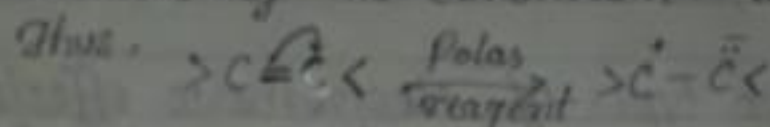


## ELECTROMERIC EFFECT

It is a temporary effect. It comes into play instantaneously at the demand of the attacking reagent and as soon as the attacking reagent is removed the original condition is restored.

When a compound having a multiple bond (double or triple) is approached by a charged reagent, the  $\pi$  electrons of the bonds are completely polarised, i.e. shifted towards  $\overset{+}{C}$  of the constituent atoms.

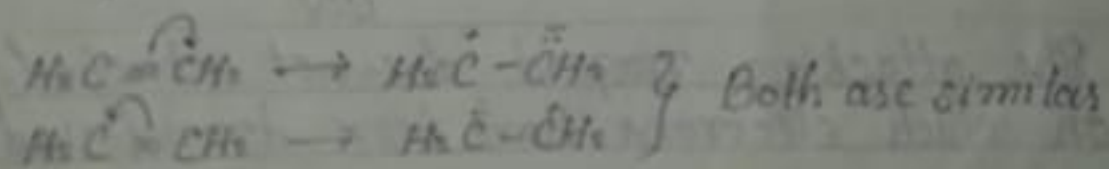


The effect involving the complete transfer of a shared pair of electrons to one of atoms joined by a multiple bond at the requirement of attacking reagent is known as electromeric effect. It is indicated by  $\curvearrowright$  and represented by curve arrow ( $\curvearrowright$ ) showing the shifting of electron pair.

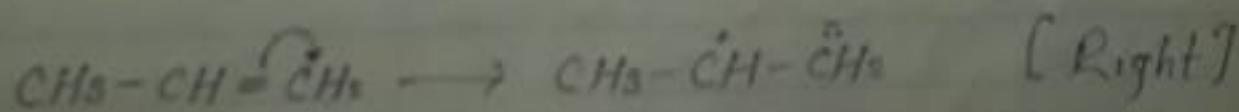
Direction of the shift of electron pair:

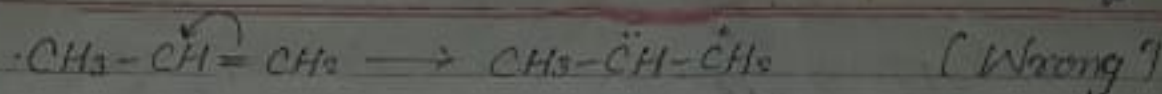
The direction of the shift of electron pair can be decided on the basis of following points:

(i) When the groups linked to a multiple bond are similar, the shift can occur in both directions. For example, in ethylene the shift can occur to any one of the carbon atoms.



(ii) When the dissimilar groups are linked on the two ends of the double bond, the shift is decided by the direction of Inductive effect. For example, in propylene the shift can be shown in the following ways:





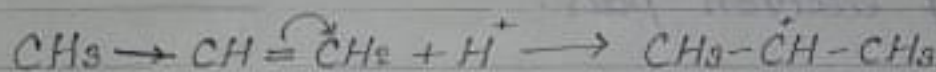
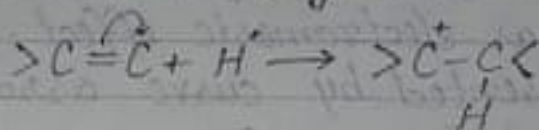
In the case of carbonyl group, the shift is always towards oxygen, i.e. more  $\delta^-$  atom.



The effect is of common occurrence during addition of polar reagent on  $>\text{C}=\text{C}<$  and  $>\text{C}=\text{O}$  bonds.

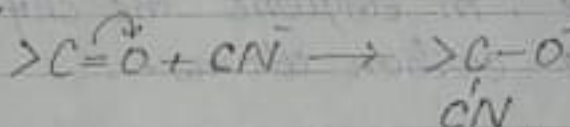
There are two types of electromeric effects:

(i) +E effect - When the transfer of electrons takes place towards the attacking reagent, the effect is called +E effect. e.g. the addition of acids to alkenes.



Propene

(ii) When the transfer of electrons take place away from the attacking reagent, the effect is called -E effect. For example, the addition of cyanide ion to carbonyl compounds.



The attacking reagent does not attached to that atom on which electrons have been transferred.