



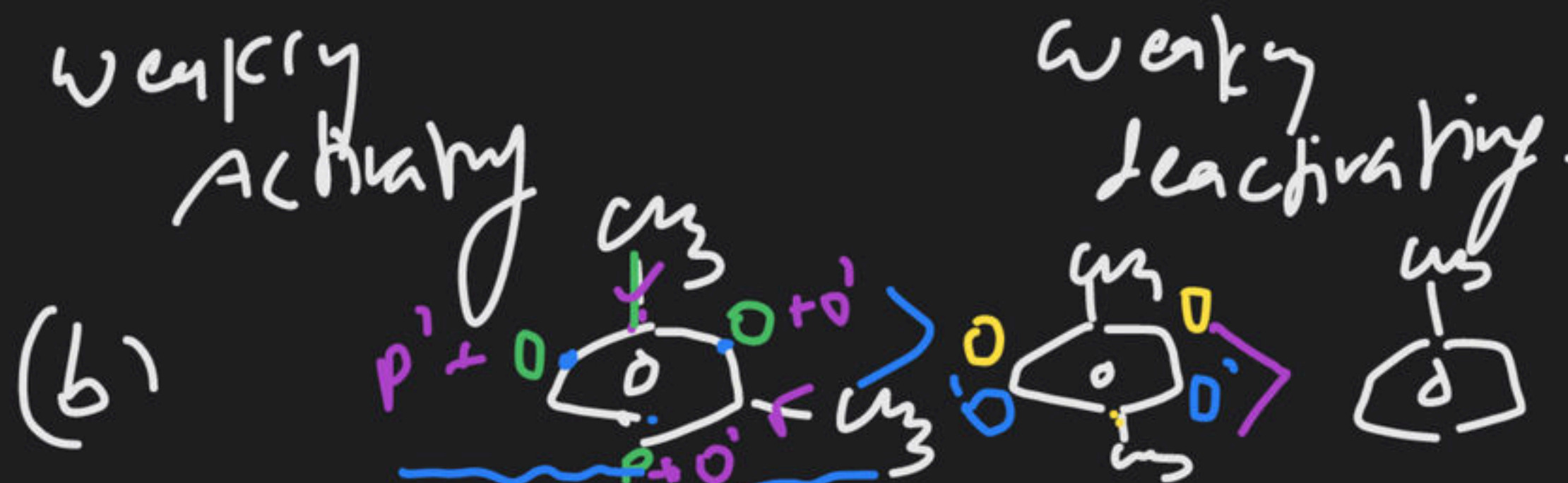
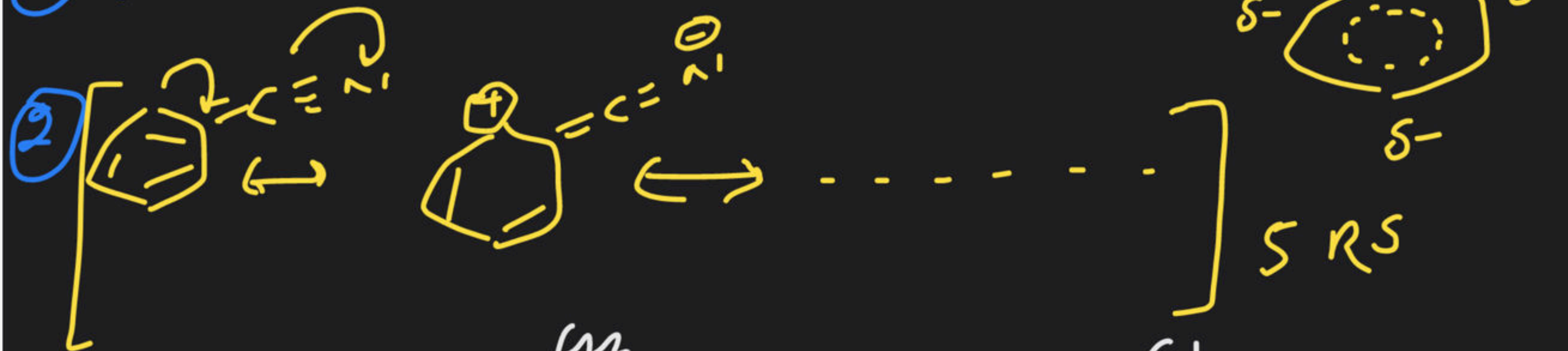
Hyperconjugation & Hyperconjugation Effect

Course on General Organic Chemistry (GOC) for Dropper 13th students

hw (Discussion)

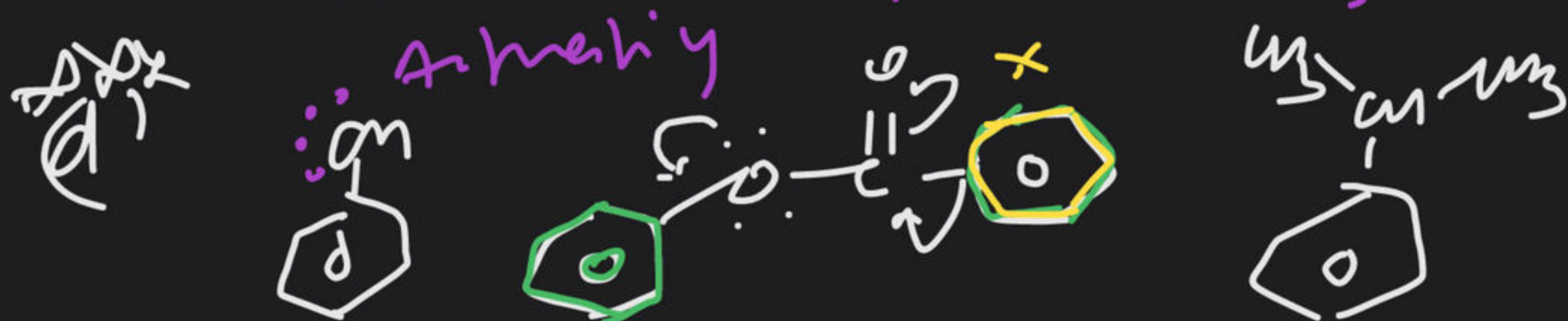
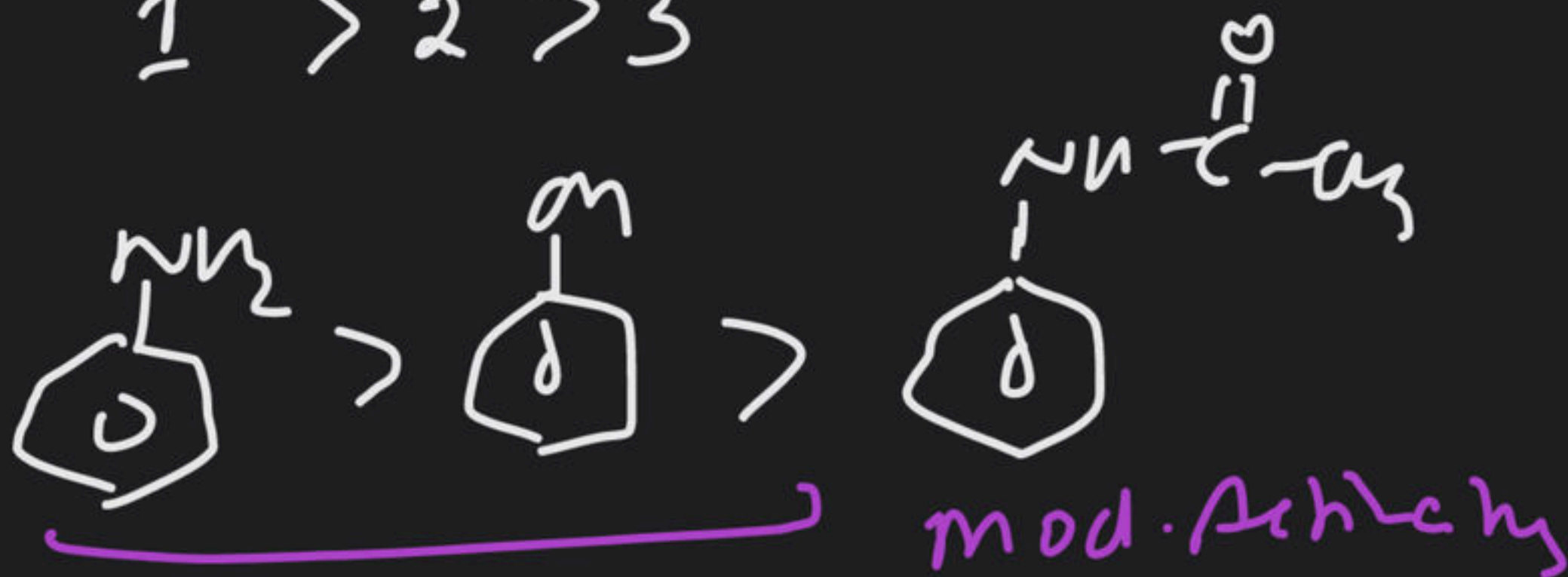
($\delta' = 1-3\delta$)

① phenoxide ion \Rightarrow 5 RS



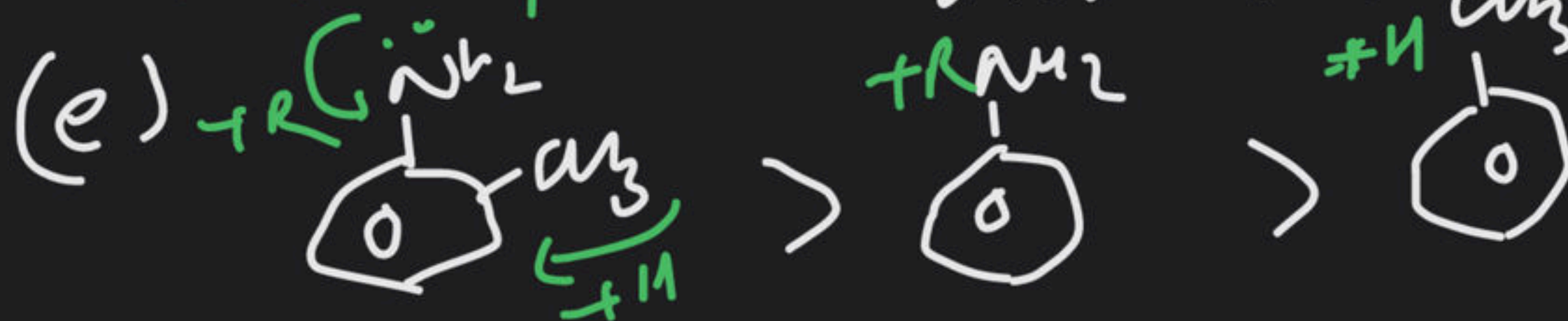
($\delta' > 2.73$)

(c) 1 > 2 > 3

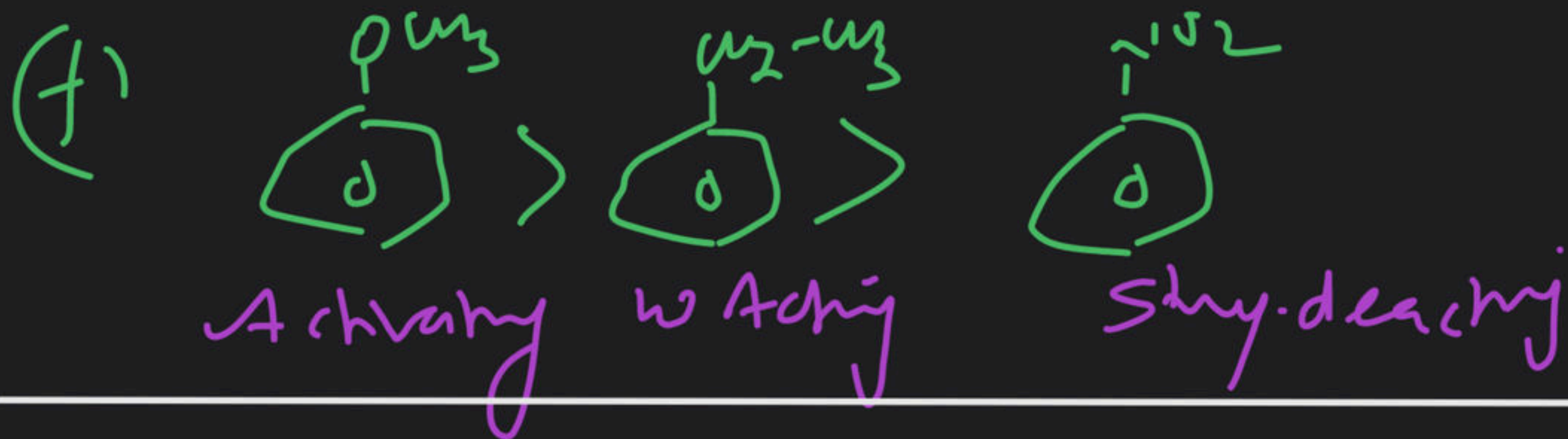


1 > 2 > 3

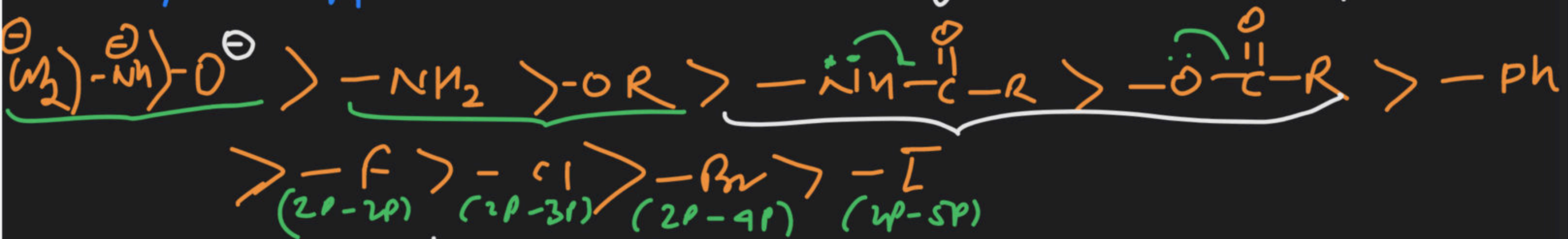
Activating mod. Activating



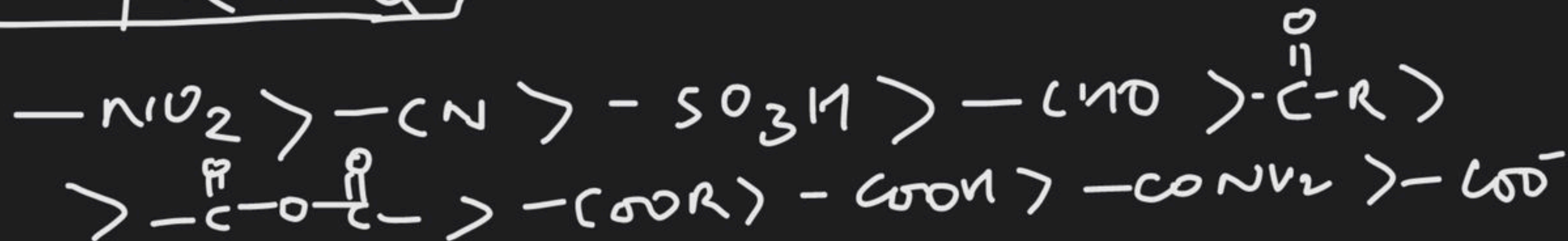
(1 > 3 > 2)



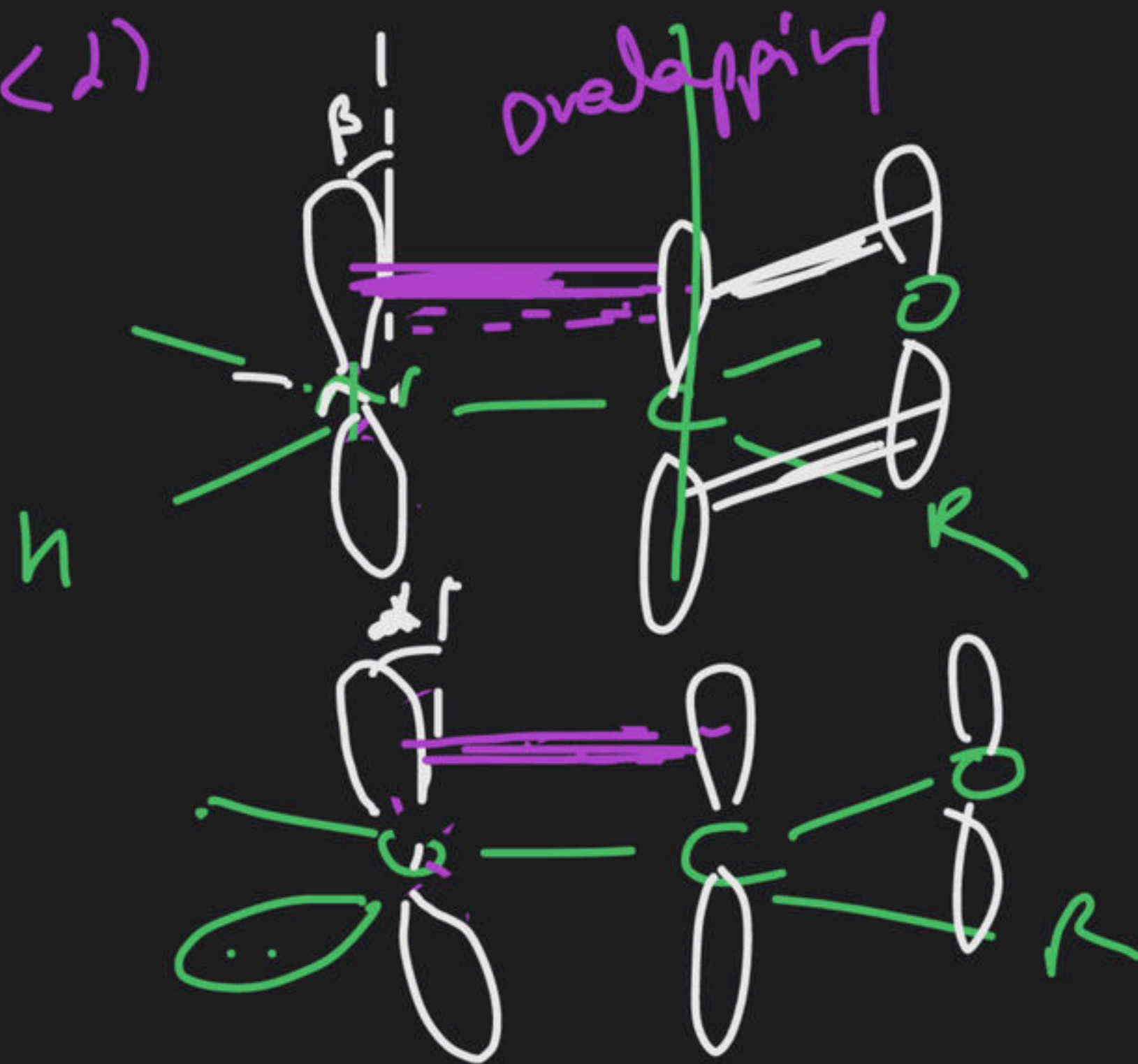
+m/+R effect order (Activating > mod. Activating)

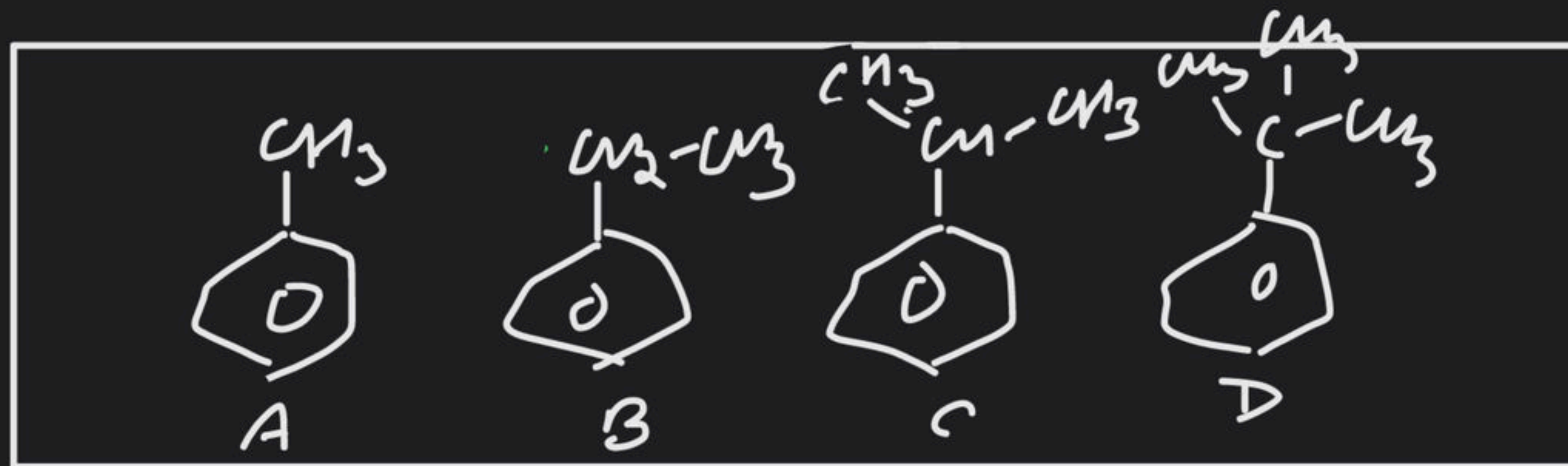


-m/-R order



$(\beta < 1)$






Methyl
Benzene
or
Toluene

Ethyl
Benzene

iso-Propyl
Benzene
or
Cumene

Tertiary
Butyl
Benzene


Nathan Baker

order of rate of electrophilic attack

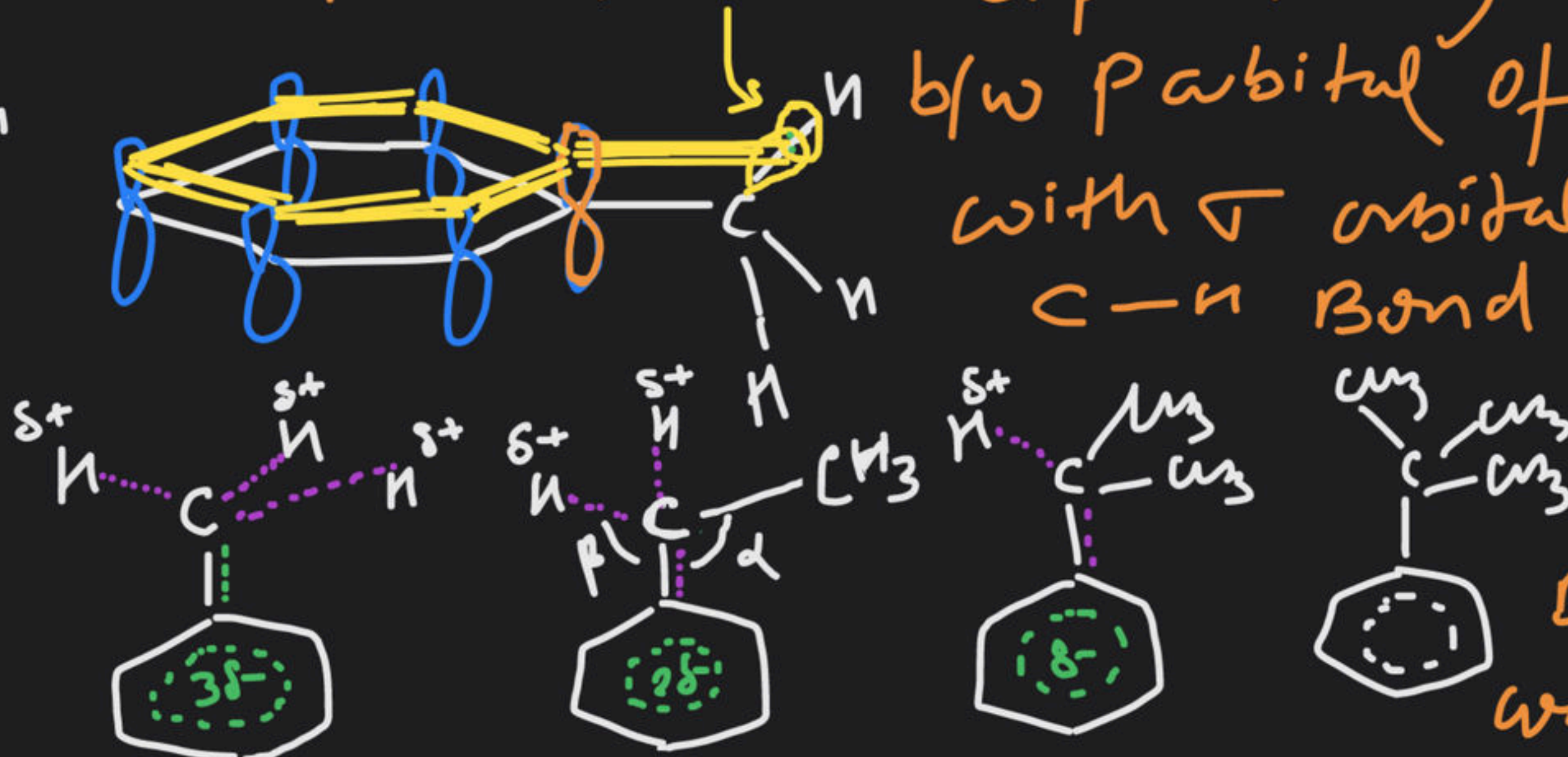
गलत है. $D > C > B > A$ (Acc to +I effect)

But Experimental observation shows that order is reverse

$A > B > C > D$ (Acc. to ? effect)

This order can be explained by assuming overlap b/w p orbital of benzene ring with σ orbital of Benzylic C-H Bond. Higher the no.

For "A"



of Benzylic C-H Bonds higher will be such

(Hyperconjugative Hybrid)

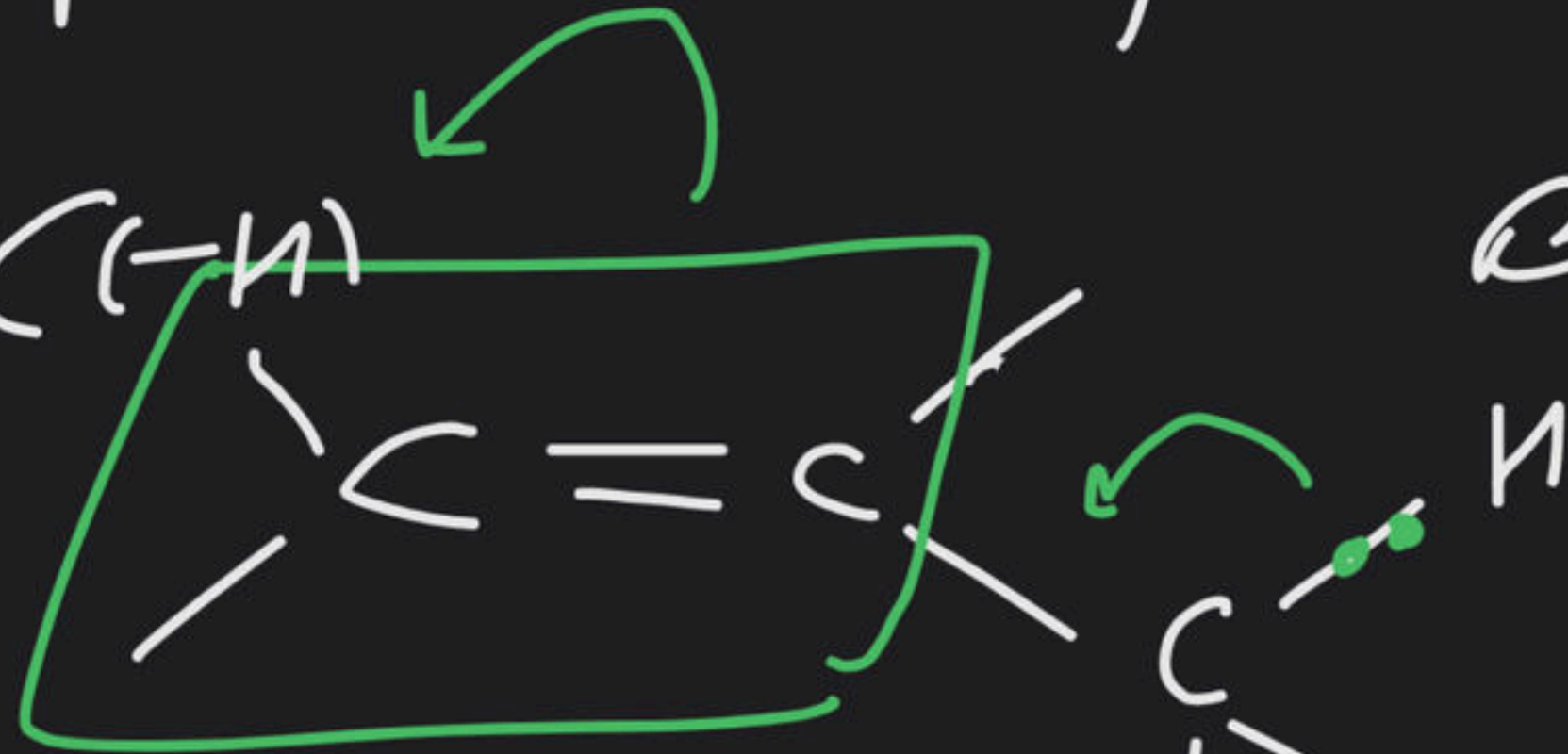
Overlapping & higher

will be electron density in Benzene. This phenomenon is known as Hyperconjugation.

Displacement of π electron density

due to σ C-H bond of directly

attached group is known as Hyperconjugation's effect of that group.



Note (i) Its permanent effect

(ii) H-effect is weaker than R effect

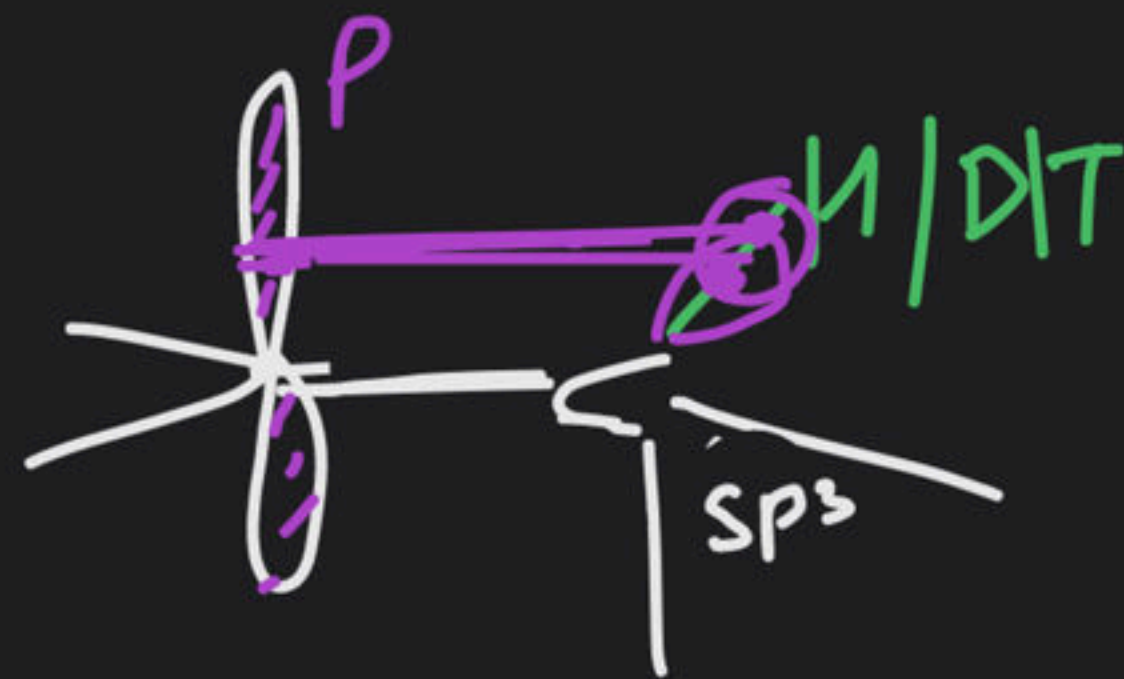
(iii) ————— stronger than I effect

(iv) effectiveness order

$$[R > H > I]$$

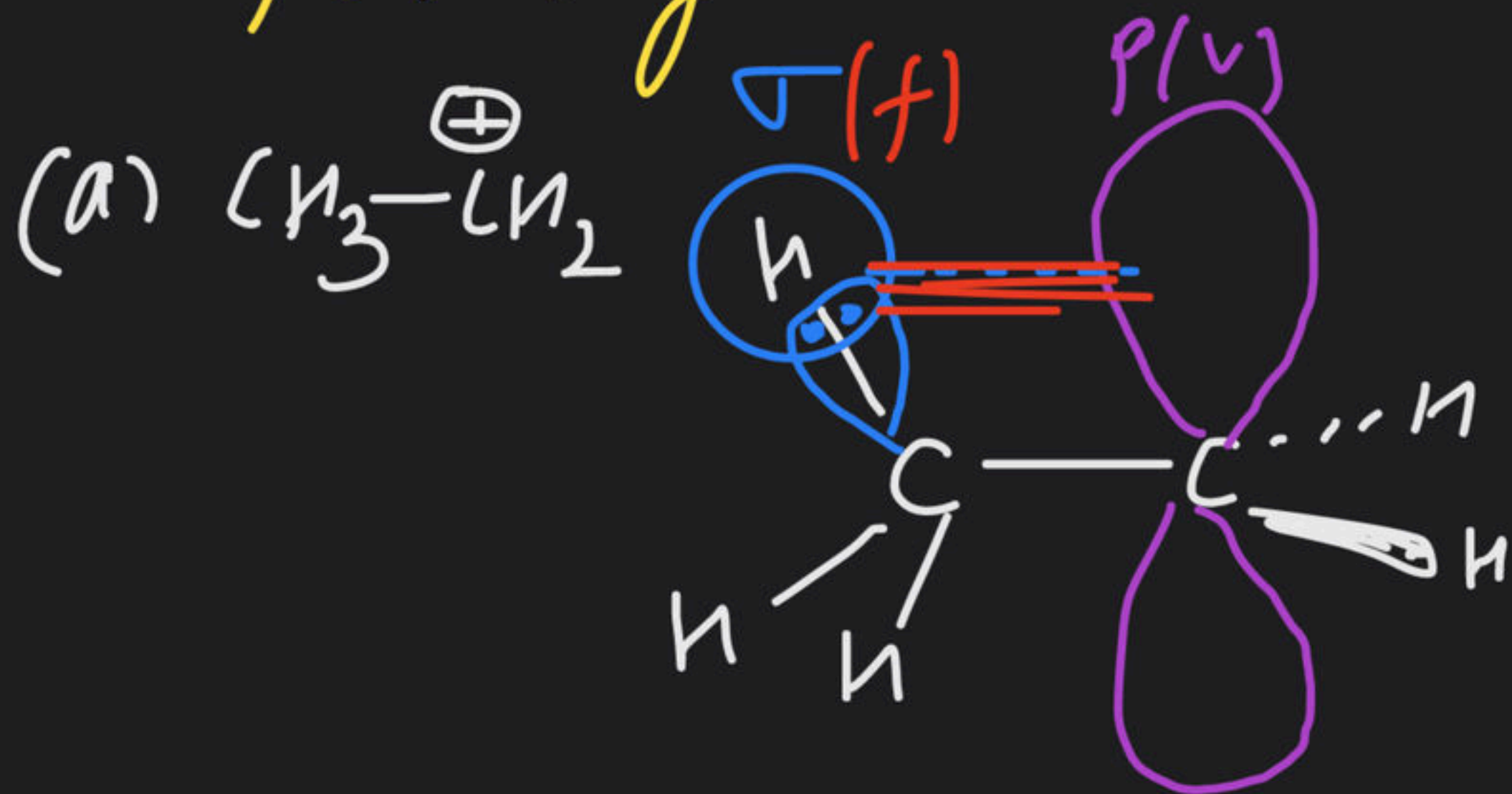
(v) distance independent effect

(vi) Condⁿ for H effect



(vii) η effect involves σ - p orbital overlapping

(ix) Orbital overlapping during hyperconjugation in following.



(x) π effect also depends on Bond Strength.

Type of π effect

(1) $+ \pi$ effect

Displacement of π e density away to directly attached alkyl group due to

its $\sigma(C-H)$



Bond is

known as its $+ \pi$ effect.

Ex: Propane

▲ 4 • Asked by Ananya

Sir mere isme 6 RS aa rhe h

