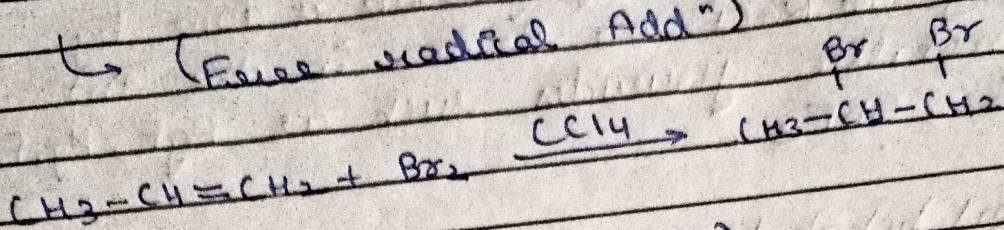
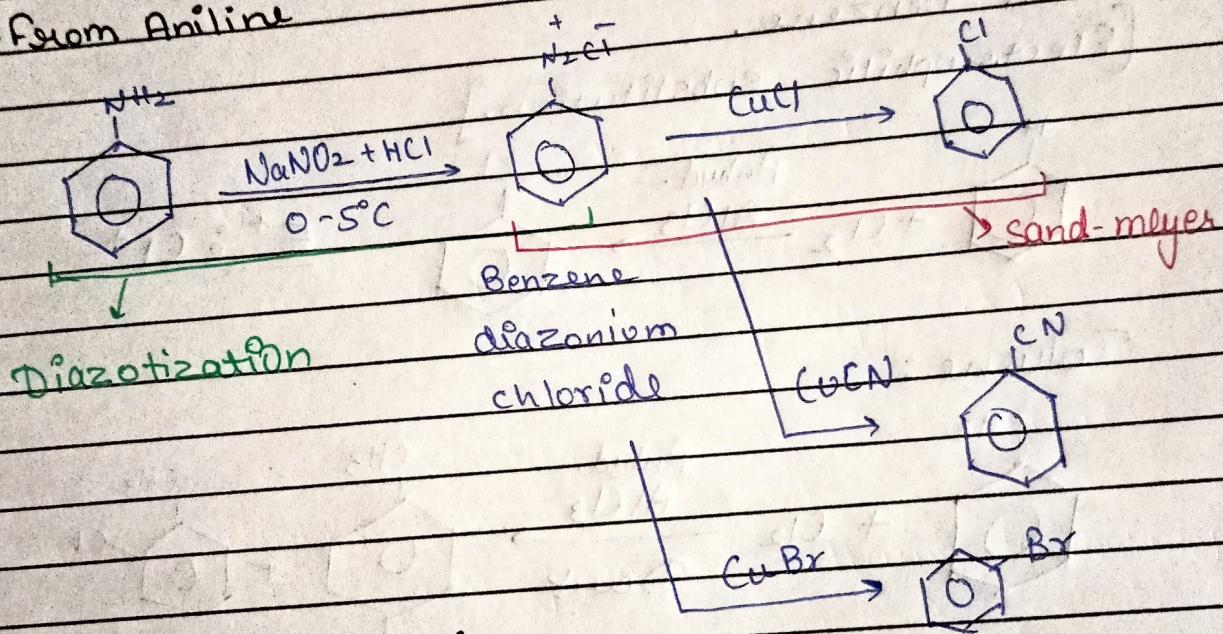


↳ (Free radical Add.)



↳ (Test for unsaturation)

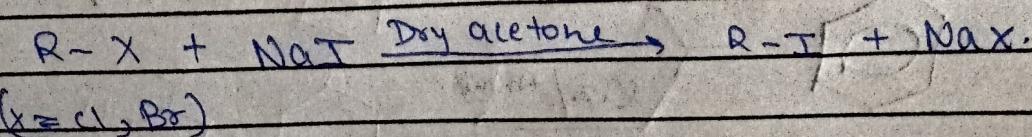
→ From Aniline



- Halogen Exchange. rxn:

Finkelstein Rxn.

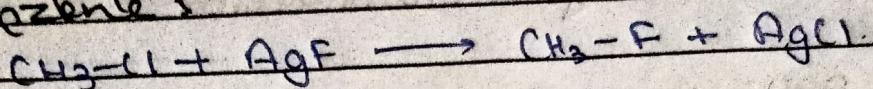
- It is used to prepare alkyl iodide from R-Cl or R-Br in NaI in dry acetone
- NaI or NaBr thus formed \Rightarrow precipitate. In dry acetone this facilitates the forward rxn acc. to Le-Châtelier's principle.



Suzuki Rxn.

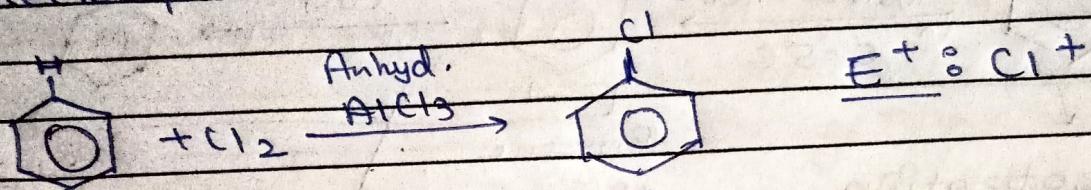
→ The synthesis of alkyl fluorides is done by heating $\text{R}-\text{Cl}$ or $\text{R}-\text{Br}$ in the tnq of metallic fluorides such as AgF , Mg_2F_3 , CaF_2 , SbF_3

→ From benzene:

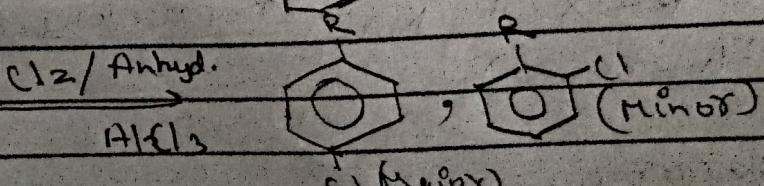
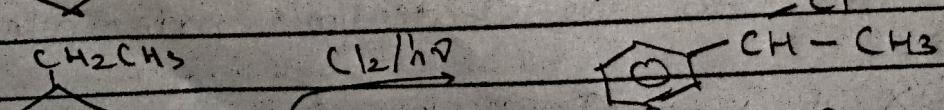
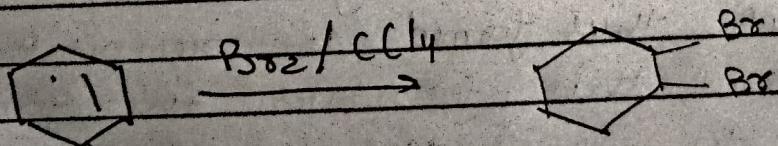
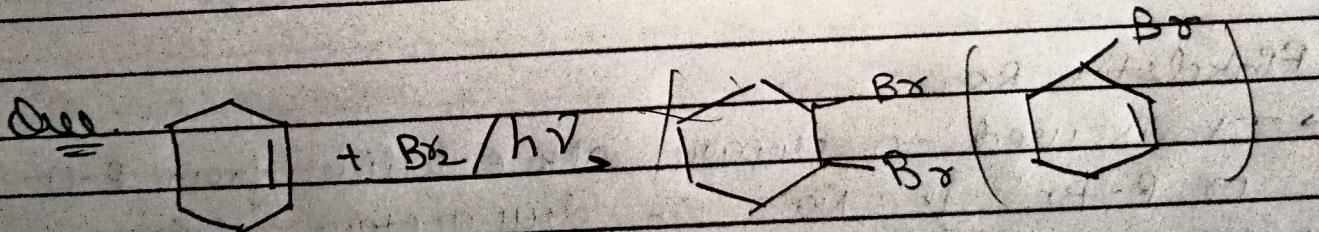
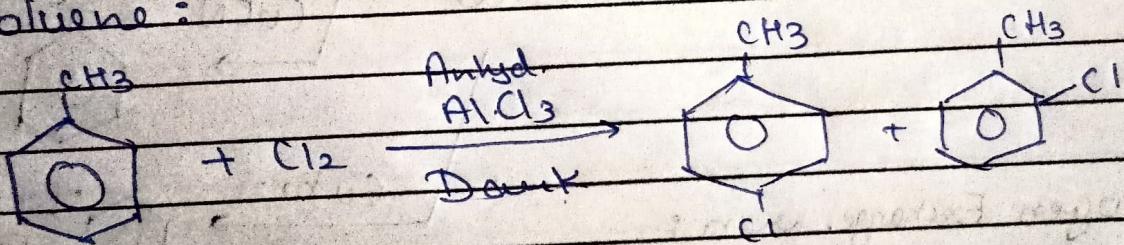


→ From benzene.

[Electrophilic substitution.]



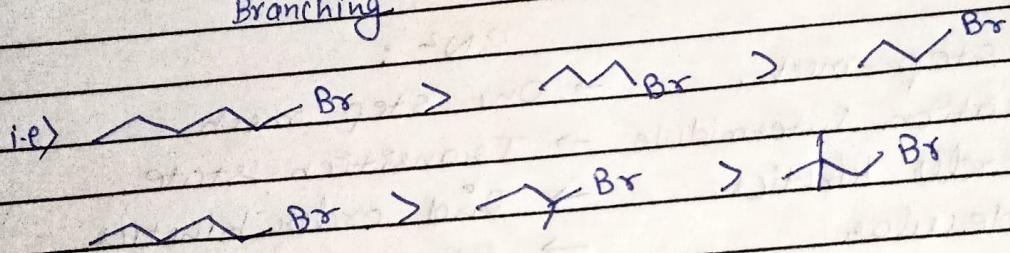
Toluene:



Physical properties:

B.P. :

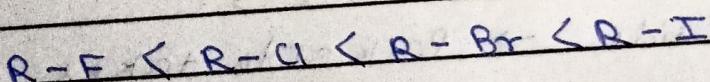
- \propto Intermolecular forces of attraction
- \propto Van der waal forces.
- \propto Molecular Mass
- \propto Surface Area
- \propto Branching



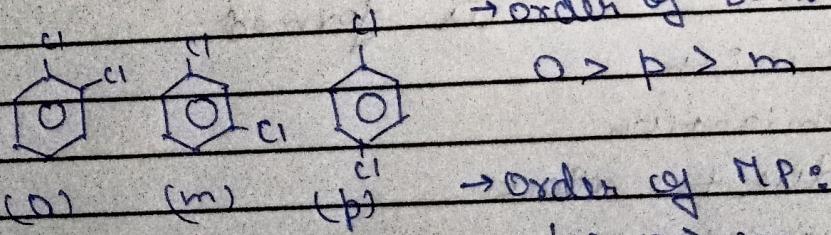
Solubility:

- These are insoluble in water (sparingly soluble)
- New bonds formed are not very strong.

Density: $\frac{\text{M}}{\sqrt{V}} \rightarrow$ Ions of lanthanide contraction.
 \rightarrow Not very much



Dichlorobenzene



Chemical properties:

- 1) Nucleophilic substitution Rxn.
- 2) Elimination Rxn.
- 3) Rxn with metal.

Nucleophilic substitution.

$\xrightarrow{\text{SN}^1}$
 $\xrightarrow{\text{SN}^2}$

- One Nu^- substitutes another

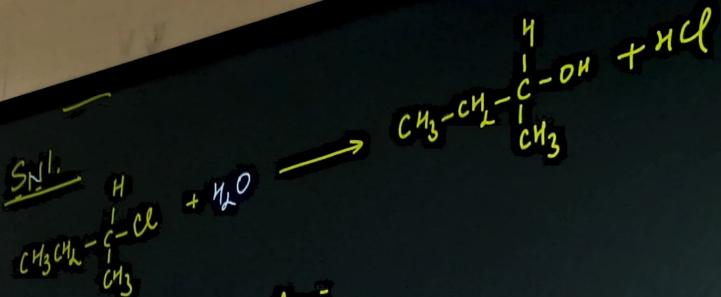
$\xrightarrow{\text{SN}^1}$:

- Two step mech.
- Carbocation intermediate
- 1st order kinetics.
- Unimolecular
- Polar protic solvent is used
- Solvent plays the role of nucleophile
- order of reactivity:
 $3^\circ > 2^\circ > 1^\circ$
- Front & back side attack takes place
- Racemic mix. is formed

$\xrightarrow{\text{SN}^2}$:

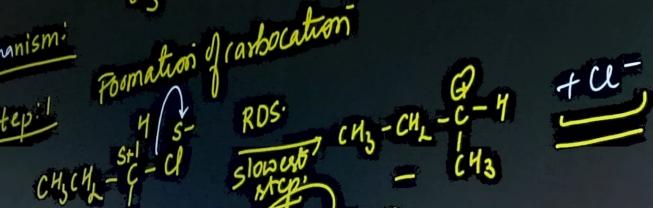
- One step mech
- Transition state
- 2nd order kinetics
- Bimolecular
- Polar Aprotic solvent is used
- Naked nucleophile is used.
- order of reactivity:
 $1^\circ > 2^\circ > 3^\circ$
- Back side takes place.
- Inverted product is formed

(Inversion with partial racemisation takes place due to attack of nucleophile takes place from back side before the formation of C^\oplus giving more inverted product)



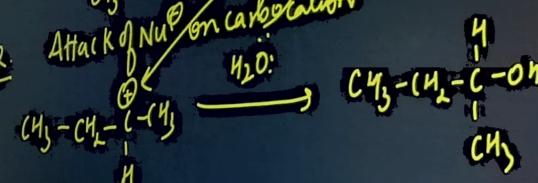
Mechanism:

Step 1



Step 2

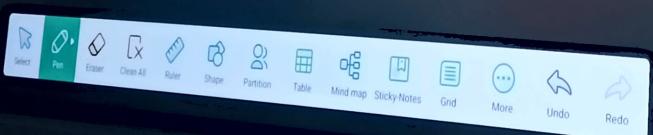
Attack of Nu^+ on carbocation

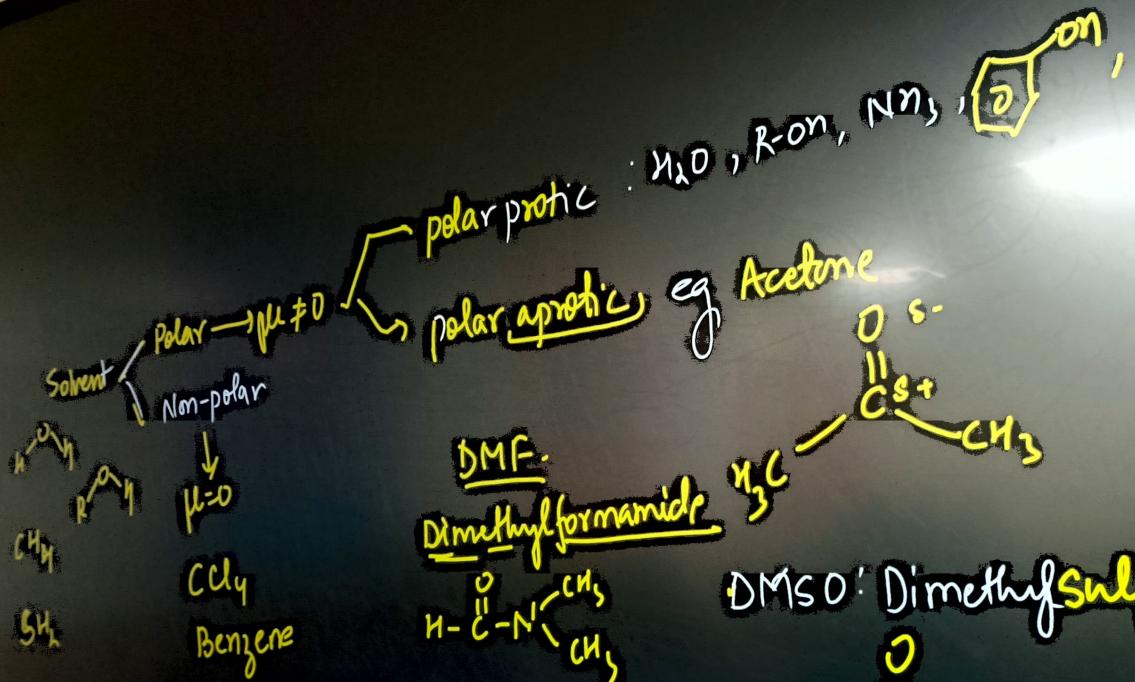


Polar protic solvent

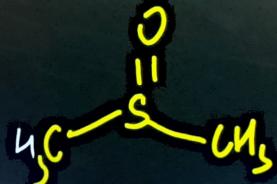
Rate Law:
 $\text{Rate} = k[\text{Sub}][\text{Nu}]$
 Order = 2

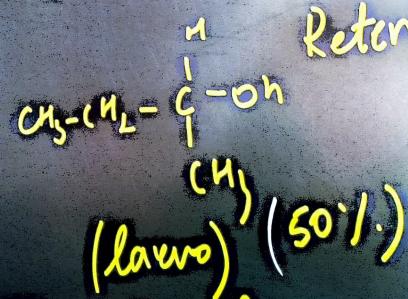
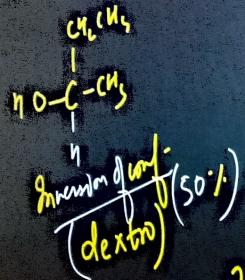
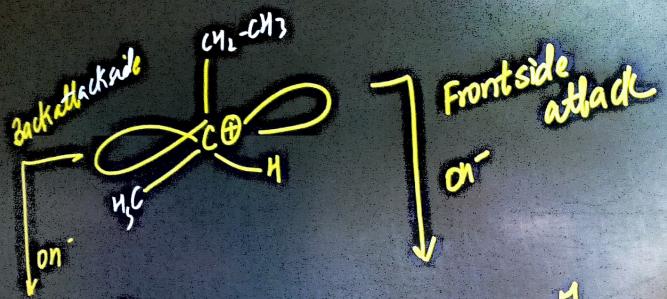
Rate = $k[\text{Sub}]$
 Order = 1





$\text{CH}_3\text{C}(=\text{O})\text{SO}_2\text{CH}_3$
DMso: Dimethyl Sulphoxide



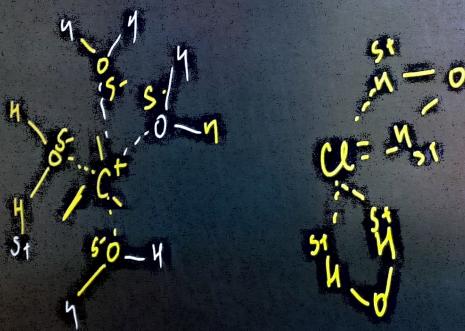


Retention of conf.

Racemic Mix \rightarrow machine



Polar protic solvent (H_2O) stabilises the carbocation as well as the Li^+ .



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