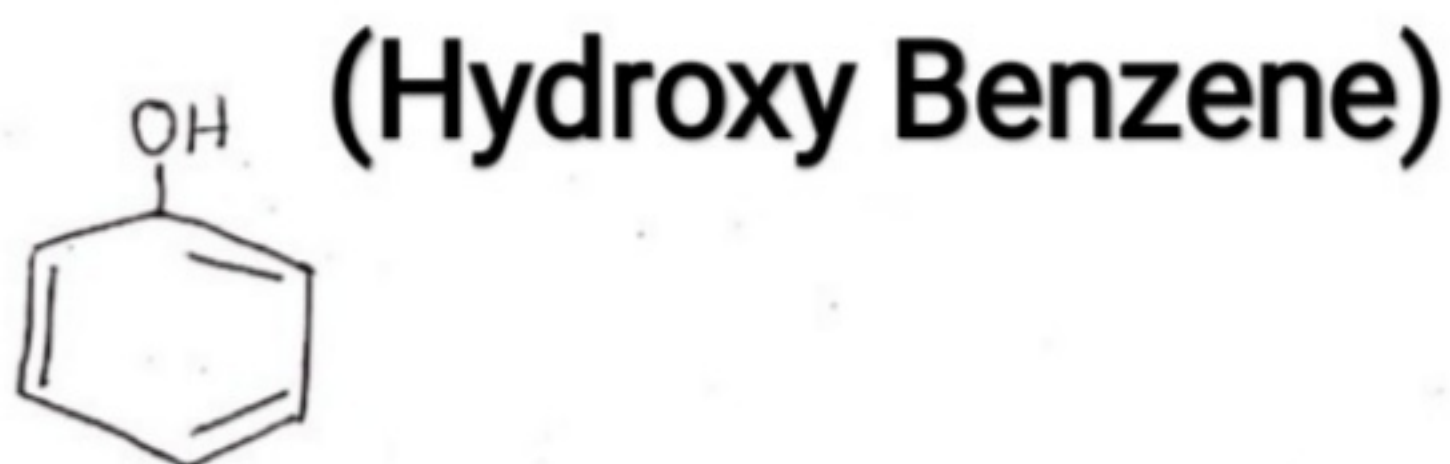


IMPORTANT NOTES

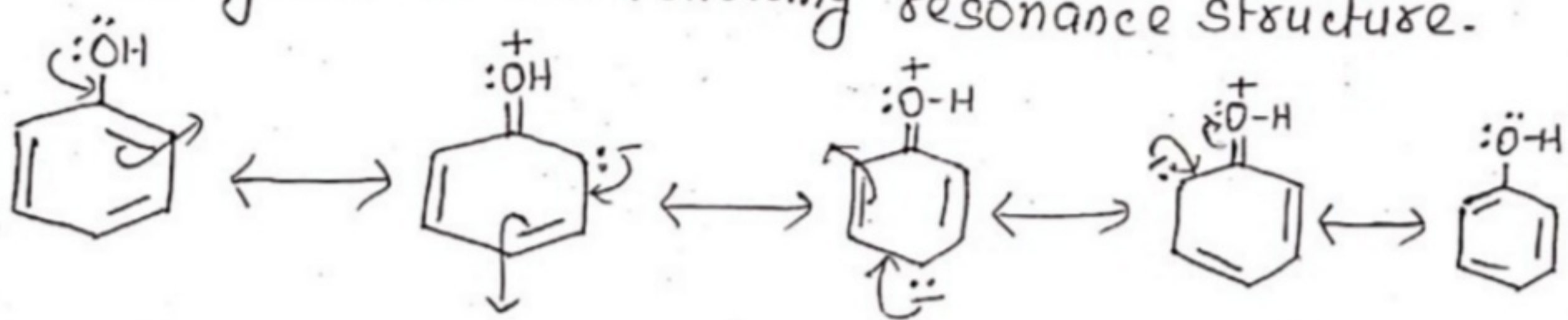
1.

By:-Dr.Rinky DEGREE-II (H) 21/10/2020

TOPIC- PREPARATION, Properties &
Uses of "PHENOL"

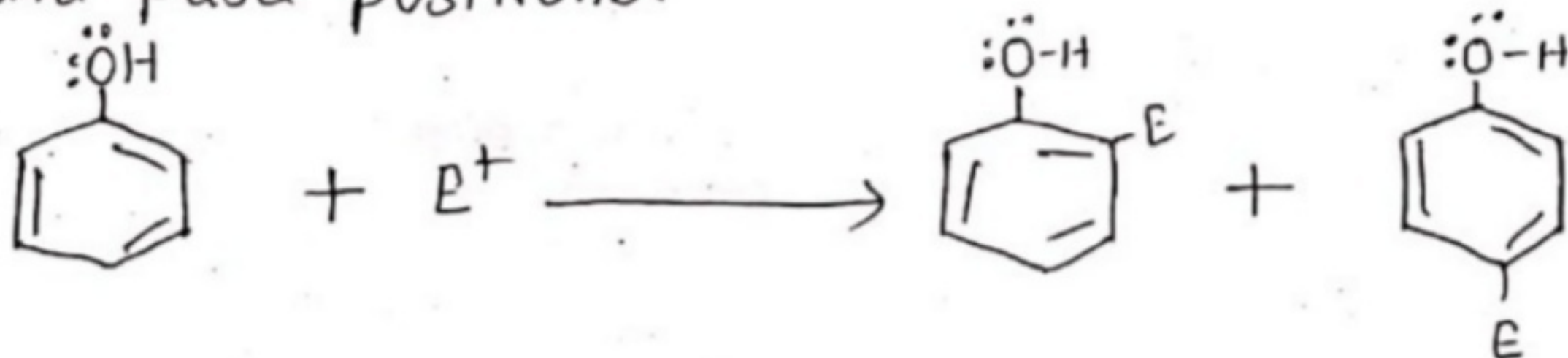


According to resonance theory, Phenol is considered to be hybrid of the following resonance structure.



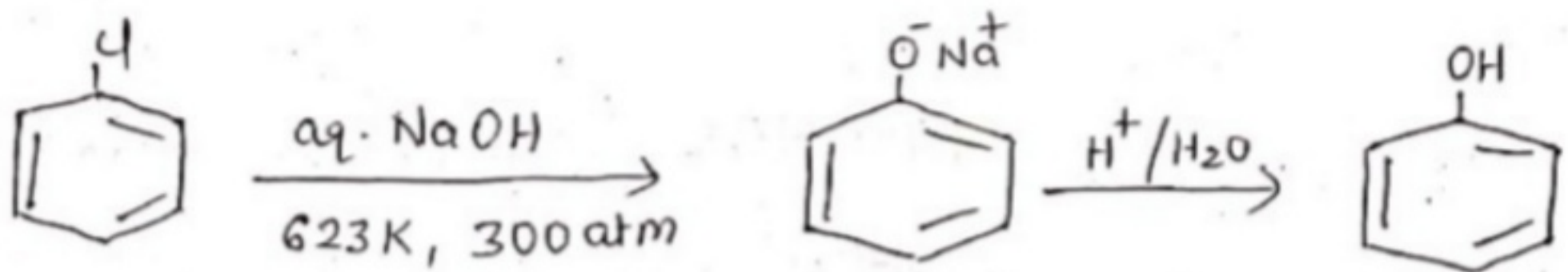
The ortho and para positions in the resonating structures carry a -ve charge.

* An electrophile (E^+) will attack these positions. Thus the hydroxyl group directs all electrophiles to the ortho and para positions.

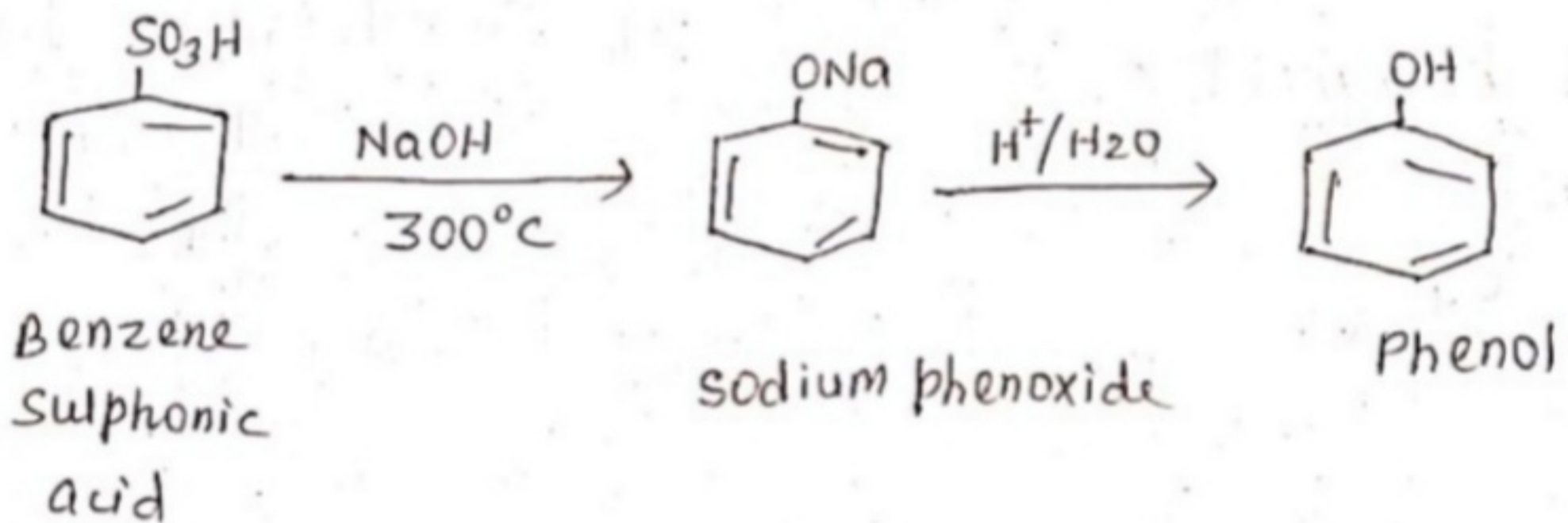


PREPARATION OF PHENOL 2.

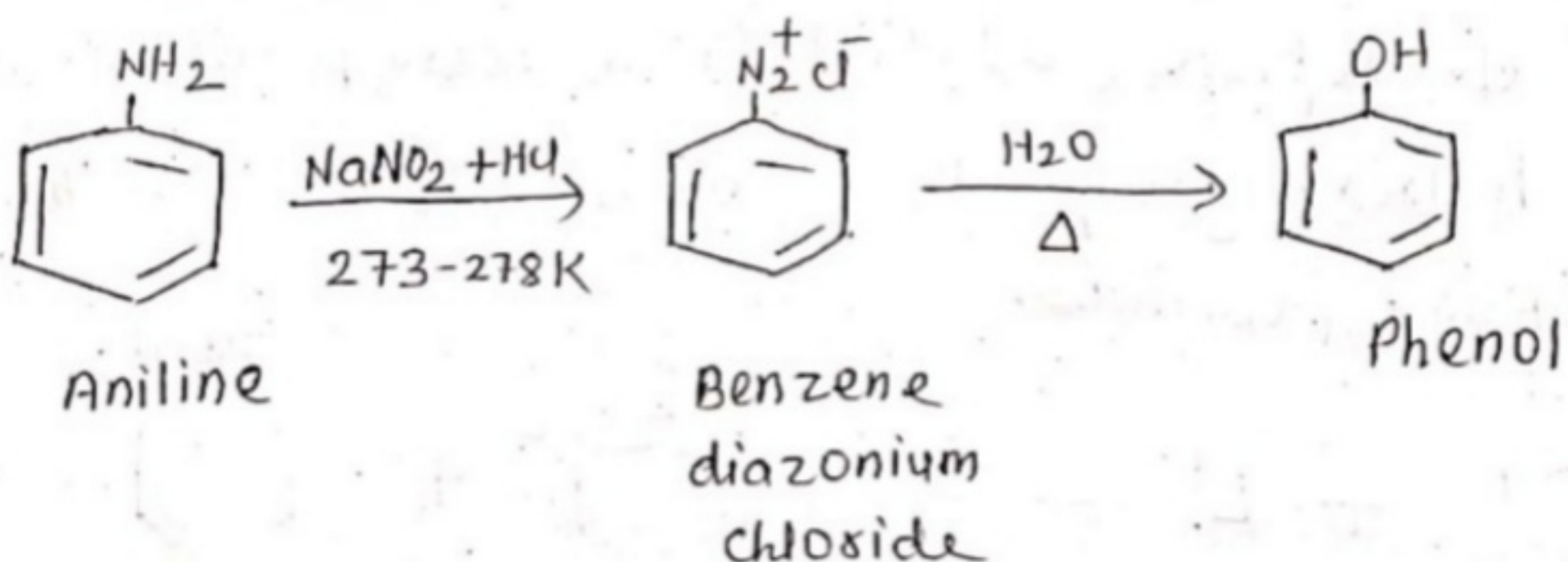
1. From Chlorobenzene (DOW PROCESS)



2. From Benzene Sulphonic Acid



3. From Benzene diazonium Salt



PHYSICAL PROPERTIES

3.

colourless, Hygroscopic, crystalline solid.

The liquid form of phenol containing about 5% water is known as carboic acid.

* Below 68.8°C phenol is partially miscible with water but above this temp. it is miscible in all proportion.

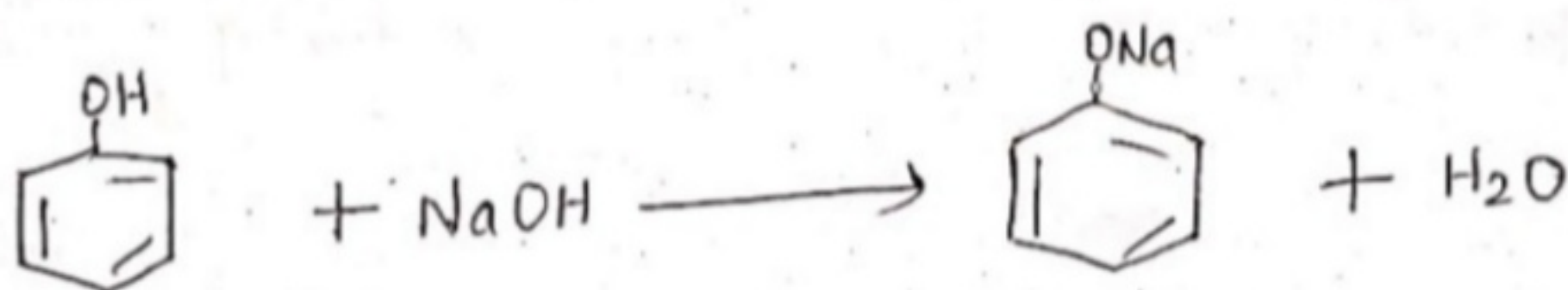
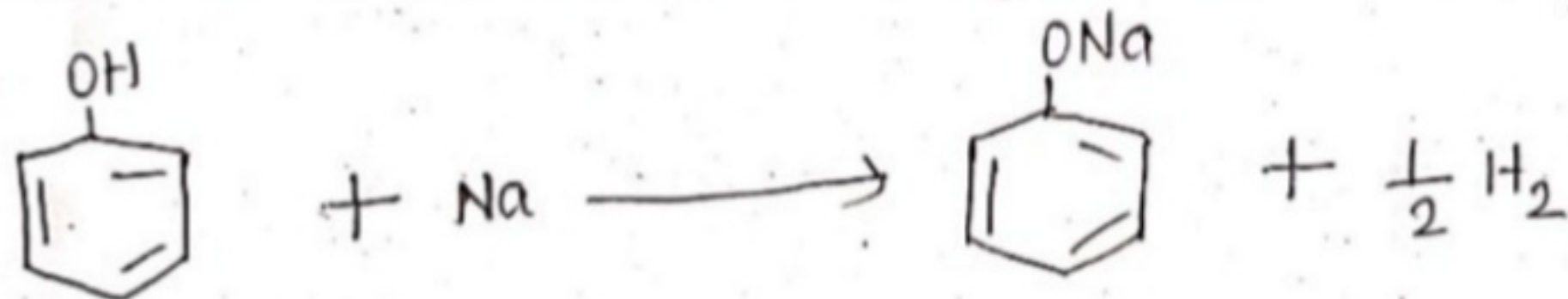
* Phenol is poison when taken orally.

CHEMICAL PROPERTIES

Reaction of-OH group

1. SALT FORMATION

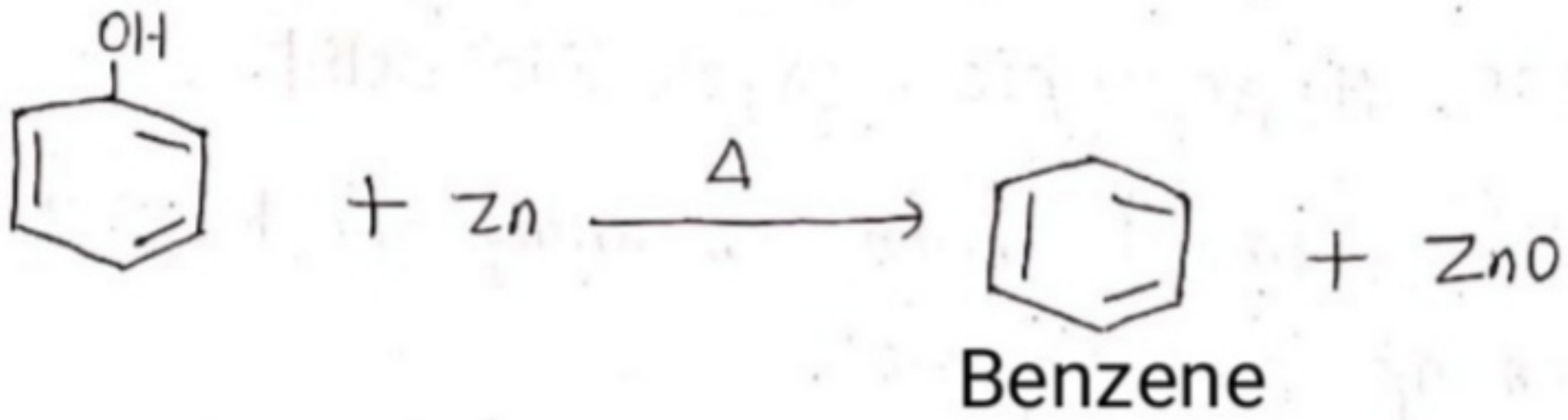
Since, phenol is acidic. It reacts with active metal like sodium or base like sodium hydroxide to form salts.



Sod. phenoxide

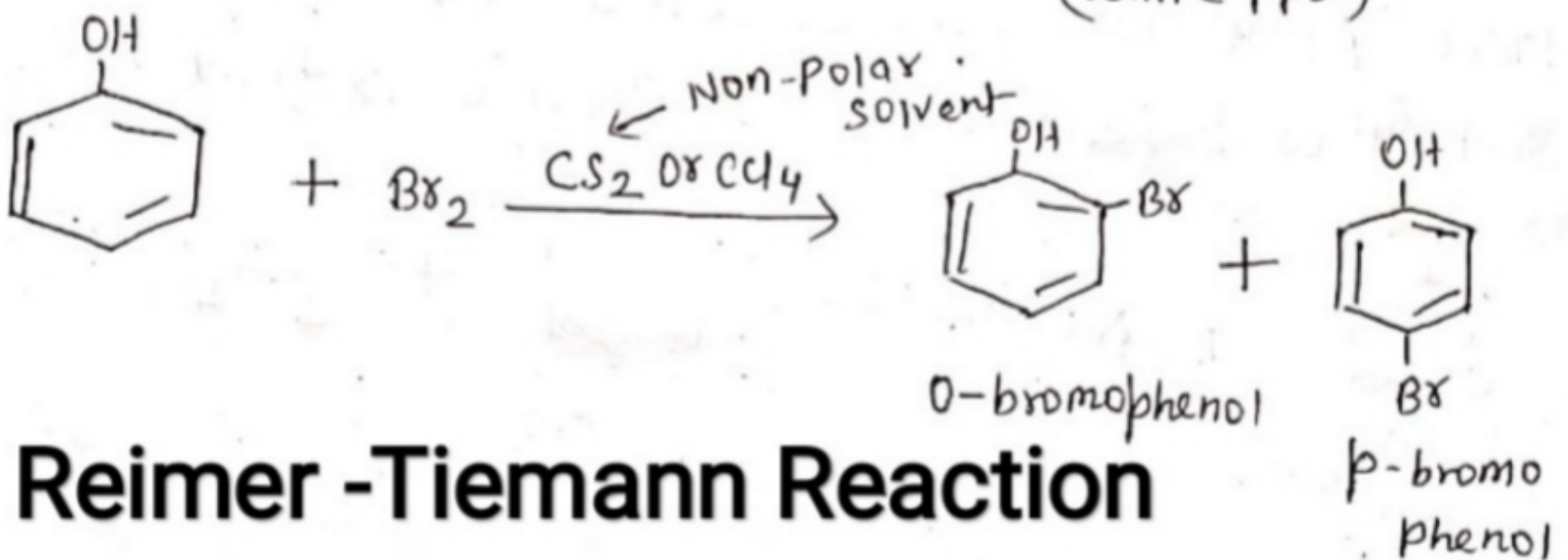
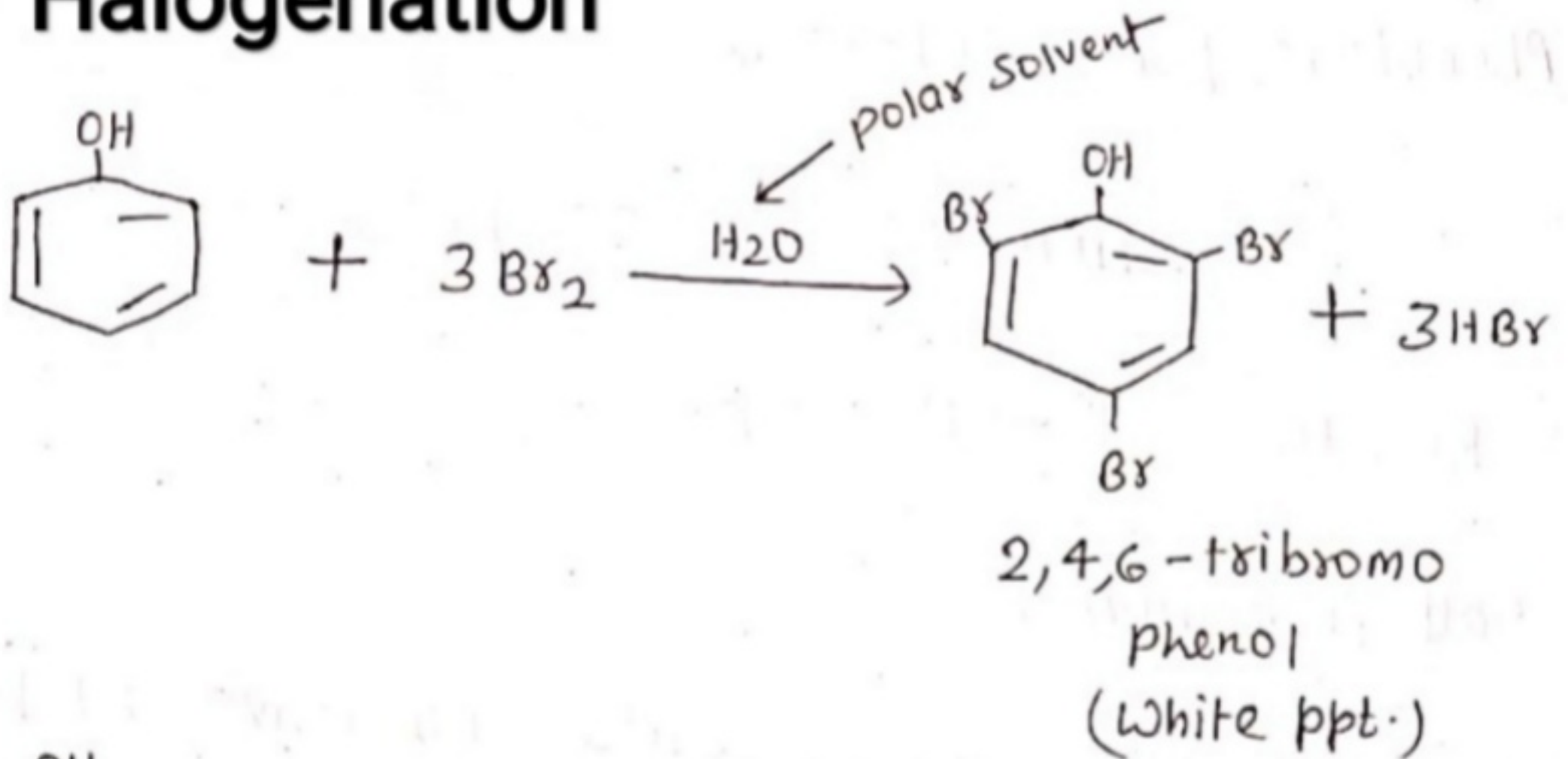
2. Reaction with Zn-dust

4.

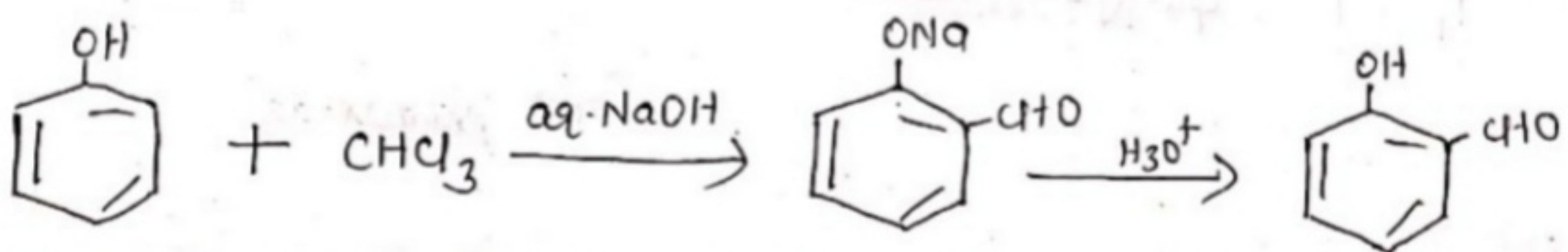


Reaction of Benzene Ring

3. Halogenation



4. Reimer-Tiemann Reaction

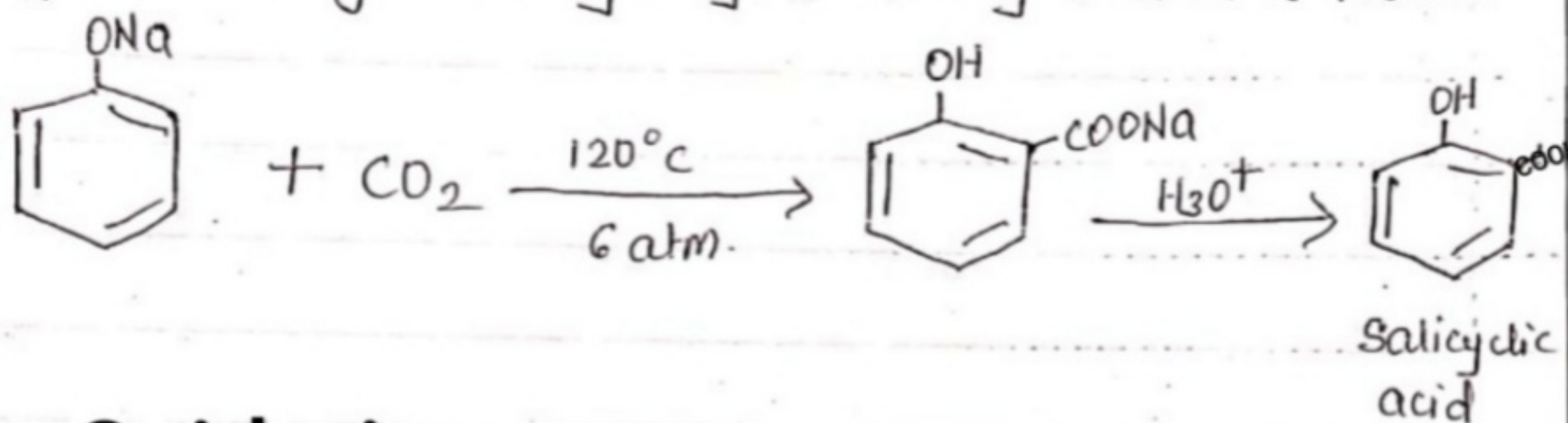


Mechanism discussed in Name Reaction chapter.

5. Kolbe's Reaction

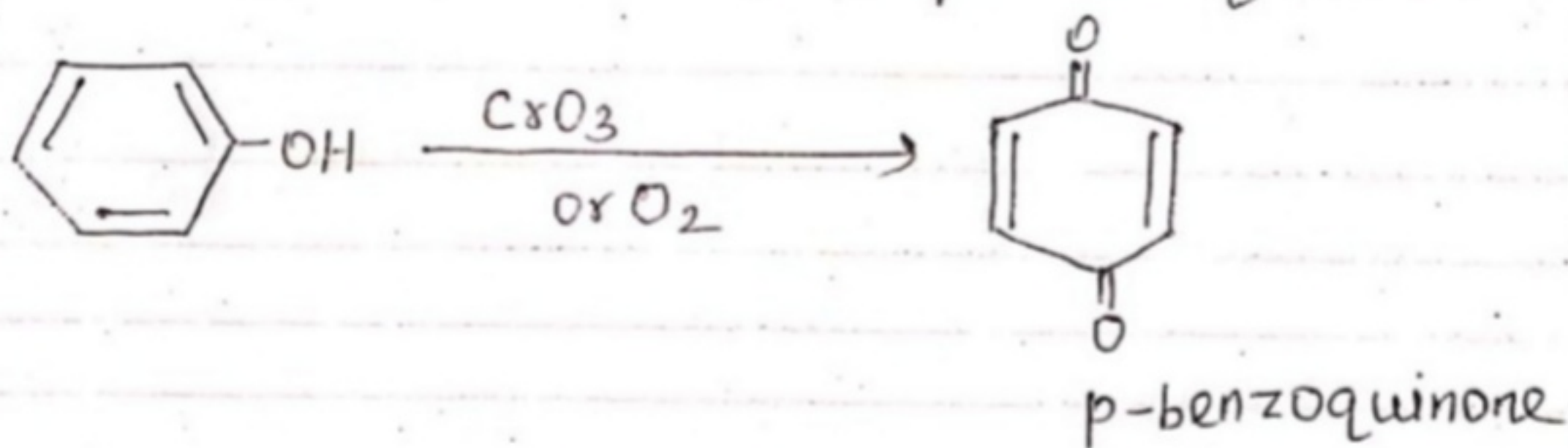
5.

This involves, the treatment of sod. phenoxide with carbon dioxide at 125°C under 6 atm. of pressure, followed by acid-hydrolysis salicylic acid is formed:



6. Oxidation

Phenol undergoes oxidation with air or chromic acid to form p-benzoquinone.



USES OF PHENOL

* About 50% of total production of phenol is used for making phenol-formaldehyde resins. ex - Bakelite

* Used as starting material for drug ex Aspirin, and some explosive. **Phenol compted.**