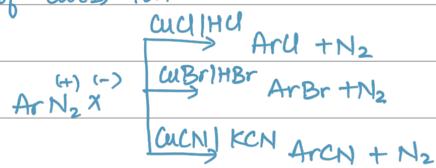


Organic Reactions

[1] SANDMAYER'S REACTION:

$\text{Cl}_2, \text{Br}_2 \text{ and } \text{CN}^- \rightarrow$ can be easily introduced in the benzene ring of benzene diazonium salt in presence of $\text{Cu}^{(\text{I})}$ ion.



[2] GATTERMAN REACTION:

Chlorine /Bromine can be introduced in the benzene ring by treating diazonium salt solution with corresponding halogen acid in the presence of Cu powder.



* [Yield in Sandmeyer's Run > Gatterman's Run]

[3] BALZ-SCHIMMANN REACTION:



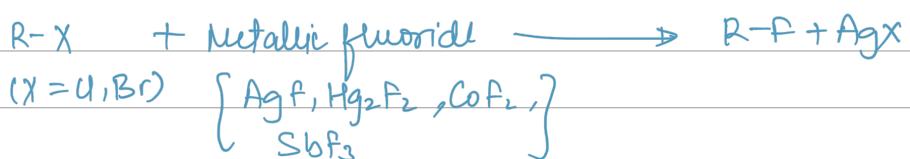
[4.] FINKELSTEIN REACTION:

Alkyl iodides preparation



[This run. can be favoured in forward dirn. by precipitating NaX with dry acetone.
Acc. to Le Chatlier's Principle]

[5.] SWARTZ REACTION:



Finkelstein and Swartz Run. \Rightarrow Halogen exchange run.

[6.] WURTZ REACTION



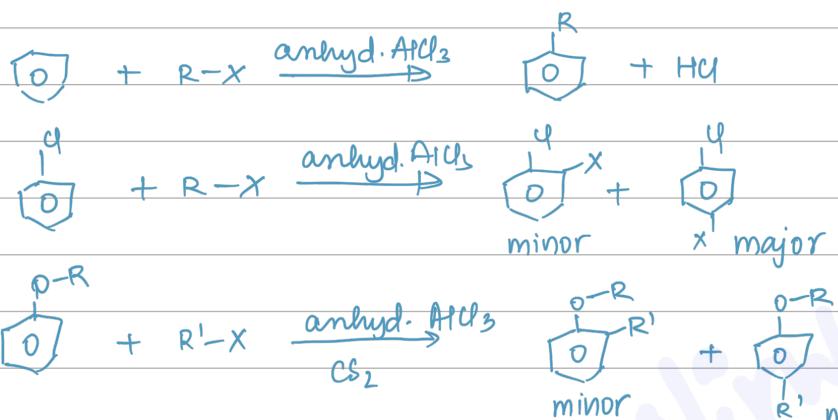
[7.] WURTZ - FITTING RXN:



[8.] FITTING REACTION:



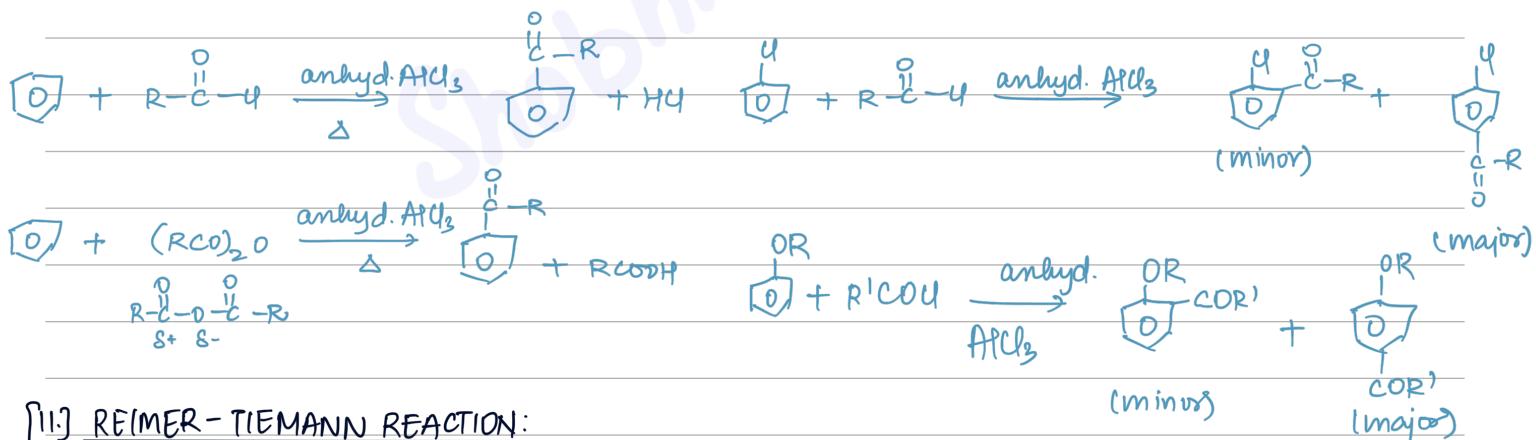
[9.] FRIEDEL CRAFTS ALKYLATION:



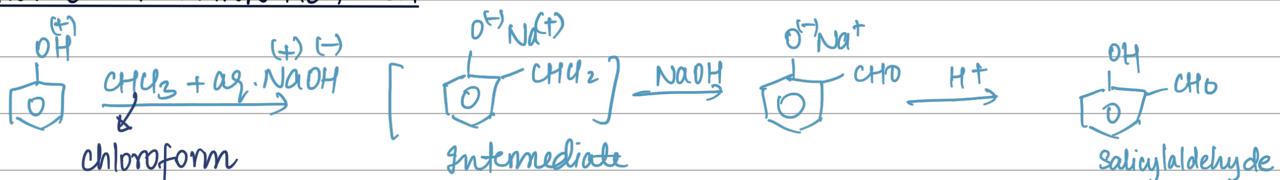
Note: Ar. carb. acid $\begin{array}{c} \text{COOH} \\ | \\ \text{O} \end{array}$

do not undergo Friedel-Crafts reaction; $\begin{array}{c} \text{O} \\ || \\ \text{C} \end{array}$ — deactivating group
and AlCl_3 (Lewis Acid) gets bonded to carboxyl group

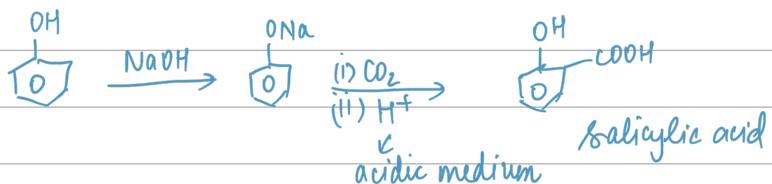
[10.] FRIEDEL CRAFTS ACYLATION REACTION:



[11.] REIMER - TIEMANN REACTION:

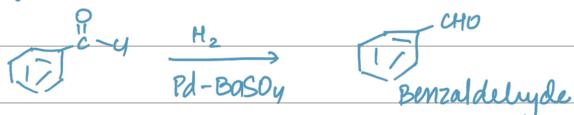


[12.] KOLBE'S REACTION:

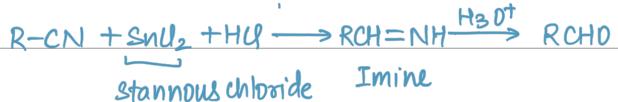


[13.] ROSEN MUND REACTION:

Acyl chloride



[14.] STEPHEN RXN:

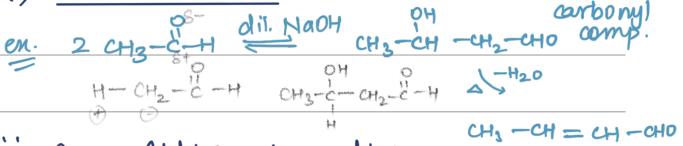


[21.] ADDOL REACTION:

Add. & ket. $\alpha\text{-H} \rightarrow$ dilute alkali $\rightarrow \beta\text{-hydroxy aldehydes/ketones (aldo) (ketol)}$



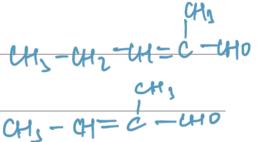
(i) Addol Condensation: \rightarrow addol & ketol $- \text{H}_2\text{O} \rightarrow$ Saturated carbonyl comp.



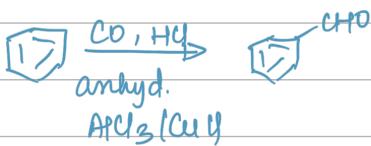
(iii) Cross Aldol Condensation:

diff. aldehydes & ketones!

4 products

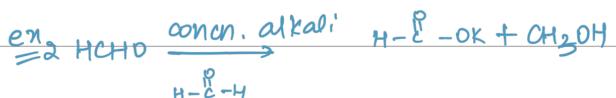


[16.] GATTERMAN-KOCH REACTION:

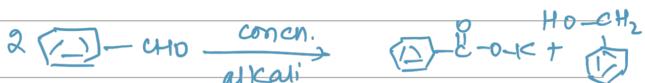
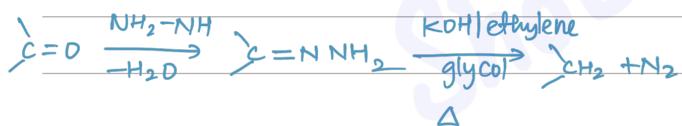


[22.] CANNIZARO RXN.: aldehydes $\neq \alpha\text{H}$
undergo self oxidation and self reduction

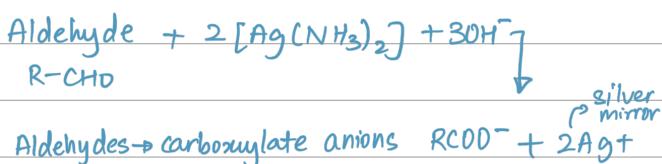
* concn. alkali



[18.] WOLF-KISHNER REDUCTION:

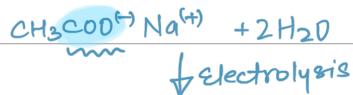


[19.] TOLLEN'S TEST:



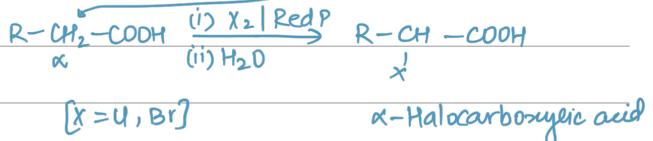
* reaction occurs in alkaline medium $2\text{H}_2\text{O} + 4\text{NH}_3$

[23.] KOLBE ELECTROLYSIS:

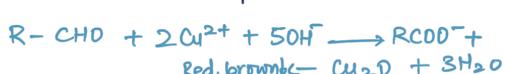
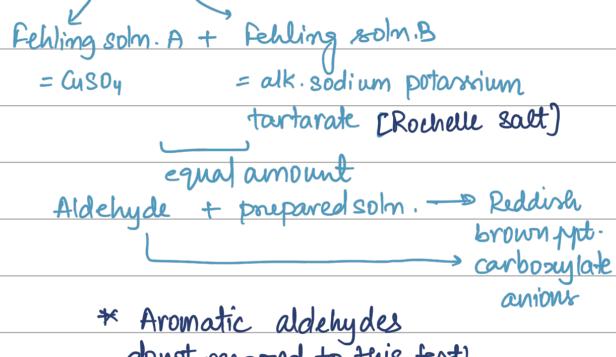


[24.] HELL - VOLHARD - ZEUNSKY (HVZ) REACTION:

Carb. acids \rightarrow having $\alpha\text{-H} \Rightarrow$ halogenated α position

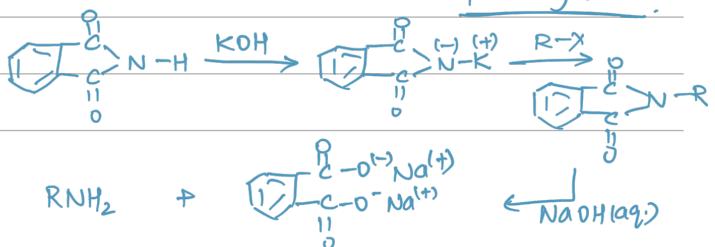


[20.] FEHLING'S TEST:



[25.] GABRIEL PTHALAMIDE SYNTHESIS:

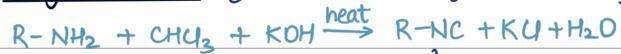
\rightarrow for prep. of pure primary amines.



[26.] HOFFMANN BROMAMIDE RXN :



[27.] Carbylamine Rxn: [also Klar isocyanide test]



foul smelling substance

* Secondary and tertiary amines do not allow this reaction and is used to test for primary amines

[28.] HINSBERG TEST:

Benzenesulphonyl chloride = Hinsberg Reagent
reacts with 1° & 2° amines to form sulphonamides

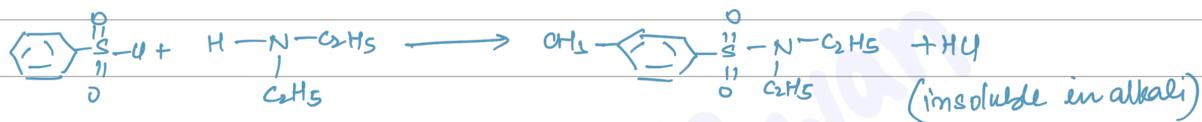
(i) Reaction of Benzene sulphonyl chloride with 1° amines



NOTE

} used to differentiate b/w
 $1^\circ, 2^\circ$ & 3° amines

(ii) Reaction with secondary amine,



(iii) Tertiary amines do not react with benzene sulphonyl chloride

[29.] COUPLING REACTIONS:

Benzene diazonium chloride + phenol



Benzene diazonium chloride + amine

