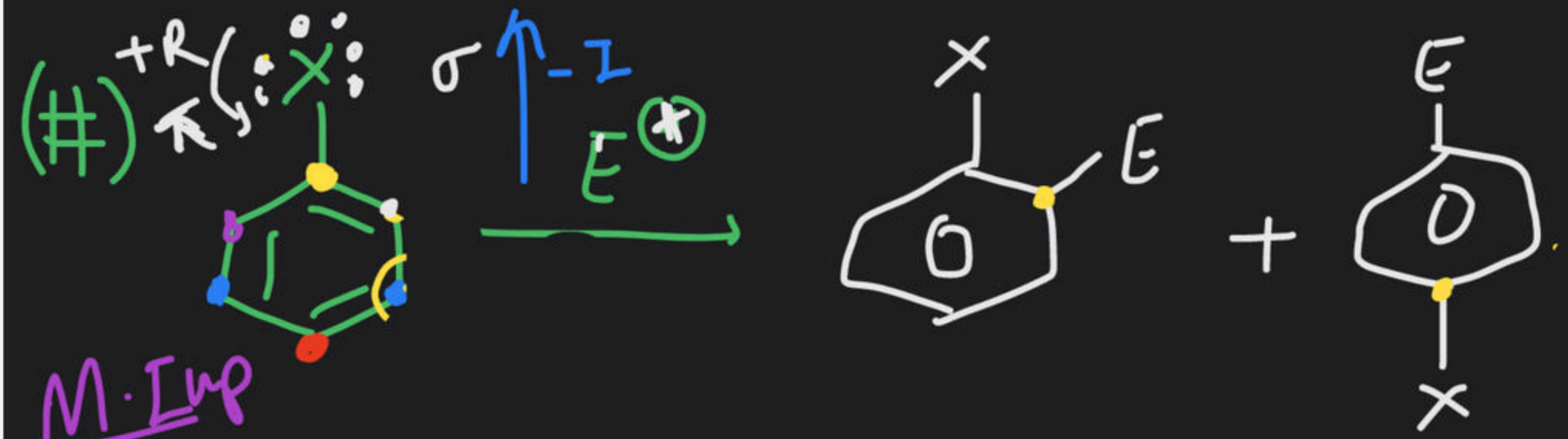

(C is more electron dense than d)

$\gamma_c > \gamma_d$

(-I > +R)

Note While Comparing Rate of electrophilic

attack among Aromatic Compounds, it is in which —I dominates +R effect.




M.I↑P

+R dominates over −I ⇒ when orientation of incoming electrophile is decided.

M.I↓D

−I dominates over +R ⇒ when order of attack of electroph is decided.

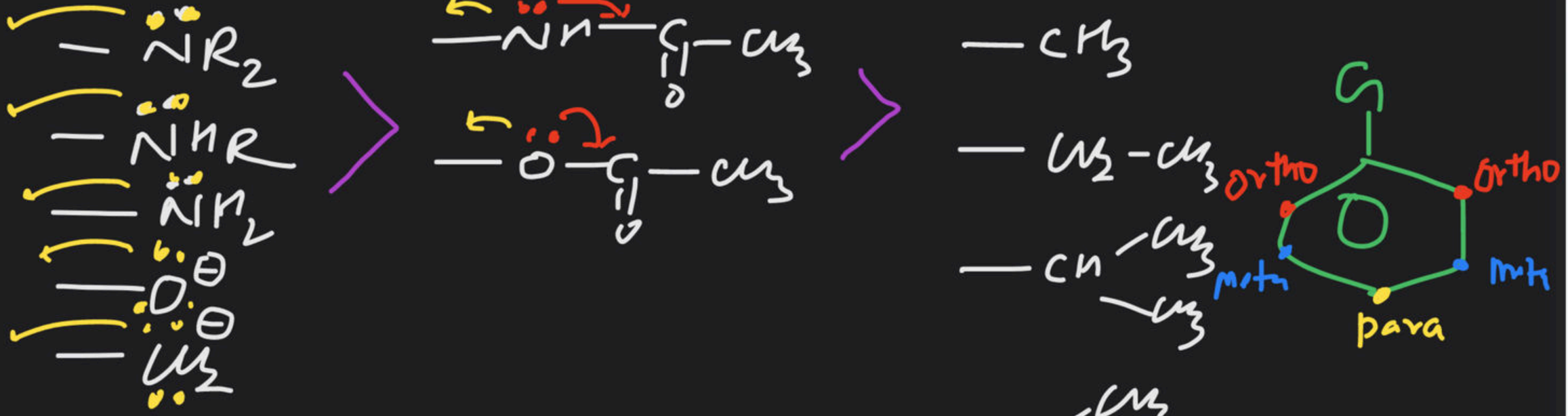
# Activating groups/Activating Compounds:-

When rate of attack of electrophile on any Compound is higher than rate of attack on Benzene Then that Compound is known as Activating Compound & group attached on it is known as Activating groups. A/G


Activating

Where (+R, +H, +I) Except halogens

Ex!




Single side involvement

Both side involvement

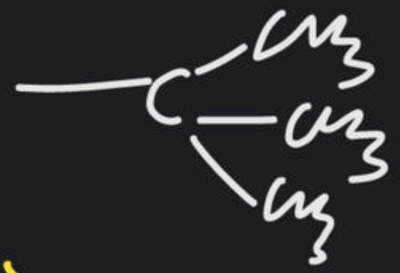
O/P

+R

O/P

Highly Activating groups

Moderately activating groups



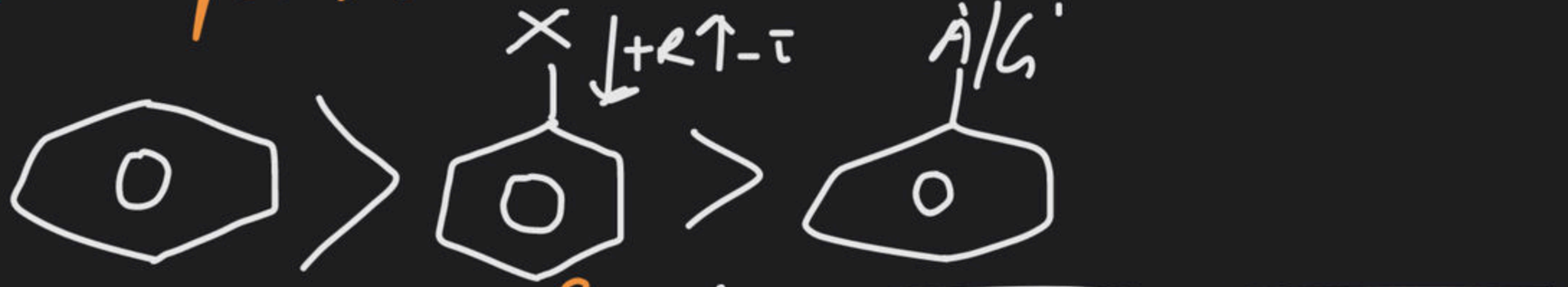
(+H +I)

O/P

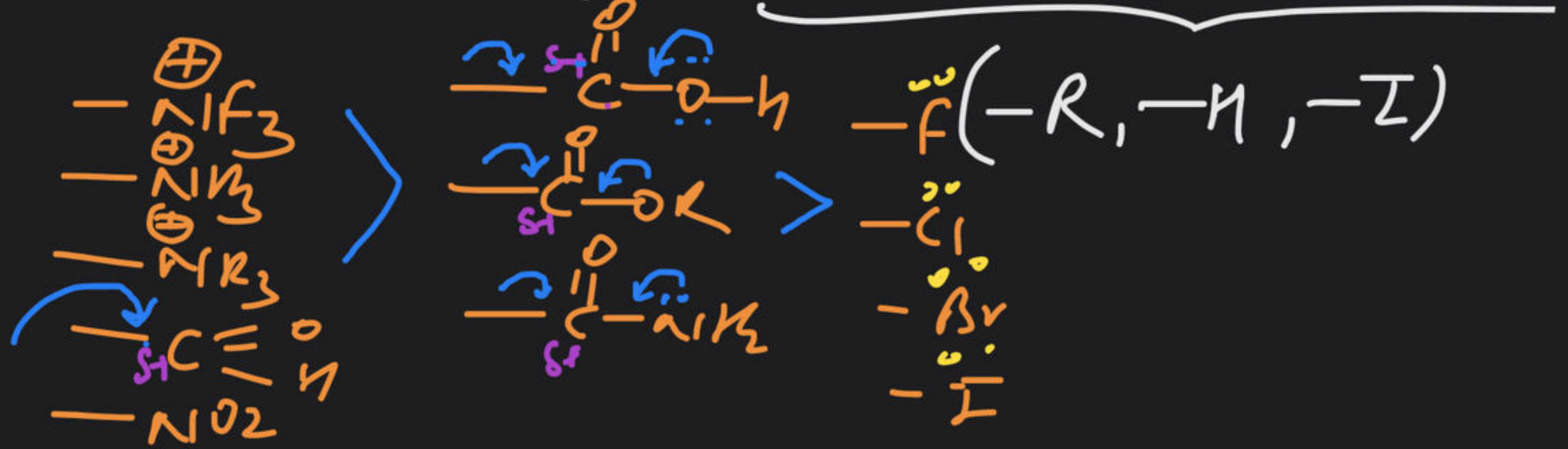
Weakly Activating groups

# Deactivating Compounds / Deactivating groups

⇒ When rate of attack of electrophile is slower than rate of attack of electrophile on Benzene than Compounds are known as deactivating Compounds




Ex:

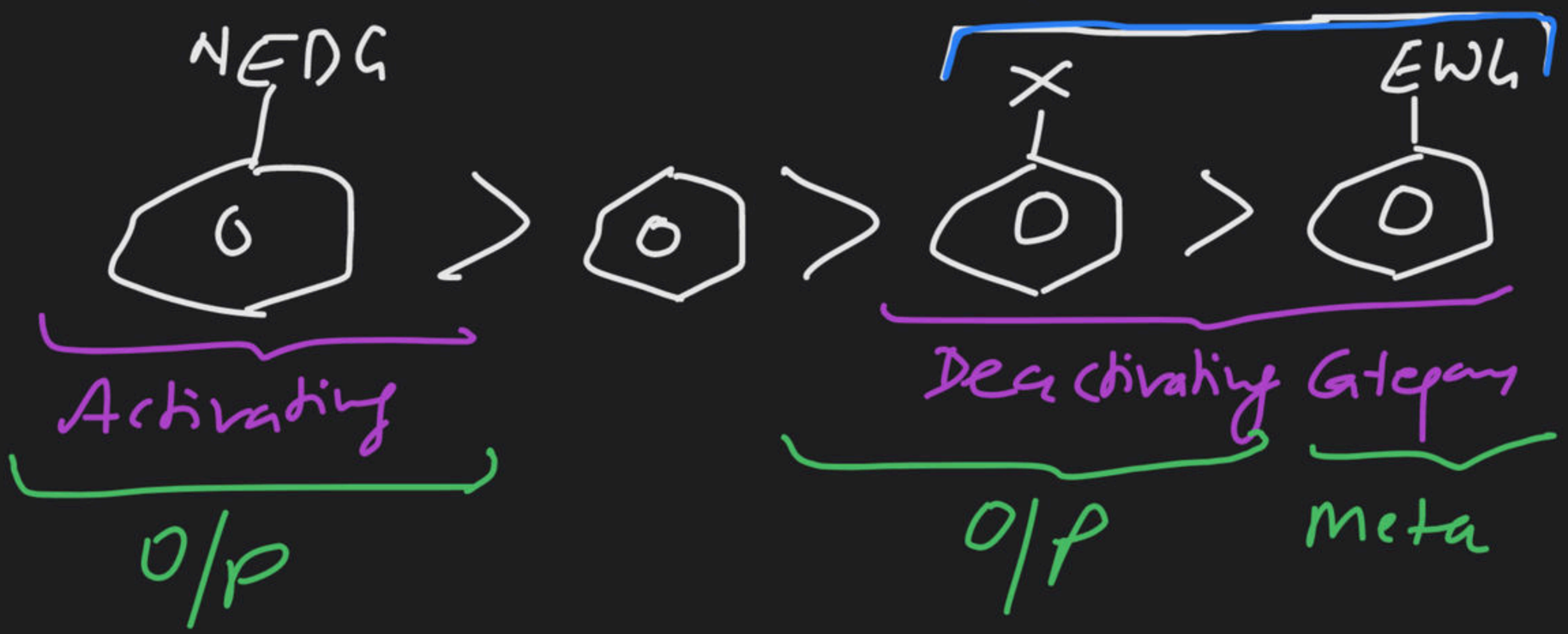


Highly deactivating — meta

Moderately deactivating — meta

Weakly deactivating — o/p

**Note**: order of rate of electrophilic attack



Ex: Arrange following in ↓ order of rate of electrophilic attack.

(a) Benzene, Chlorobenzene, Toluene

(b) Benzene, Nitro Benzene, Anisole

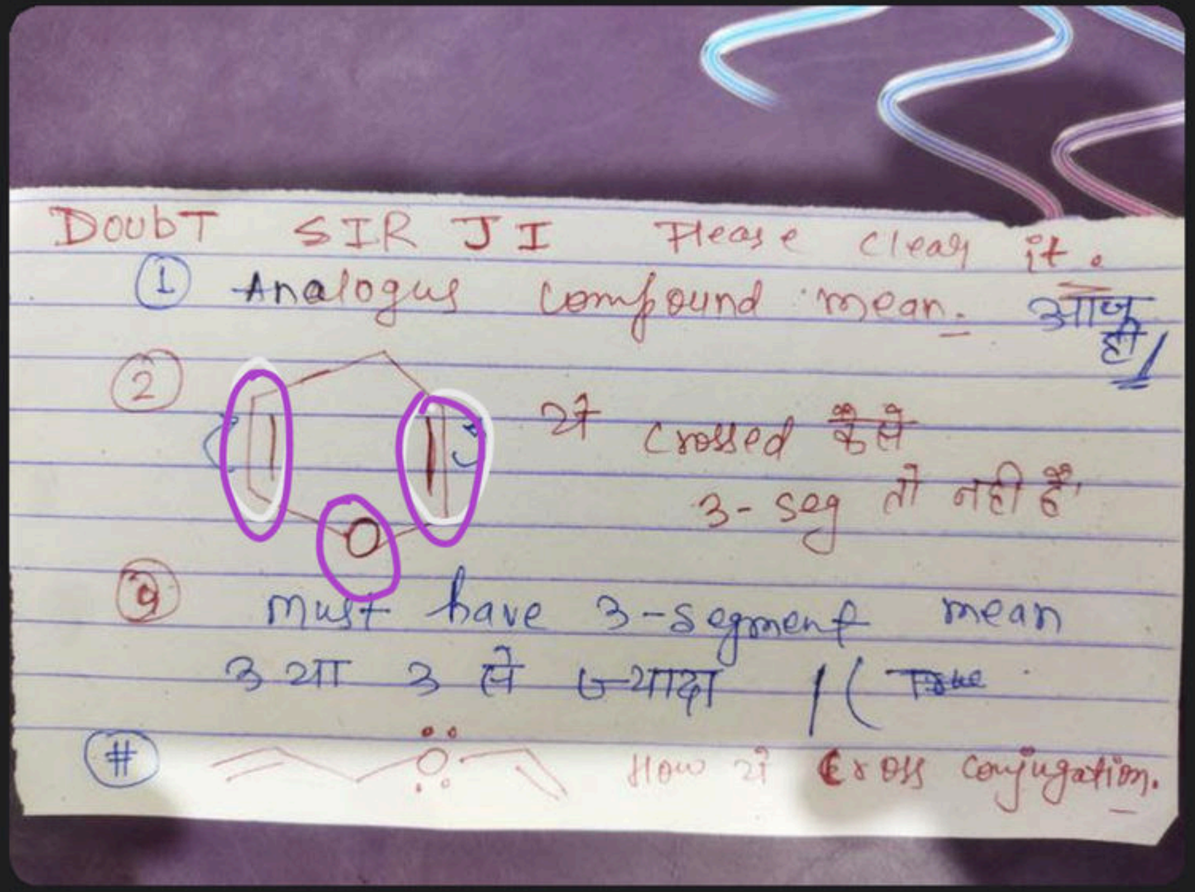
(c) Phenol, phenyl Acetate, Aniline

(d) O-Xylene, m-Xylene, toluene

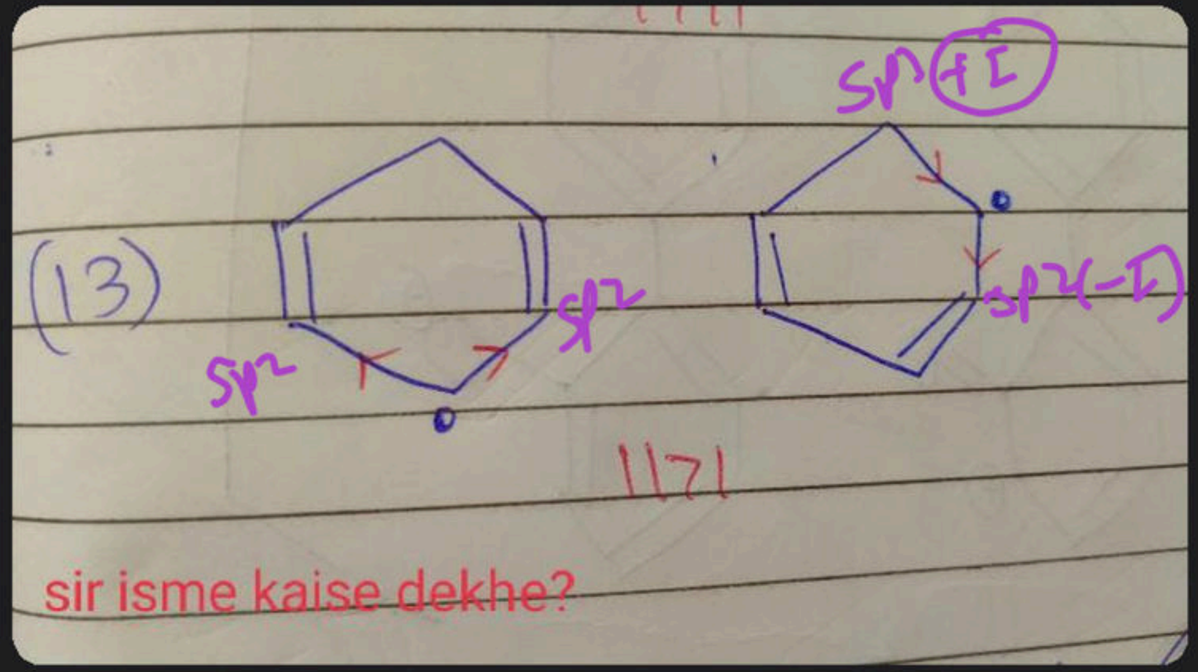
(e) Aniline Acetanilide O-toluidine

(f) Phenoxide ion. Phenol Benzyl alcohol.

Question
from Amit



## Question
from Aditya



**Question**
from Rajat

sir mera last class se dbt h agar oxygen pr lone pair hn 2 to vo -r efffect q show krta h?? vo lone pair ya electron density accept q karega..?