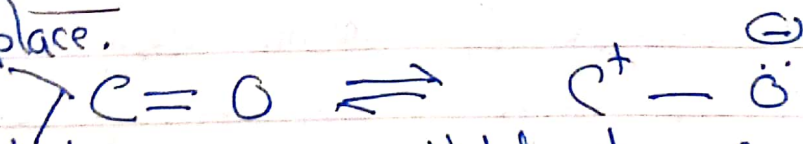


-E

ELECTROMERIC EFFECT.

It is a temporary effect is called upon into play only on demand of the attacking reagent. This temporary effect is possible only in the compounds containing multiple bond i.e. $C=O$, $C=C$, $C\equiv N$ etc or containing an atom with a lone pair of electron adjacent to a multiple bond. Thus this effect involves the displacement of π electrons of multi bond or π electron of an atom.

Consider for example, a carbonyl group carbon, attached to oxygen, through a sigma and π bond. All the σ and π electrons are shared by both the atoms. Now, when a reagent i.e. HCN is added to carbonyl compound a complete polarisation of π electrons take place.

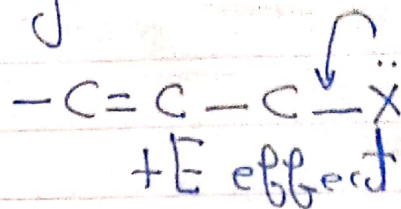
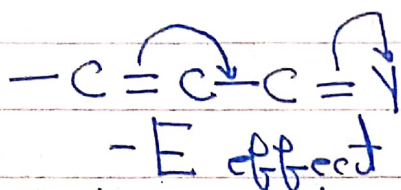


The π electrons are completely transformed to the more electronegative oxygen. Thus a complete separation of +ve and -ve charges takes place within the molecule. This transfer of electrons

(3)

or separation of charges. due to electrostatic effect vanishes as soon as the attacking reagent is removed from the reaction mixture.

The electrostatic effect is represented by the symbols like inductive, it is also $-E$, when the electrons are displaced towards the atom. and $+E$ when the displacement of electron is away from the atom.



Like inductive effect electrostatic effect always aids the reaction. However when both inductive and electrostatic effect are operating in the same molecule it is the electrostatic effect which is more prominent and overpowers. Reason being simple it involves loosely held π -electron.

~~Characteristics of electrostatic effect:~~

- (i) It is temporary effect and is called into play on demand of the attacking reagent.
- (ii) It involves the displacement of π electrons only.
- (iii) σ electrons completely leave their original atomic orbitals.