REACTION OF BENZENE

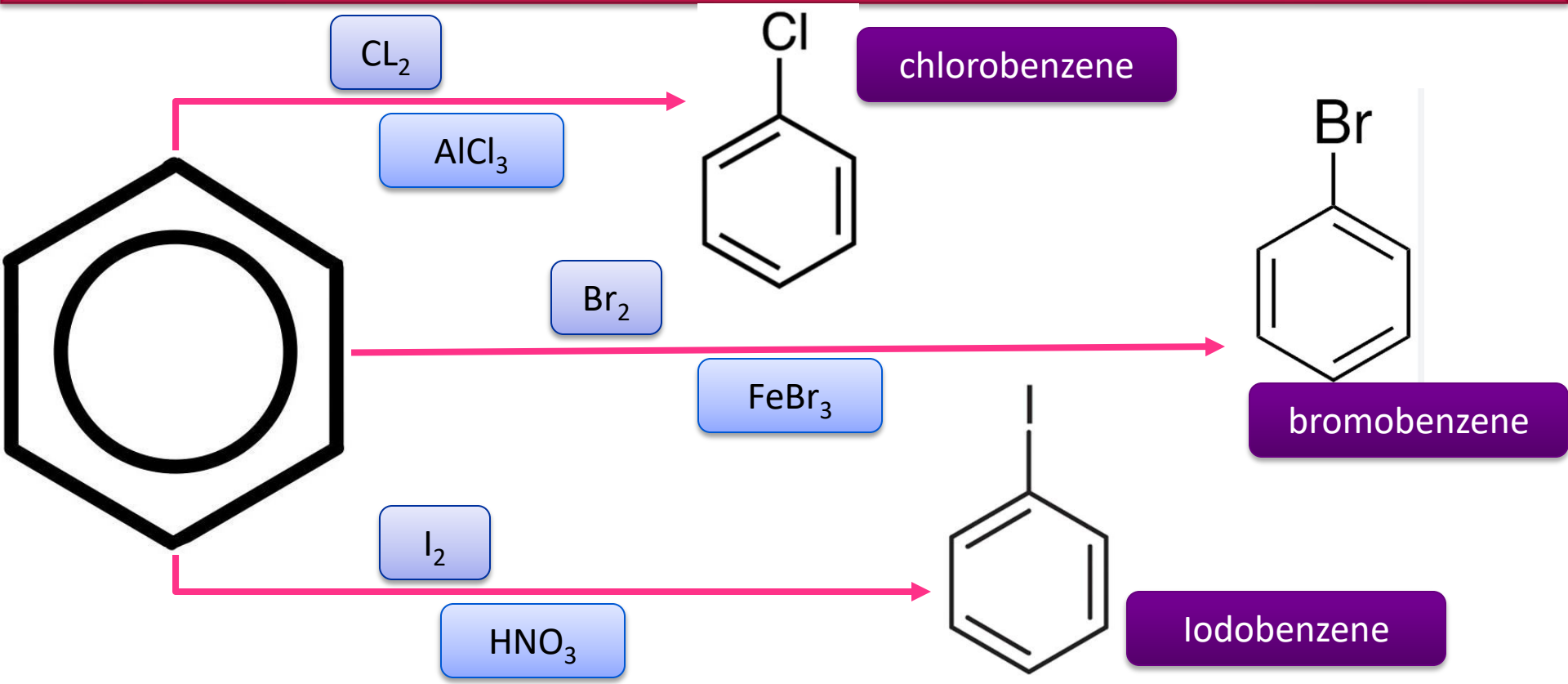
- NITRATION
- SULPHONATION
- HALOGENATION
- FRIDEL CRAFT ALKYLATION & ACYLATION

HALOGENATION

- Halogenation is a process in which one hydrogen is substituted by halogen atom like Cl, Br, I
- Fluorine {F} is not used because it is highly electronegative element
- Generally Cl is introduced – chlorination
- When Br is introduced – Bromination
- Iodine [I] is introduced- iodination

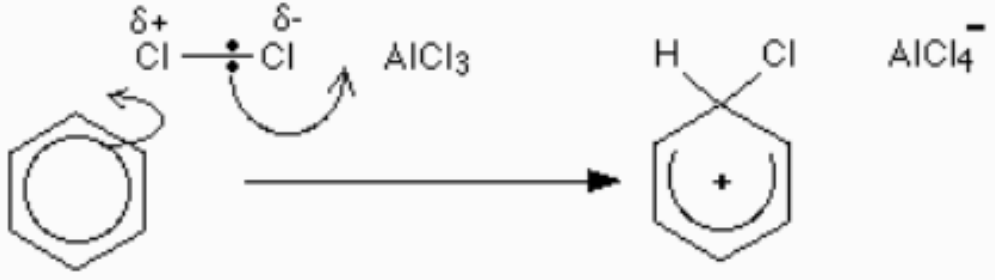
DEPTH OF BIOLOGY

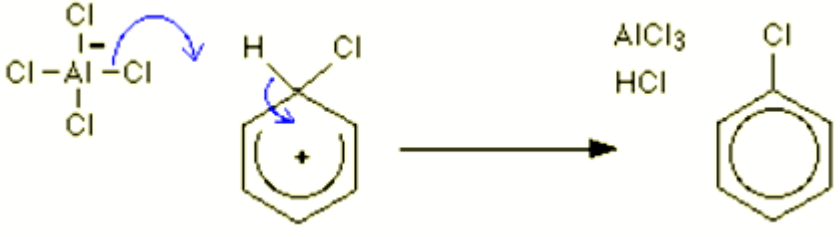
HALOGENATION



MECHANISM

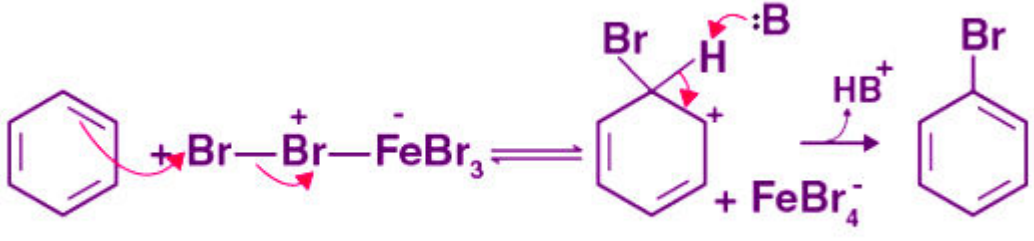
- Cl – Cl bond is easily breakable, so the bond breaks giving partial negative and positive charges to chlorine molecules
- In $AlCl_3$ Al carries negative charge while Cl carries positive charge so the Cl with partial negative charge attacks and forms $AlCl_4$
- While other chlorine molecule attaches to benzene and forms nitrobenzene


δ+
Cl
δ-
Cl
AlCl3
H
Cl
AlCl4−


Cl
Cl
Al
Cl
Cl
H
Cl
AlCl3
HCl
Cl

MECHANISM

- Same mechanism is followed for bromine and iodine



APPLICATION

- One common application is in the production of halogenated solvents, which are used as cleaning agents, degreasers, and as intermediates in chemical synthesis.
- Halogenated benzene compounds are also used in the manufacturing of pharmaceuticals, dyes, and agrochemicals.
- Additionally, certain halogenated benzene derivatives have applications in the field of organic electronics and materials science