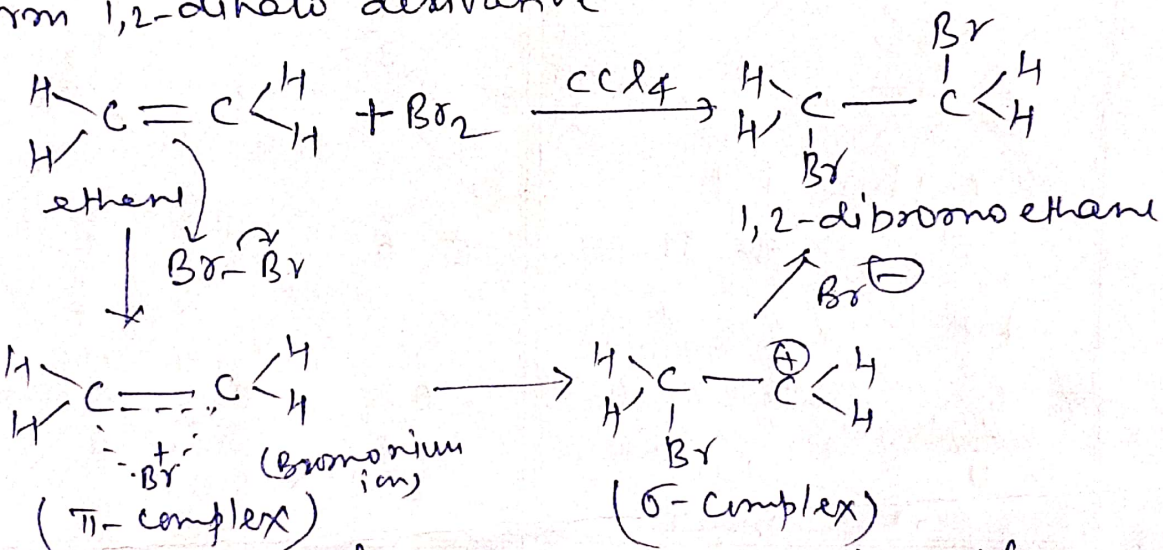
Electromeric effect :→ The polarizability (i.e, deformation) of an unsaturated system on the close approach of a reagent is called electromeric effect. When the reagent is removed without allowing the reaction to take place, the electronic system reverts to the original ground state of the molecule. So this is a temporary effect which operates in the substrate molecule on the demand of the reagent.

This effect causes complete transfer of the loose π-electrons from one atom to another causing one end +vely charged & other -vely charged and the reagent to attack as shown below: -

$$>C=C< \underset{\text{Reagent removed}}{\overset{\text{Reagent}}{\rightleftharpoons}} >\overset{\oplus}{C}-\overset{\ominus}{C}<$$

e.g. chlorination/Bromination of an alkene to form 1,2-dihalo derivative.

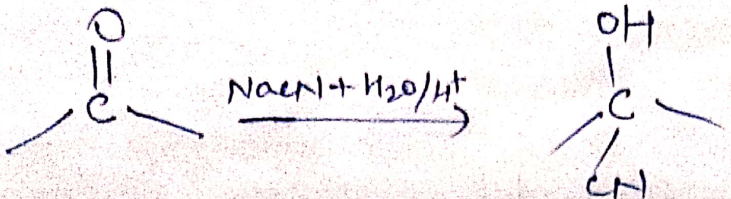


Due to electromeric effect complete transfer of π-electrons take place from one carbon to another through cyclic halonium ion, which combines with halide ion to form the product.

When the multiple bond is between two dissimilar atoms, the shift of electrons take place towards the more electronegative of the two. e.g, Addition of reagents →

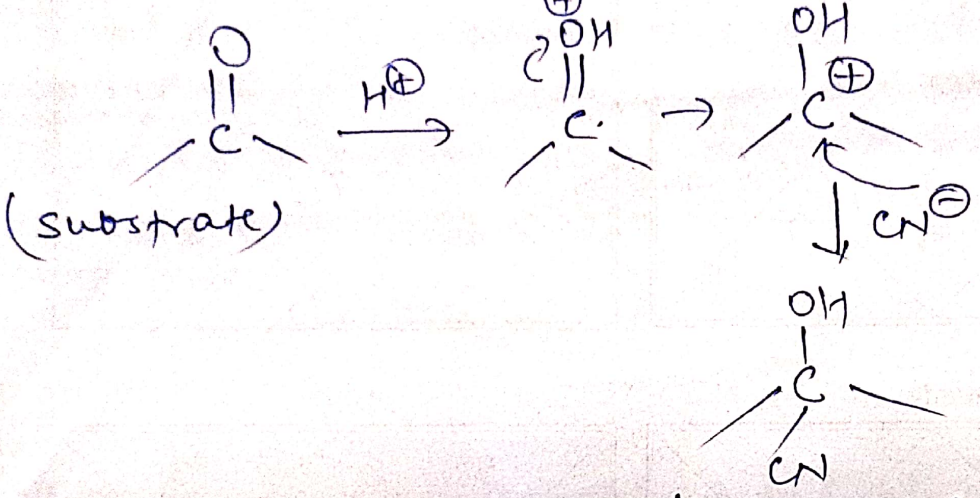
→ On carbonyl compound, like aldehydes | ketones.

e.g. Addition of HCN on $>C=O$ may be shown as under :-



cyanohydrin.

Mech. $NaCN + H_2O \rightarrow HCN$ (produced in situ)



(substrate)

(Product)

Addition of Grignard reagent, alcohol, $NaHSO_3$ --- etc also on carbonyl compounds take place, in this way.

Thus electromeric effect is strong effect than inductive effect, since in this effect the loose π-electrons shift completely thereby producing full charge (⊕ & ⊖) on carbon atoms, while in I-effect the charge developed on carbon joined to the substituent is small shown as δ^+ or δ^-.