

A. Type of halogen atom :- as Fluoro, chloro, bromo, Iodo.

B. Number of halogen atoms :- as mono, di, tri.

C. Nature of Carbon atom :- as Primary ( $1^\circ$ ), Secondary ( $2^\circ$ ), Tertiary ( $3^\circ$ ).

- Classification on the basis of type of hybridization of Carbon bonded to the halogen atom :-

↓ Compounds containing  $sp^3$  hybridised Carbon :-

(a) Haloalkanes or alkyl halides ( $RX$ ) :-

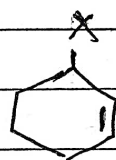
In these halides the halogen atom is bonded to an alkyl group ( $R$ ).

If  $R$  is alicyclic then the halide is called cycloalkyl halide or halocycloalkane.

(b) Allylic halide :-

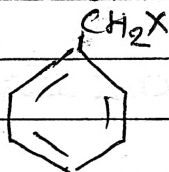
In these halides, the halogen is bonded to an  $sp^3$  carbon atom next to the Carbon-Carbon double bond. The Carbon atom next to the Carbon-Carbon

double bond is called allylic carbon.



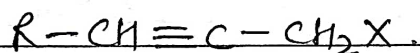
c) Benzylic halide:-

In these halides the halogen atom is bonded to an  $sp^3$  carbon atom next to an aromatic ring



d) Propargyl halides:-

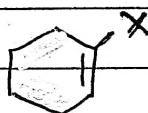
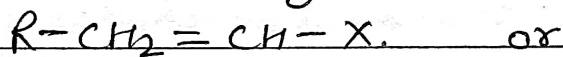
In these halides, the halogen atom is bonded to a  $sp^3$  carbon atom next to a carbon-carbon triple bond.



2. Compounds Containing  $sp^2$  Carbon.

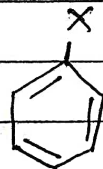
a) Vinylic halide:

In these halides the halogen atom is bonded to an  $sp^2$  carbon (vinylic carbon)



b) Aryl halides:-

In these halides, the halogen atom is bonded to a  $sp^2$  carbon of an aromatic ring. These aromatic halogen compounds are also called haloarenes.



3. Compound containing  $sp$  Carbon:-

In these halogens the halogen atom is directly bonded to one of the carbon atoms of a triple bond

