TITLE

Date : / /

Mo Tu We Th Fr Sa Su

(1) $\sigma \rightarrow \sigma^*$ transition :-

It is a high energy process as σ-bonds are generally strong bonds.

Saturated hydrocarbons like methane propane etc show such type of transition.

(2) $n \rightarrow \sigma^*$ transition :-

Such type of transition takes place in Saturated Compound which contain a hetero atom such as Cl, N, O.

eg → Saturated halide, alcohol, ether, aldehyde, Ketone, amine etc.

(3) $\pi \rightarrow \pi^*$ transition :-

Such type of transition occurs in the unsaturated hydrocarbon contain double bond, tripple bond and also in aromatic.

eg → Alkene, Alkynes, Carbonyl compound, cyanide, etc

TITLE

Date : / /

Mo Tu We Th Fr Sa Su

(4) $n \rightarrow \pi^*$ transition :-

Such type of transition occurs in the hetero atom gets excited to π^* antibonding orbital.

Saturated aldehyde, saturated ketones show both types of transitions—

(a) low energy, $n \rightarrow \pi^*$

(b) High energy, $\pi \rightarrow \pi^*$.

Selection Rule—

(1) The transition between s to p-orbital and p-q orbitals are allowed transition. ($\Delta l = \pm 1$)

(2) The transition which involves a change in the spin quantum no. of an electron during the transition do not occur. Thus singlet - triplet transitions are forbidden.

(3) The transition between orbitals of different symmetry do not occur eg $n \rightarrow \pi^*$ transitions are forbidden

(4) The transition from S to S orbital and from p to p orbital are forbidden. ($\Delta l = 0$).

Neelgagan

TITLE

Date : / /

Mo Tu We Th Fr Sa Su

* Chromophores :-

chroma = colour.

All those compounds which absorb light of wave length (λ) between 400 - 800 m.mm appears coloured to the human eye. Thus a chromo-phore are considered as any system which is responsible for imparting colour to the compound.

The chromophoric groups are -

$>C=C<$, $-C\equiv N$, $>C=O$, $-N=N-$, $-N=O$

Simple chromophores like ethylene, acetylene undergoes $\pi - \pi^*$ transition in the shorter wave length (λ).

compound containing atoms as $-\ddot{O}-$, $-\ddot{S}-$, $>\ddot{N}:$ show absorption due to $n - \sigma^*$ transition.

$>C=C<$	$\lambda_{max} = 170$ m.mm.
$-C\equiv C-$	$\lambda_{max} = 196$ m.mm.
$>C=O$	$\lambda_{max} = 220$ m.mm.

Neelgagan