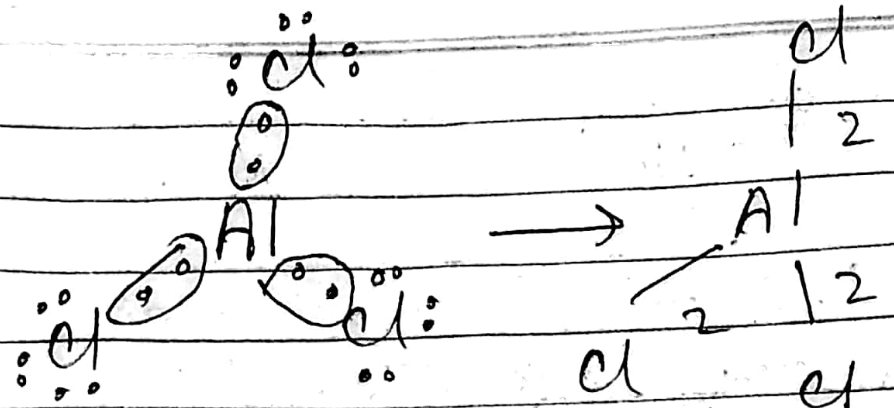


Here 6 electron on Al, hence acts as electrophile.

⇒ All acid acts as electrophiles

eg- $H-Cl \longrightarrow \underbrace{H^{\oplus}}_{E^{\oplus}} + Cl^{\ominus}$,

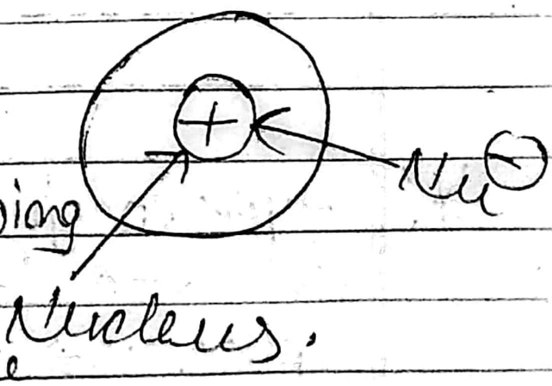
HNO_3, H_2SO_4, HBr, CO_2, SO_2
(non-metal oxide are acid).

⇒ All oxidising agent acts as electrophiles

eg- $KMnO_4$, $K_2Cr_2O_7$, H_2SO_4, HNO_3, CO_2 etc.

* Nucleophile :-

Nucleous love



⇒ Those species which having excess electron hence make bond by donate own electron pairs to other ~~elec~~ electron deficient species (electrophile)

i-e
$$E^{\oplus} + Nu^{\ominus} \longrightarrow E-Nu.$$

⇒ All Species having negative charge acts as ~~mee~~ nucleophile.
eg- $Cl^{\ominus}$, $H^{\ominus}$, $\overset{\ominus}{O}H$, $\overset{\ominus}{C}H_3$, etc.

⇒ All Species having lone pair electron acts as nucleophile.
eg- $H_2\ddot{O}$, $\ddot{N}H_3$, $H_2\ddot{S}$, $P\ddot{H}_3$ etc.

⇒ All species having π bond (=, ≡) acts as nucleophile.
example. $C=C$, $C\equiv C$, $C\equiv N$, 

⇒ All base acts as nucleophile.
Example - $NaOH$, $Mg(OH)_2$, $Ca(OH)_2$, KOH etc.

⇒ All reducing agent acts as nucleophile
example - $LiAlH_4$, $NaBH_4$

$$LiAlH_4 \downarrow LiAl^{+}H_3 + H^{-} \qquad NaBH_4 \downarrow NaBH_3^{+} + H^{-}$$

✱ Hyperconjugation :— OR, No bond resonance, OR, σ-π conjugation, OR, Baker-nathan process :⇒
For hyperconjugation must at least One α-H w.r.t double bond (sp^2 atom).

⇒ α- carbon:- carbon attach with Sp^2 atom / functional group.

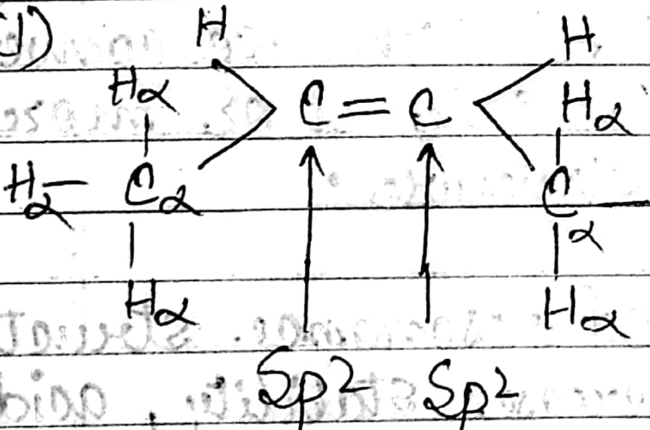
⇒ α-Hydrogen:- Hydrogen attach with α- carbon atom.

⇒ No. of hyperconjugation (H.C) =

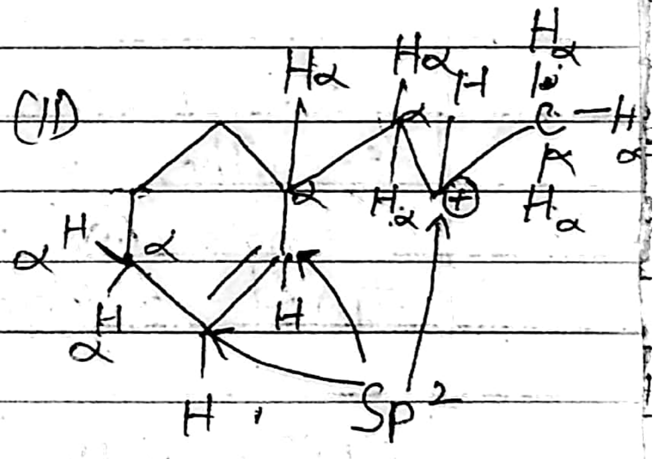
$\boxed{\text{no. of } \alpha H + 1}$

⇒ when no. of hyperconjugation increase then increase stability of compound, acidic strength, ka value, Pkb value and POH value but decrease basic strength, kb value, Pka value and PH value.

(I)



(II)



α-C = 2

α-H = 6

H.C = 6+1 = 7.

α-C = 4

α-H = 8

H.C = 8+1 = 9.

Here second compound is more stable than first compound because no. of hyperconjugation greater in second (9) than first (7).