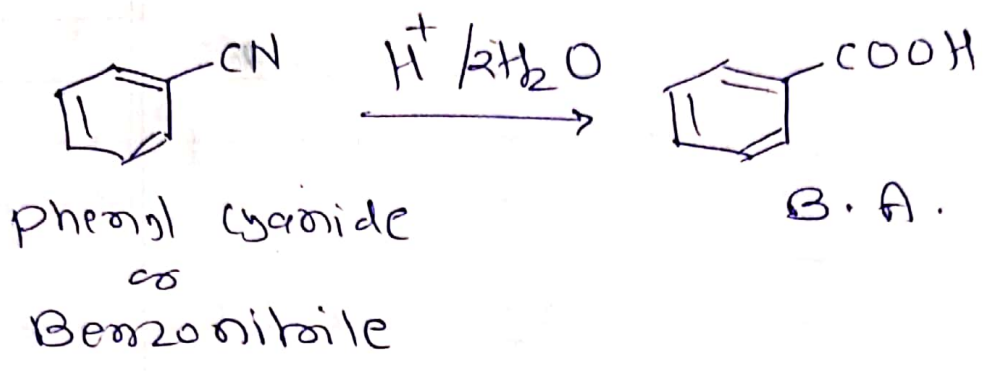


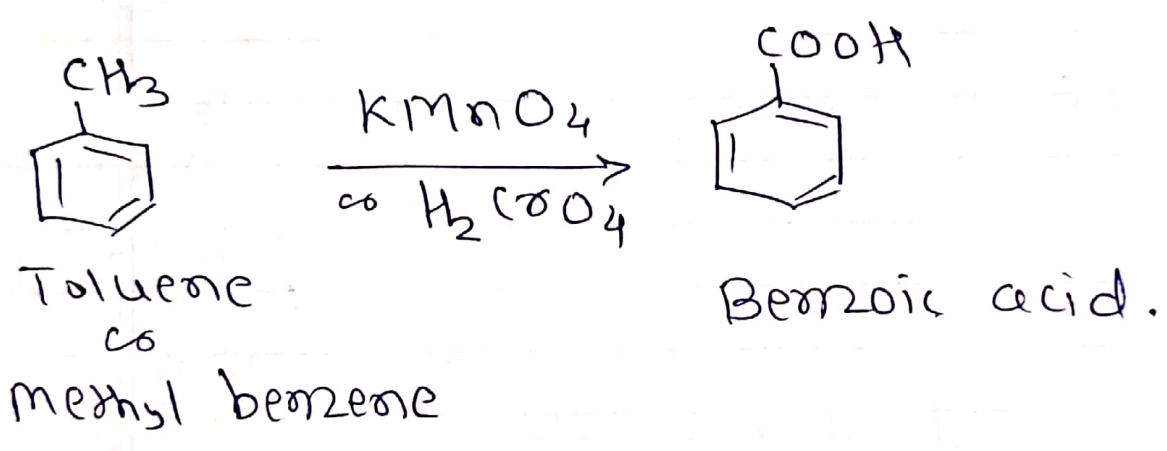
* Aromatic carboxylic & Sulphonic Acids \Rightarrow

* Synthesis of Benzoic acid \Rightarrow

1] From phenyl cyanide (benzonitrile)



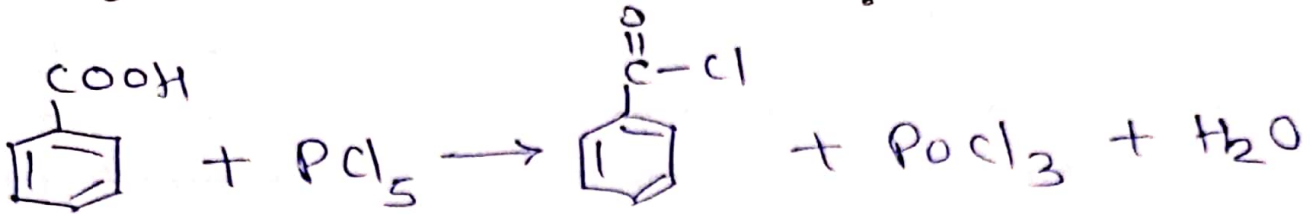
2] From Toluene \Rightarrow (methyl benzene)



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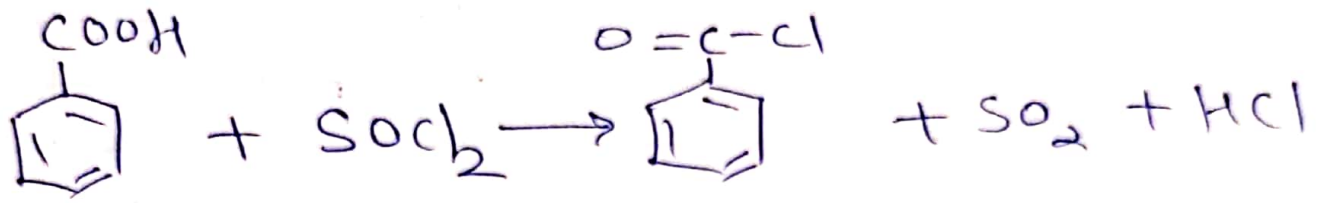
* Reaction of Benzoic acid :-

1] Acyl halide Formation :-

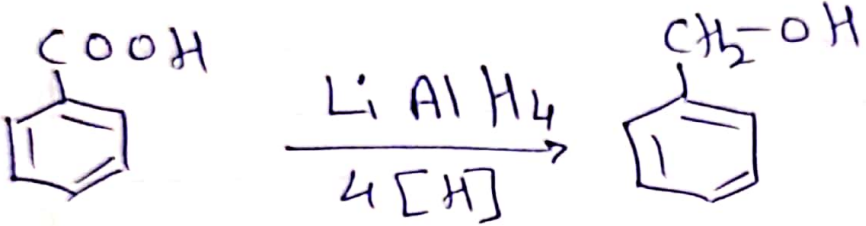


Benzoic acid

Benzoyl chloride



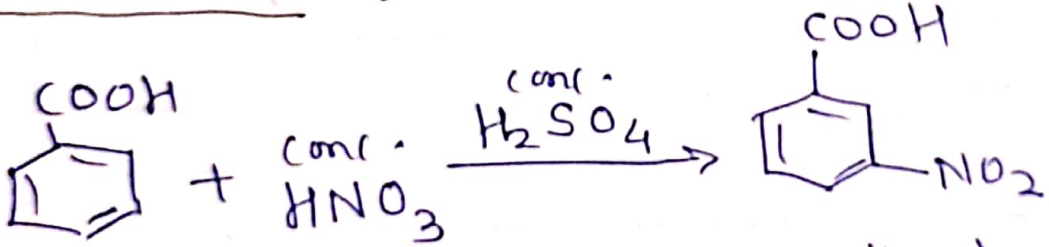
2] Reduction :-



Benzoic acid.

Benzyl Alcohol

3] Nitration :-



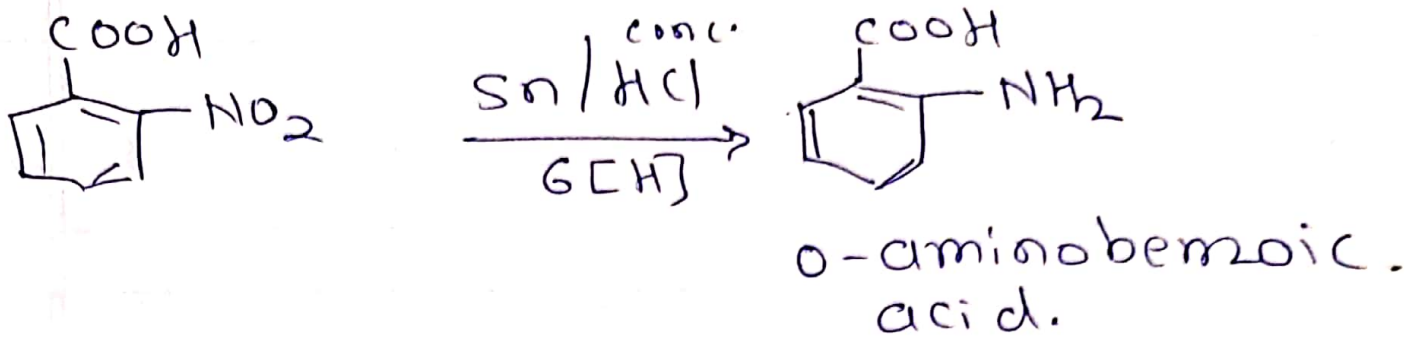
B. A.

m-nitro benzoic acid.

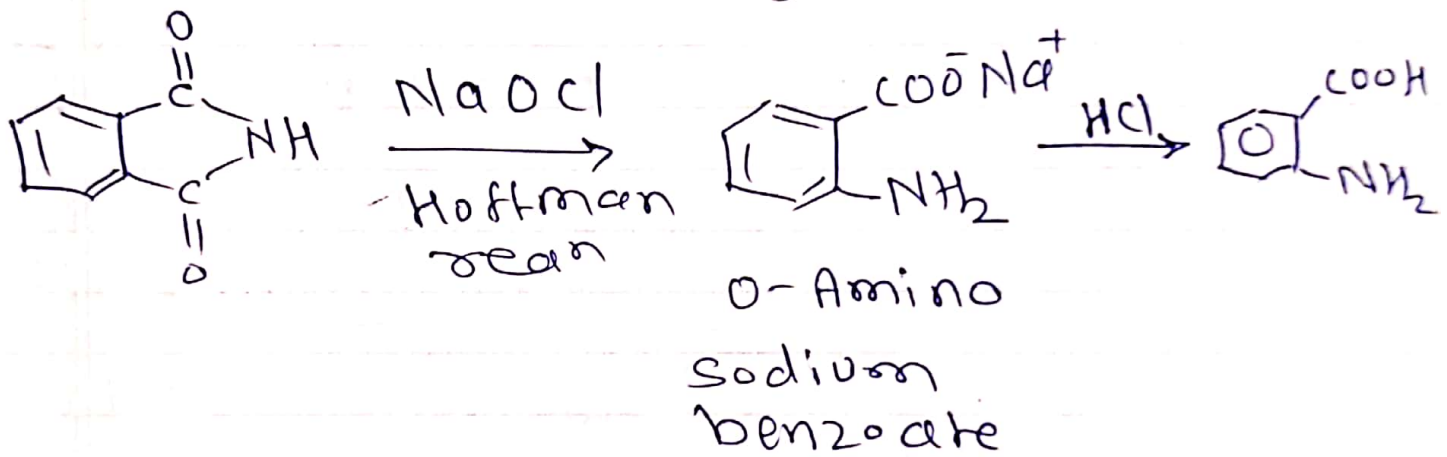
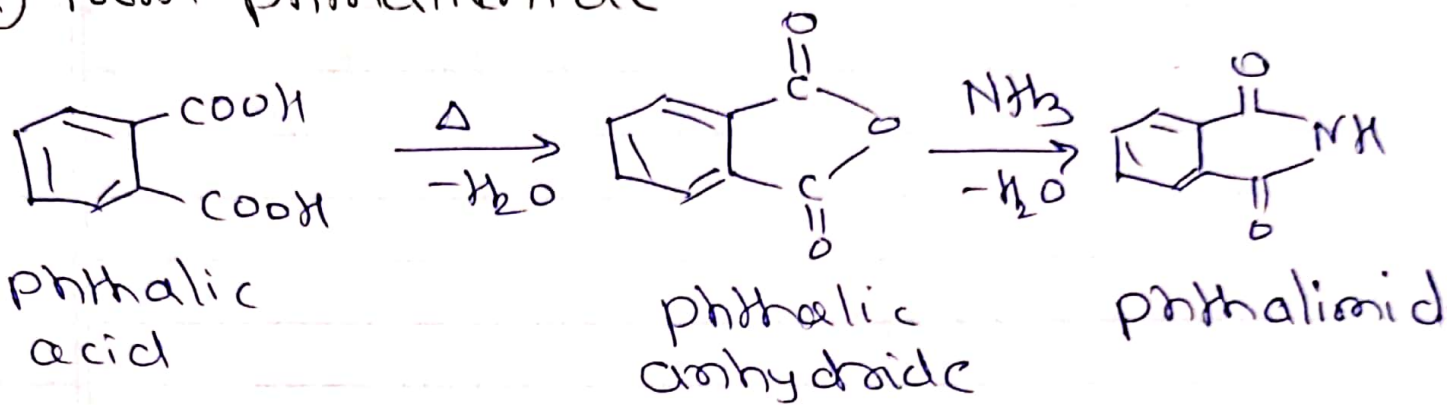
b] Anthranilic Acid (o-amino benzoic acid) (3)

Synthesis

① From o-nitrobenzoic acid \Rightarrow

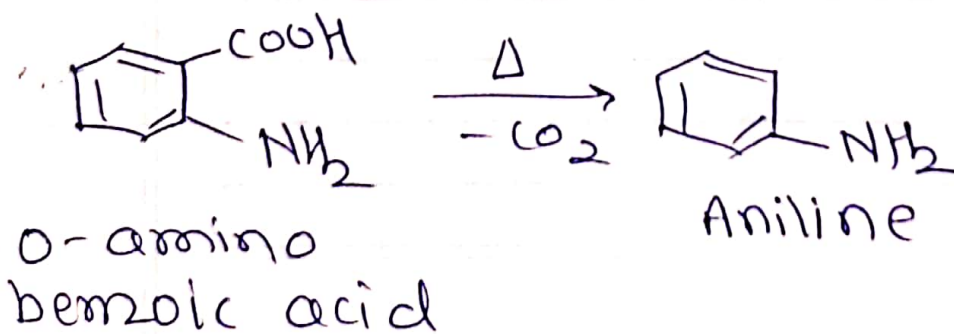


② From phthalimide

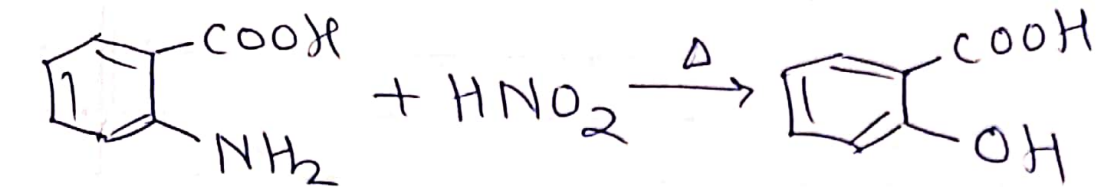


Reactions of Anthranilic acid \Rightarrow

① Action of Heat \Rightarrow



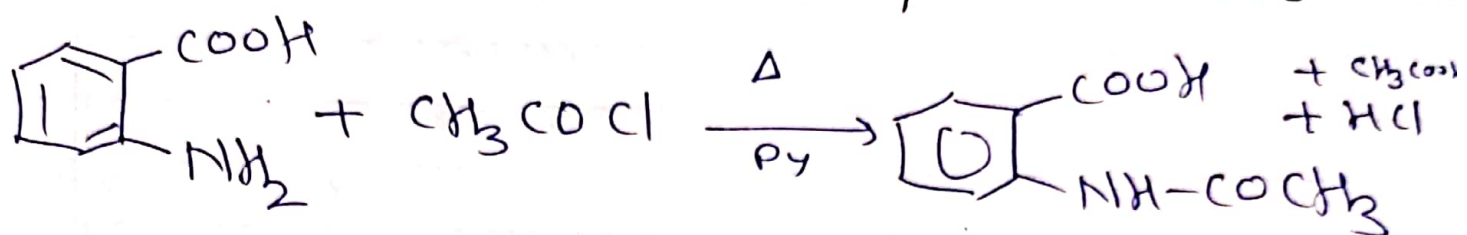
2] Action of $\text{HNO}_2 \Rightarrow$



o-amino
benzoic acid

Salicylic Acid
or
o-Hydroxy benzoic
acid.

3] Action of acetyl chloride / acetic anhydride

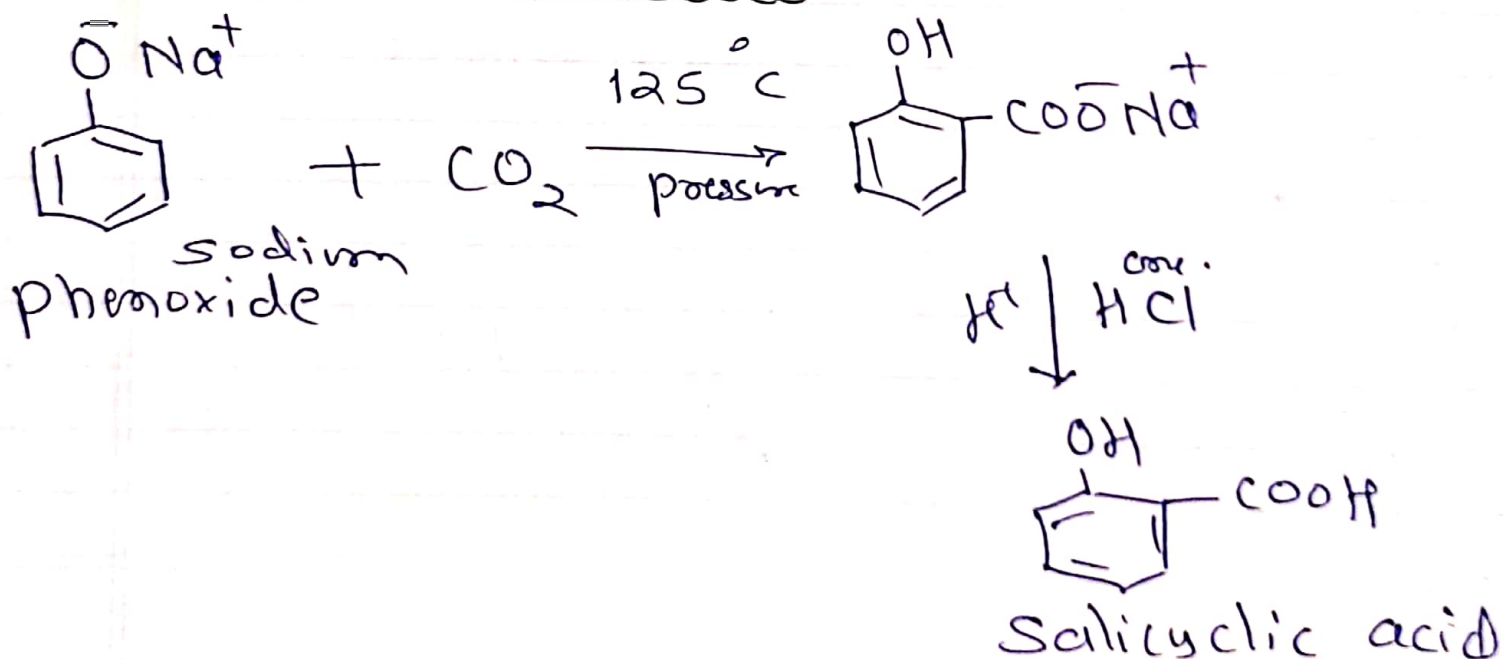


N-acetyl
o-amino benzoic
acid.

4] Salicylic acid (o-hydroxy benzoic acid)

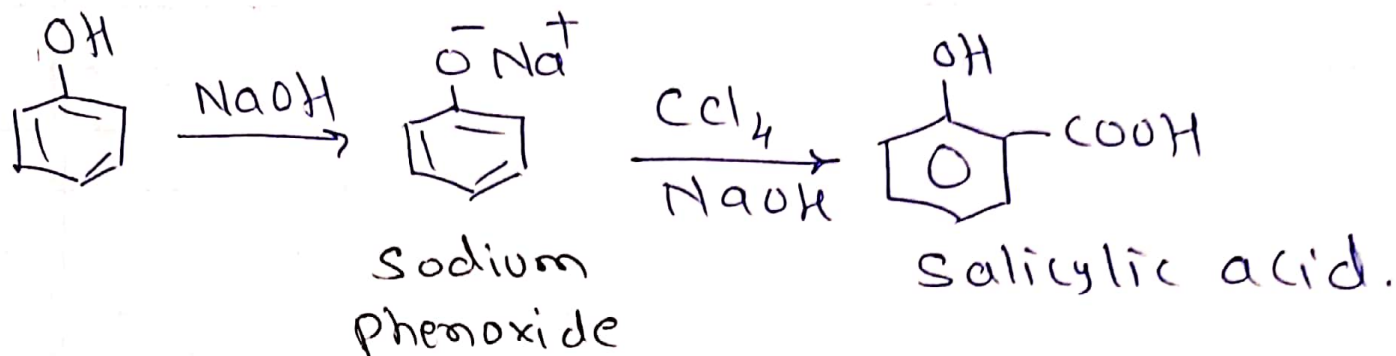
Synthesis From

1] Kolbey's reaction \Rightarrow

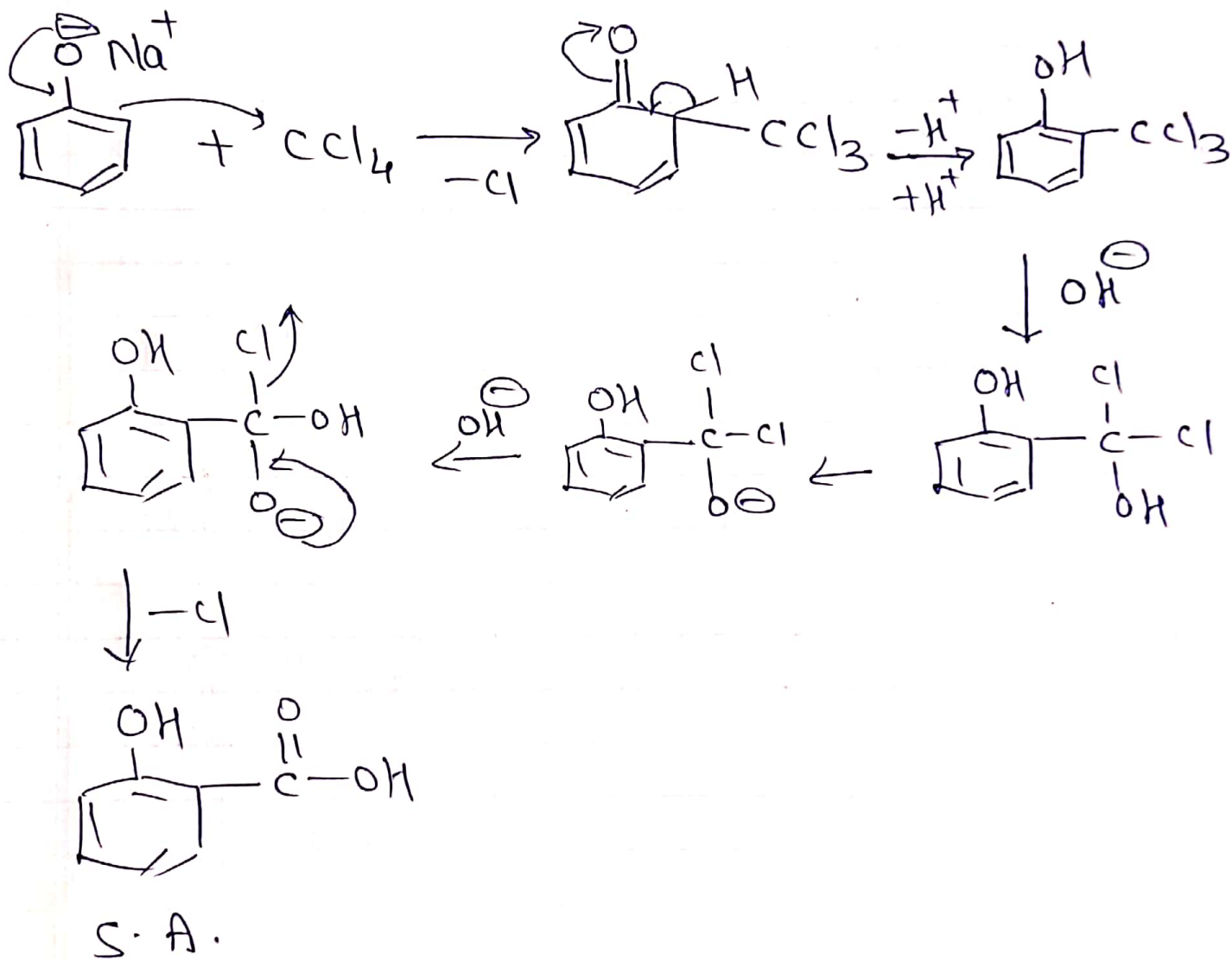


Reimer-Tiemann Reaction :-

Sodium phenoxide is heated with carbon tetrachloride (CCl_4) in alkaline medium forms salicylic acid.

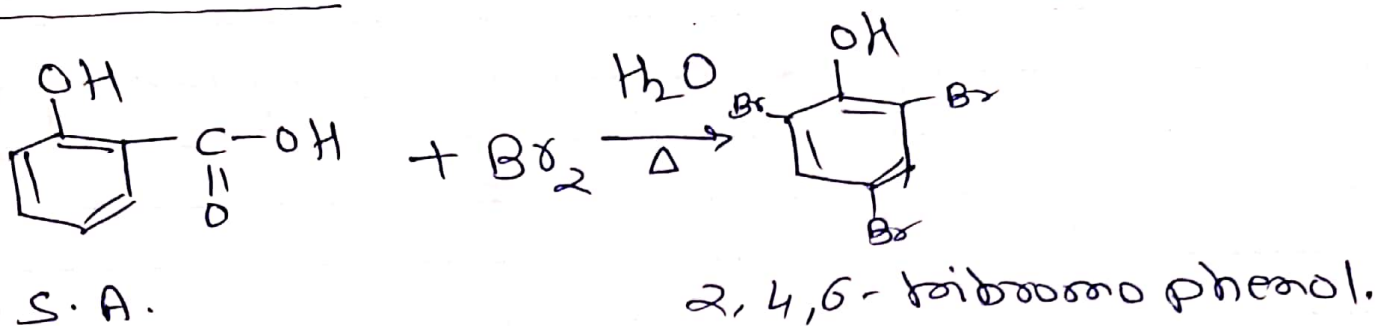


Mechanism :-

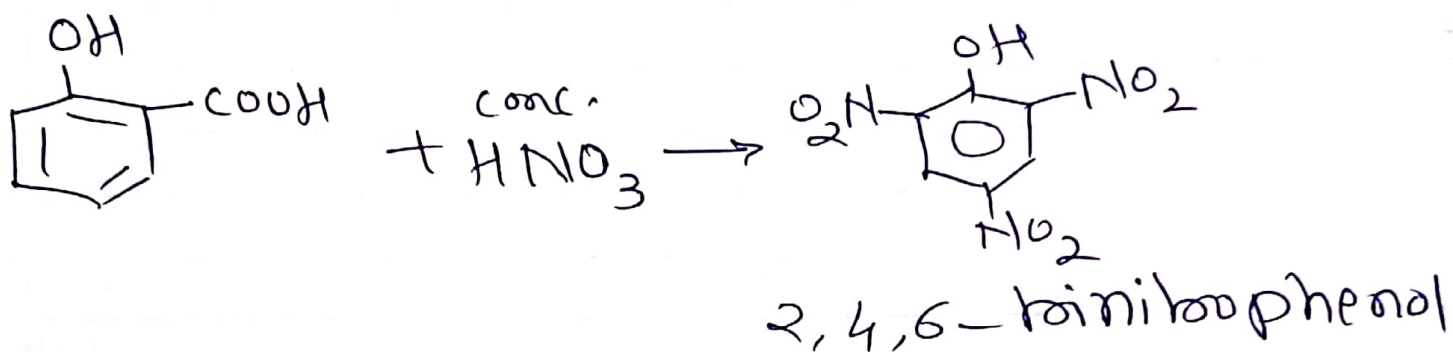


* Reaction of salicylic acid.

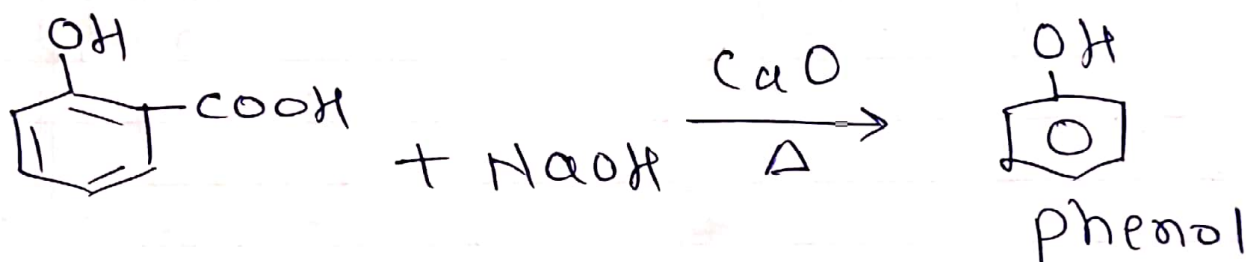
1] Bromination \rightarrow



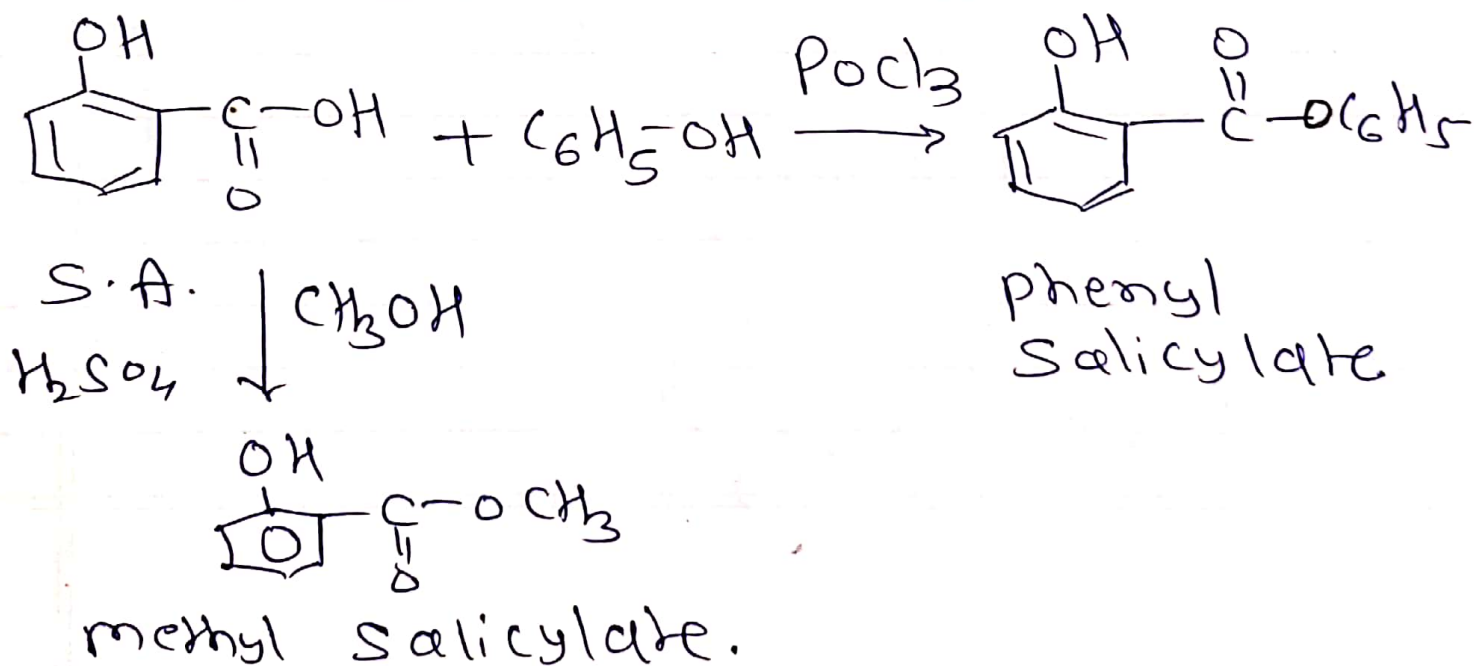
2] Nitration \rightarrow



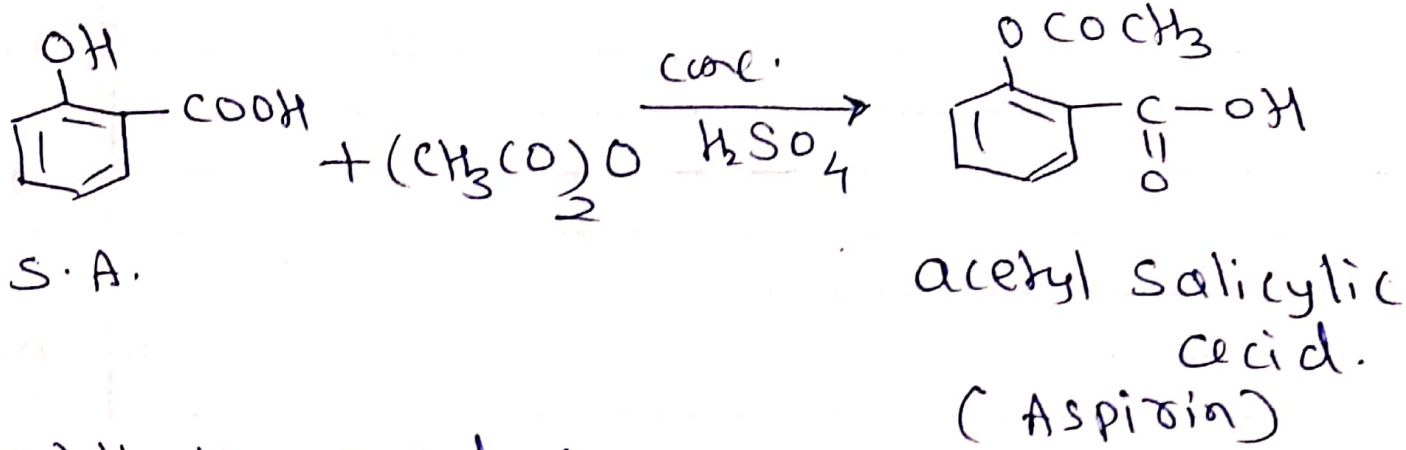
3] Decarboxylation \rightarrow



4] Reaction with Zn-dust :-



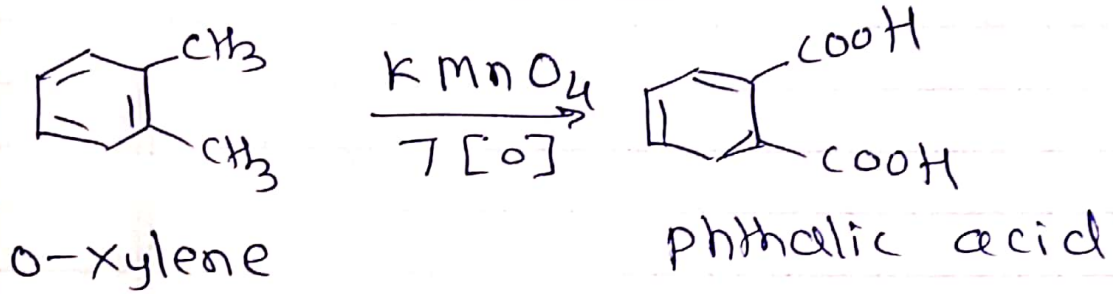
8] Reaⁿ with acetic anhydride :-



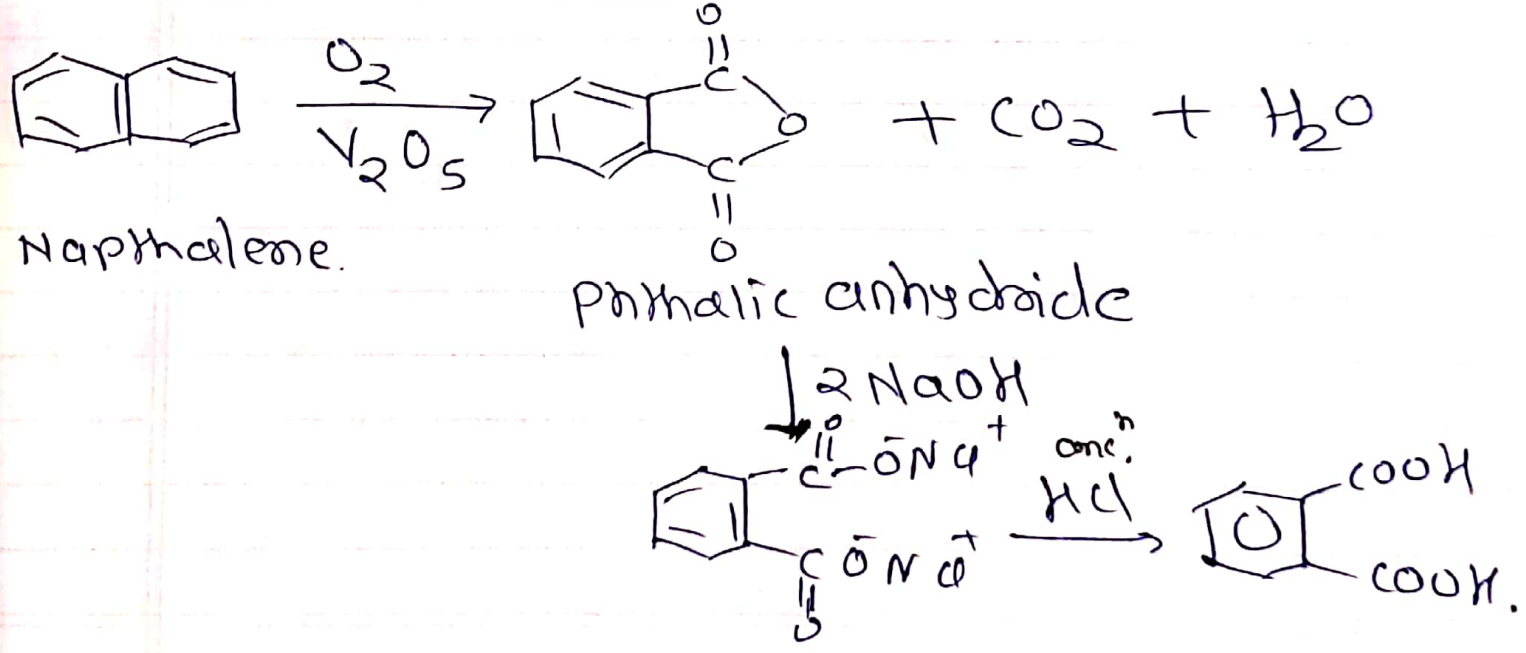
9] phthalic acid :-
 (o-benzene dicarboxylic acid).

Synthesis

1] From o-xylene :-

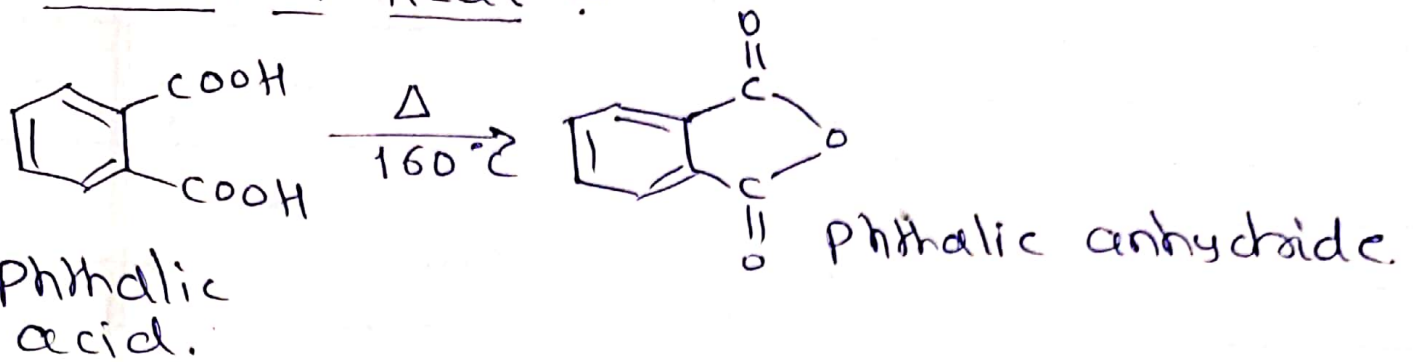


2] From Naphthalene :-

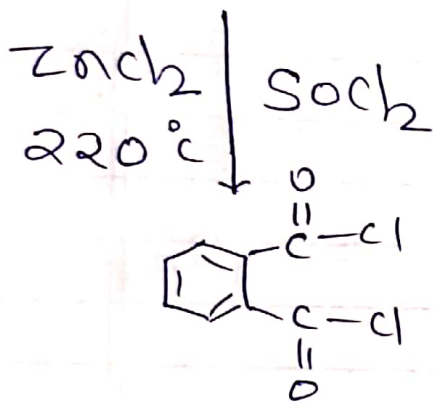
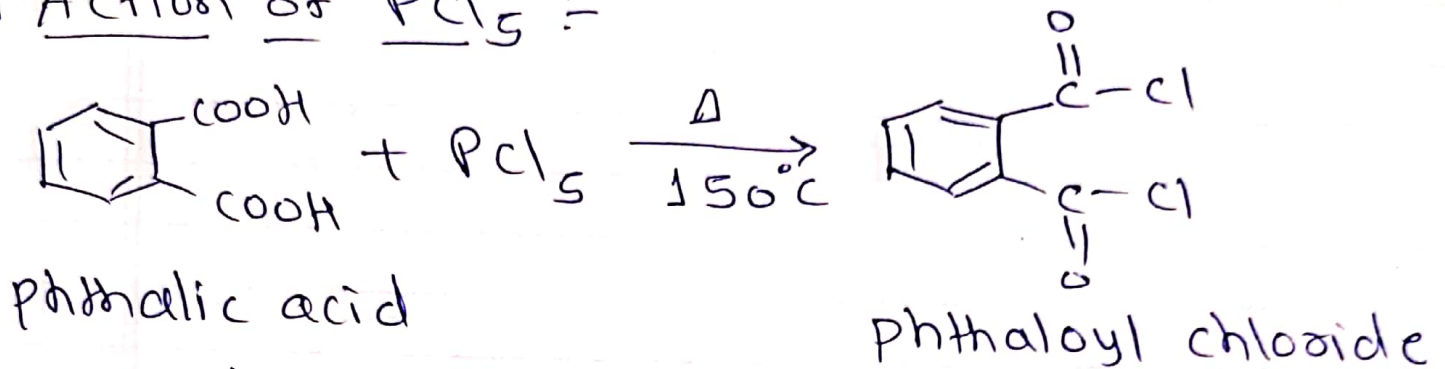


* Reactions of phthalic acid.

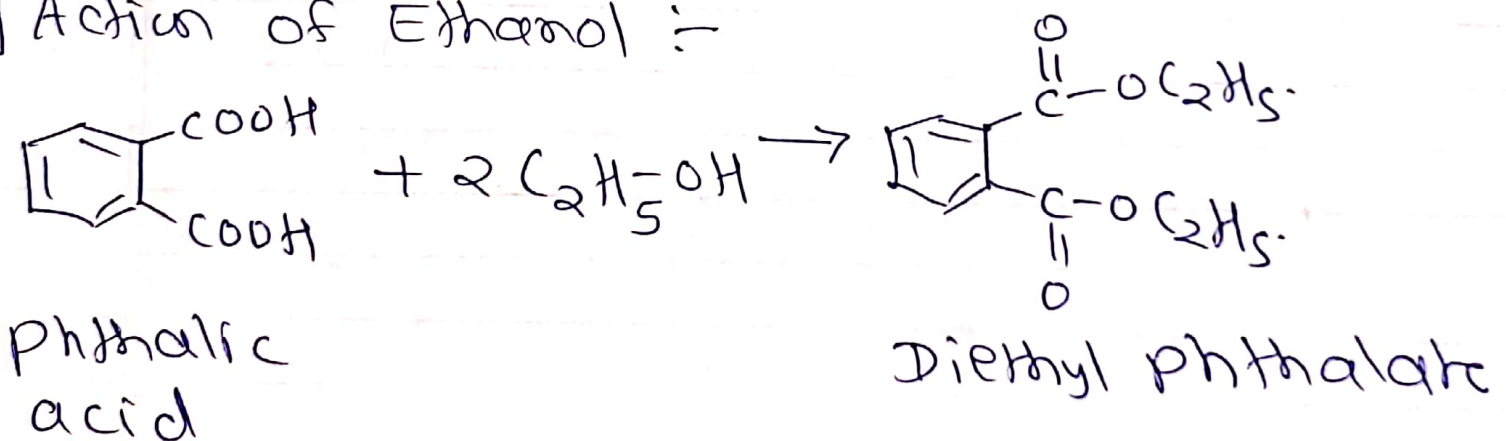
1] Action of Heat :-



2] Action of PCl₅ :-

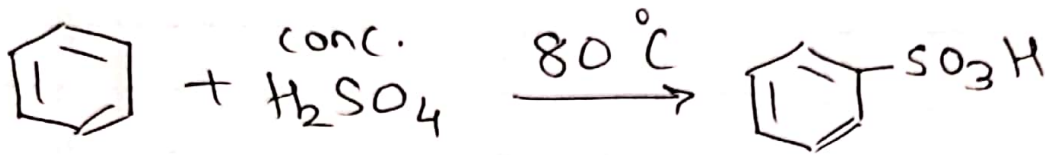
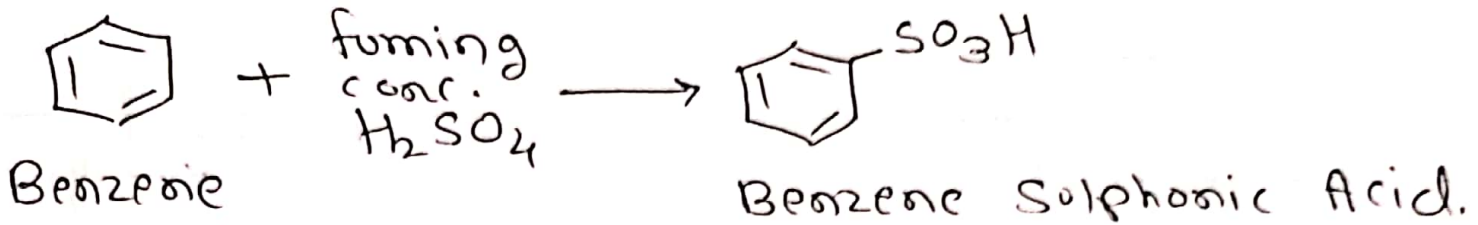


3] Action of Ethanol :-



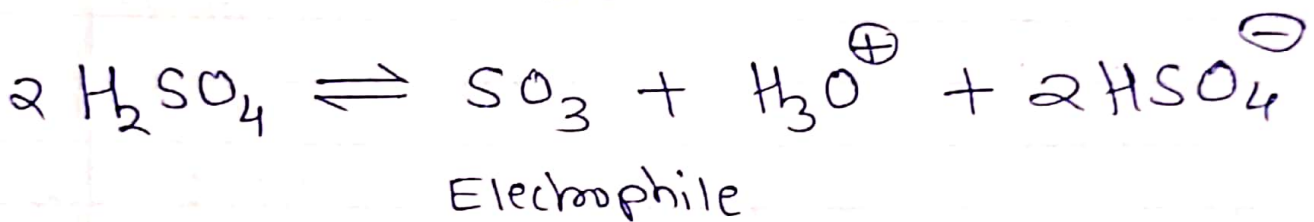
* Benzene sulphonic acid.

preparation of benzene sulphonic acid from benzene with mechanism \Rightarrow

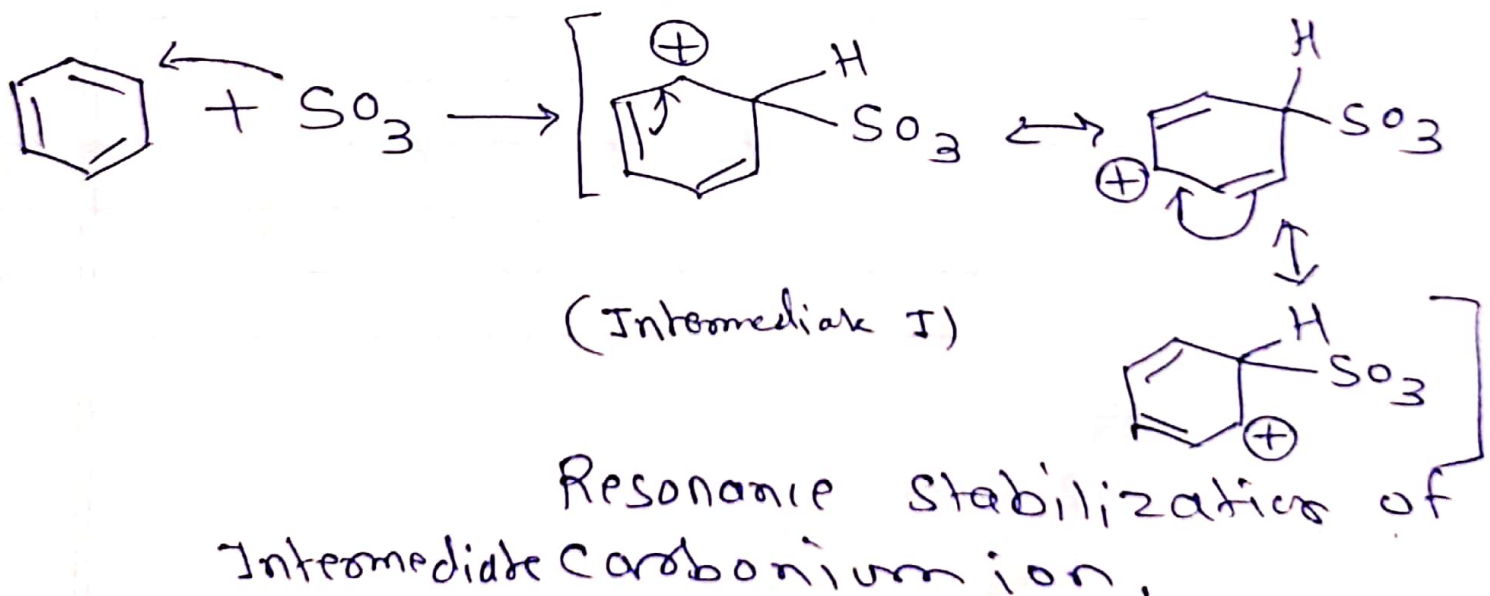


Mechanism \Rightarrow

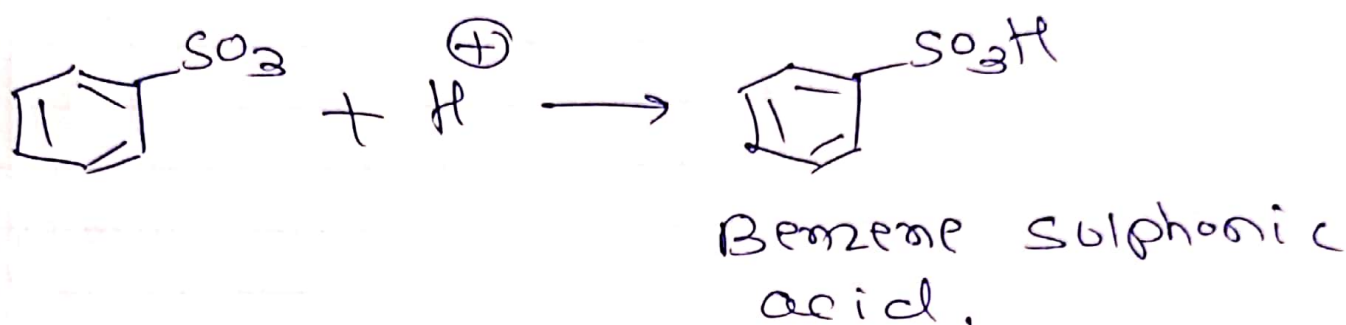
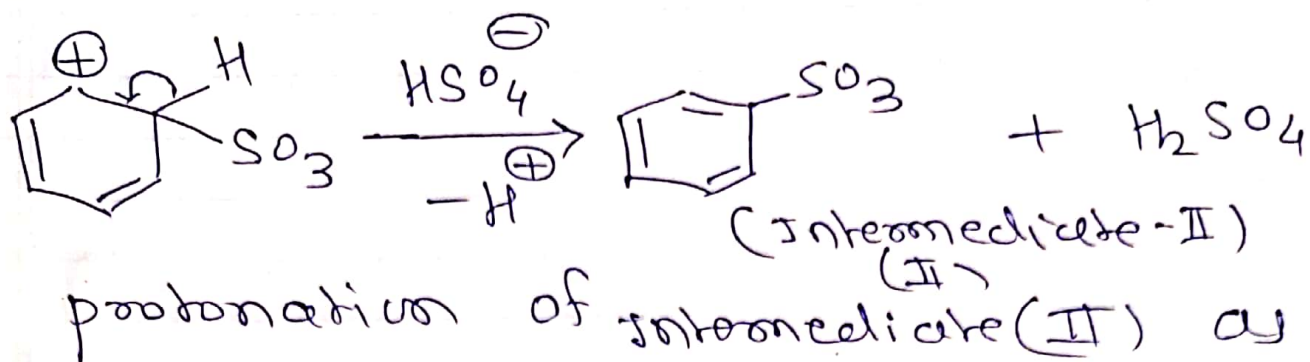
Step I :- Formation of electrophile by the reaction ~~is~~ as follows



Step II :- Attack of electrophile (SO_3) on benzene ring to give a carbonium ion.

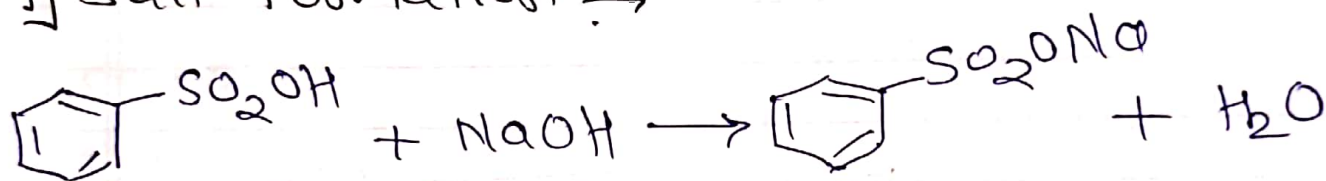


Step-III :- Formation of benzene sulphonic acid via intermediate.



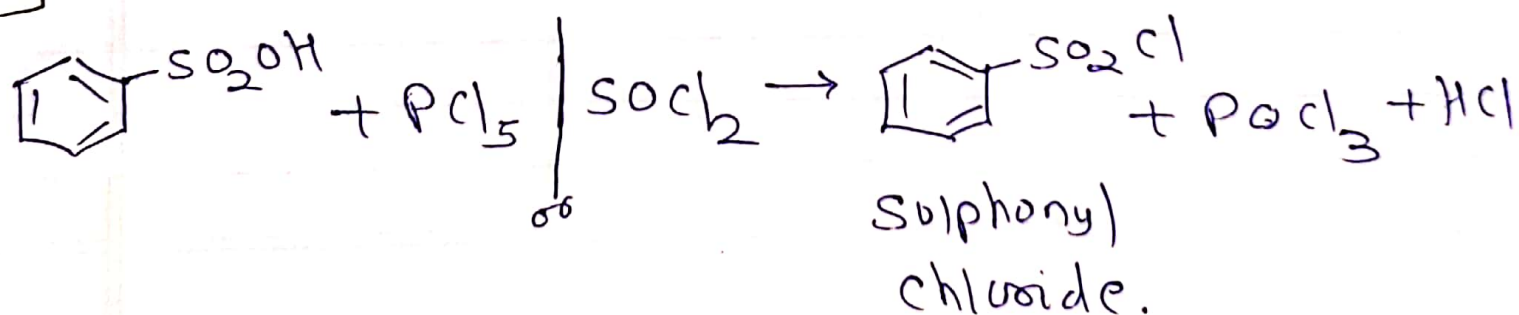
* Chemical Reaction of Benzene sulphonic acid

1] Salt formation :-

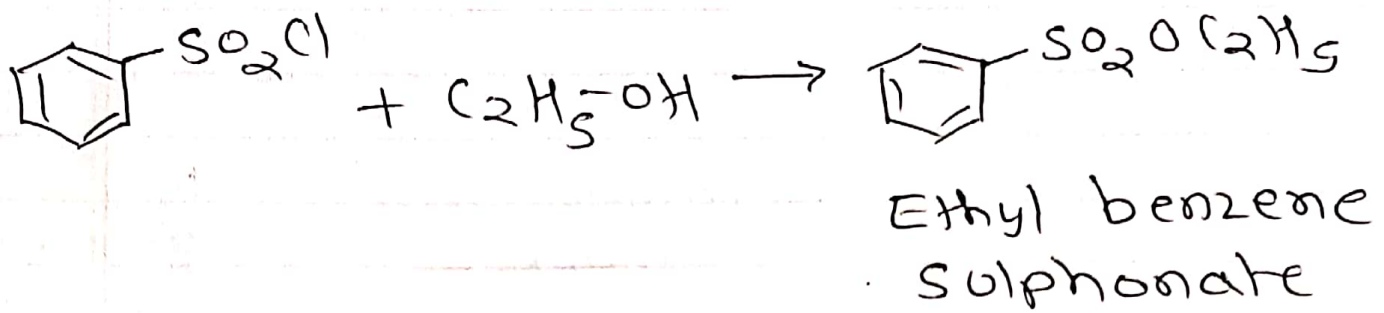


Benzene sulphonic acid. $10-11$ $10-11$ sulphonates

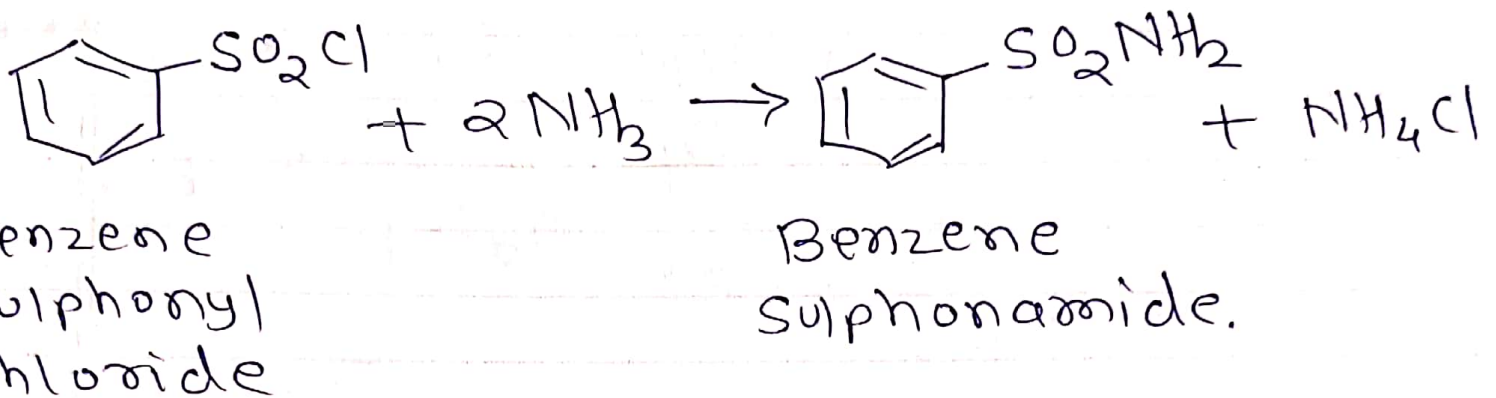
2] Formation of sulphonyl chloride :-



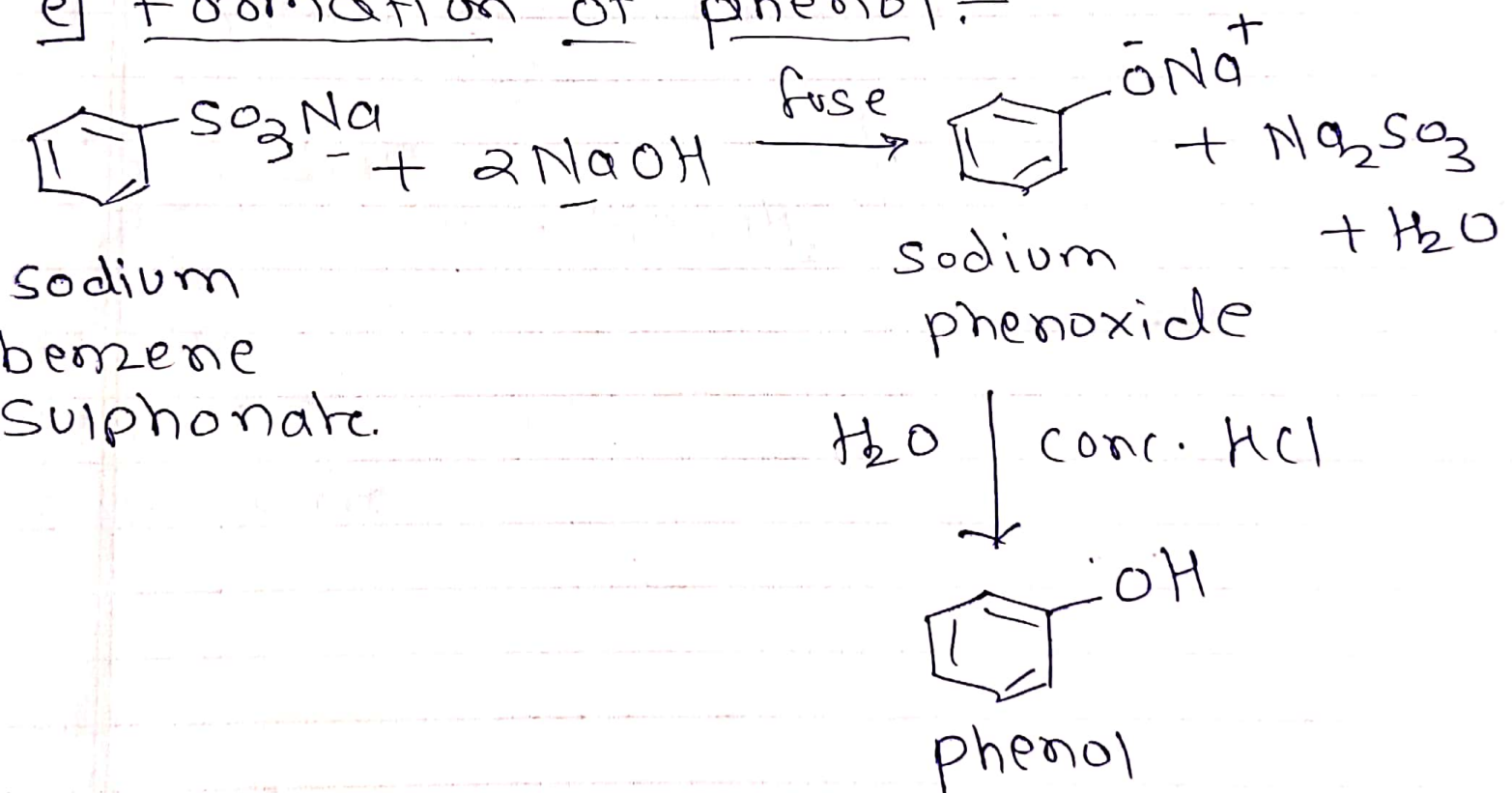
c] Formation of ester \Rightarrow



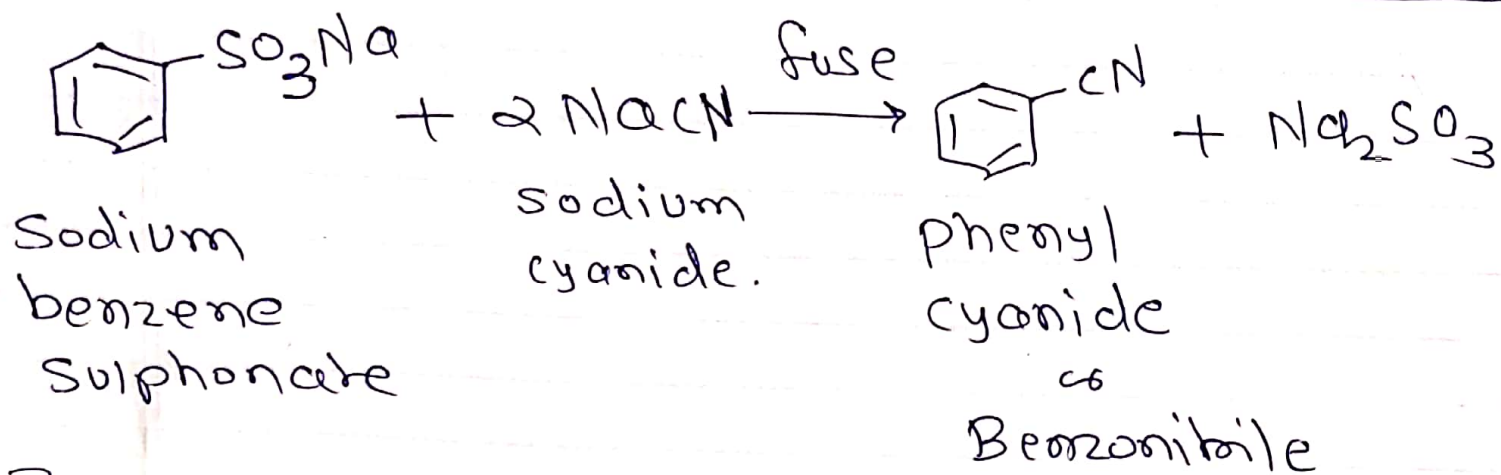
d] Formation of Amide \Rightarrow



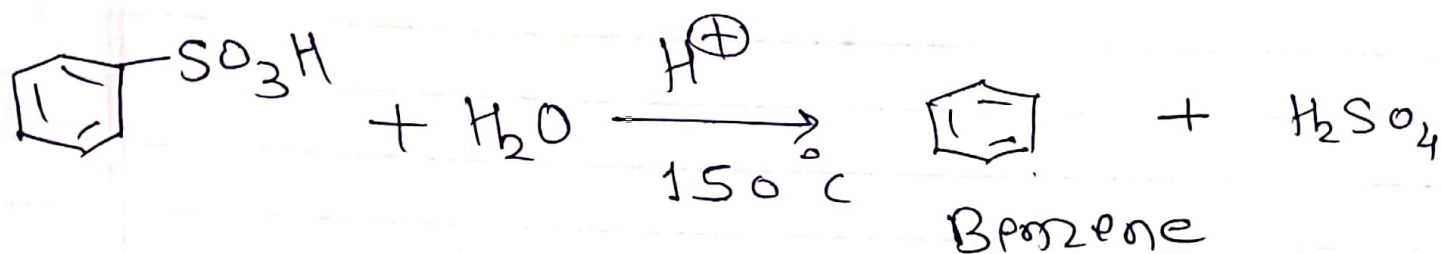
e] Formation of phenol \Rightarrow



e] Formation of benzonitrile / phenyl cyanide



f] Formation of Benzene ⇌



g] Formation of aniline ⇌

