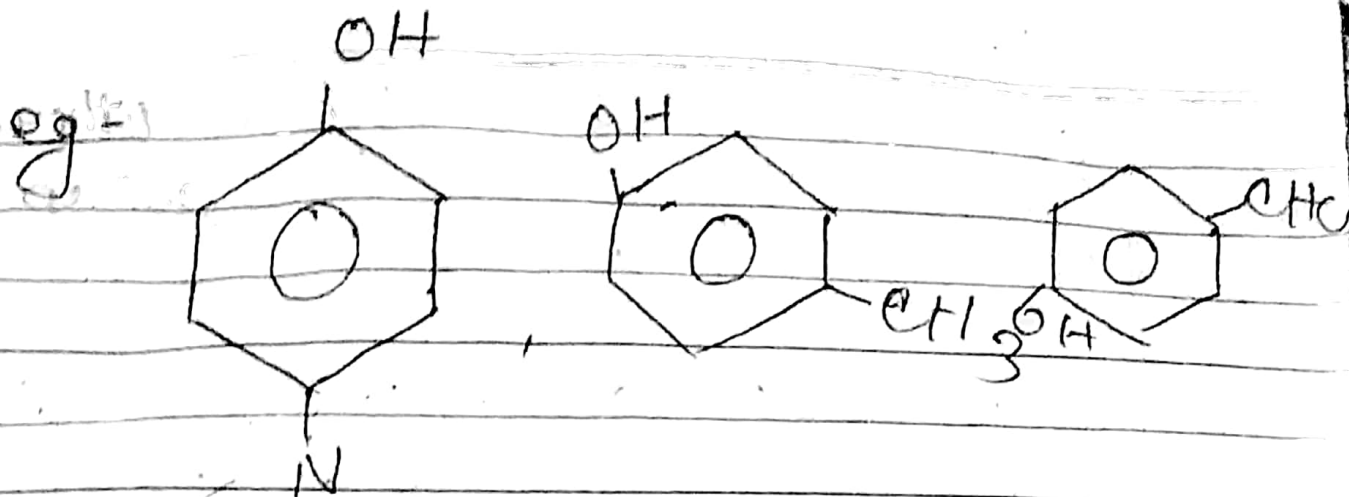
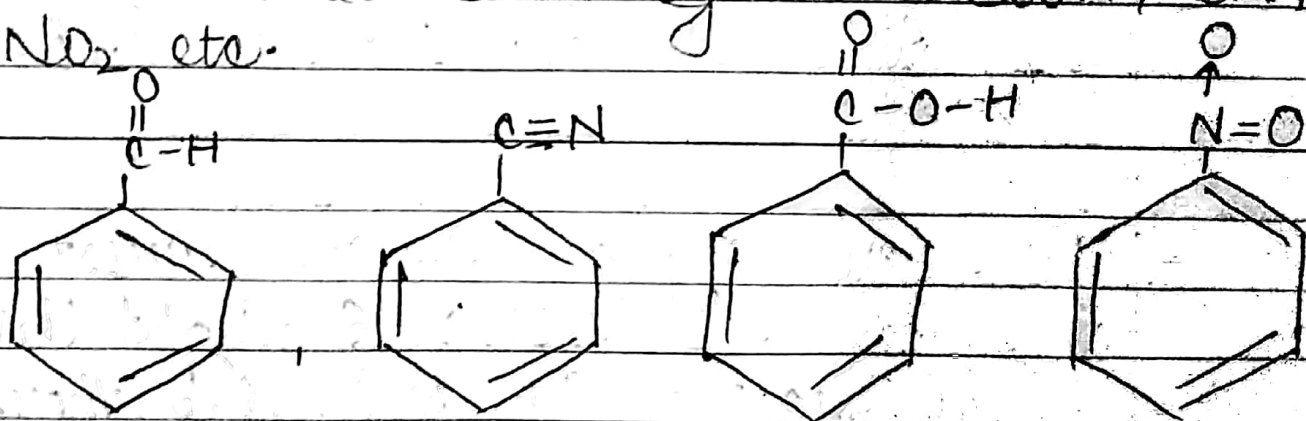




* Electrom with drawing group (EWG) or Deactivating group or, meta directing or, pulling group :- These species which take electron from other hence increase acidic nature, K_a value, $-P_{kb}$ value, P_{OH} value but decrease basic nature, K_b value, P_{Ka} value & P_H value.

* When 'A' show multiple bond ($=, \equiv$) them called EWG. eg - $CHO, COOH, CN, NO_2$ etc.



* Here attack of electrophile favour at meta position hence called meta directing group

* It takes electron from other hence called deactivating group or pulling group.

* Bond breaking or cleavage or fission:- Bond breaking occurs by two methods

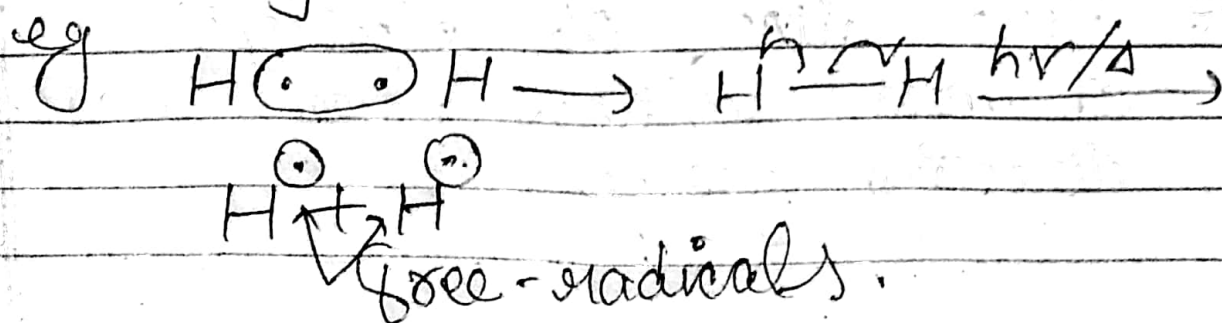
(a) Homolytic fission (b) Heterolytic fission

(a) Homolytic fission $\Rightarrow$

When bonded electrons divide Symmetrical or equally between bonded atoms.

* It occurs in saturated compound 90% & 10% in unsaturated compound. Motion of one electron indicated by single headed arrow or fishhook $\curvearrowright$.

* For homolytic fission must be presence of heat (Δ) Sunlight ($h\nu$), metal (Na, Zn, Cu etc), dry ether, electricity (current).



(b) Heterolytic Dission $\Rightarrow$
different break

Defbberent

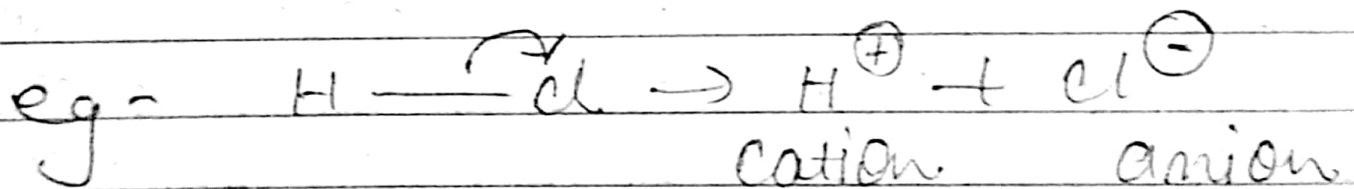
break

when bonded electrons
divided unsymmetrically or unequally
between bonded atoms.

* It occurs in unsaturated compound (=, $\equiv$) 90% & 10% in saturated compound.

* motion of two electrons indicated by double bonded arrow $\curvearrowright$.

* After breaking of bond ions are formed $(+q, -q)$.



cation.

anion

* Inductive effect (I effect): $\Rightarrow$

It is a permanent effect because strong sigma bond that in saturated compound.

* This effect occurs up to 3 carbon from the functional group.

* Partial positive & negative charge indicated by δ^+ & δ^- .