

Chemistry-II

UNIT II

Phenols

Aromatic amines

Aromatic acids

PREPARATION AND REACTIONS OF PHENOLS

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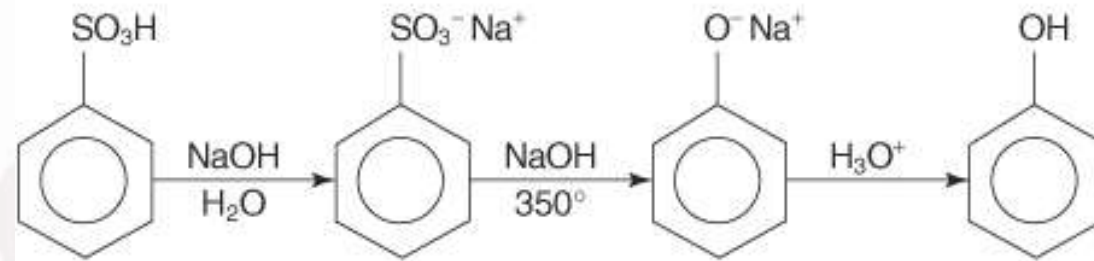
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The logo of Galgotias University is a circular emblem with a stylized 'G' shape in the center. The 'G' is composed of three curved segments in shades of yellow, blue, and red. The background of the emblem is a light, multi-colored gradient.

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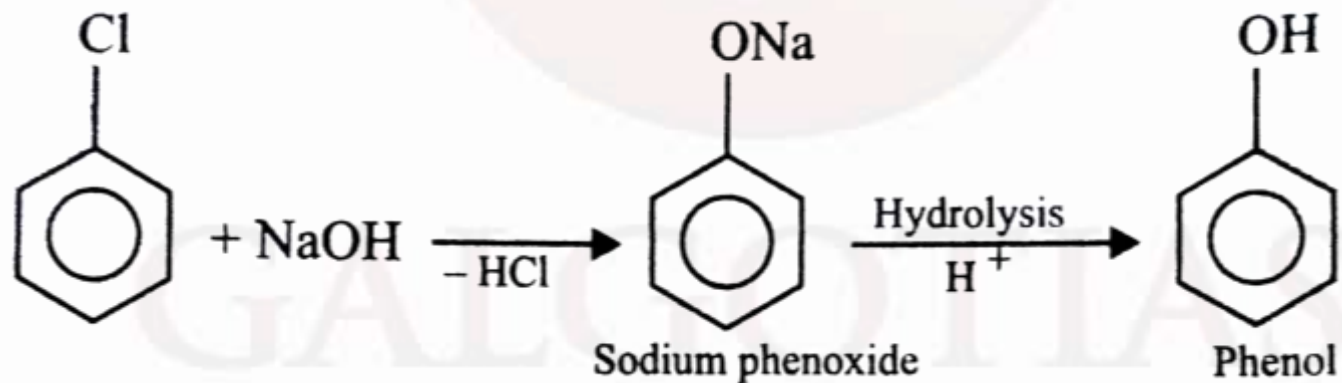
Preparation of phenol

- REACTION OF SODIUM SALT OF BENZENE SULFONIC ACID WITH NaOH:
 - Sodium benzene sulfonate on fusion with strong alkali like NaOH at 300°C give sodium phenoxide which on treatment with HCl gives phenol



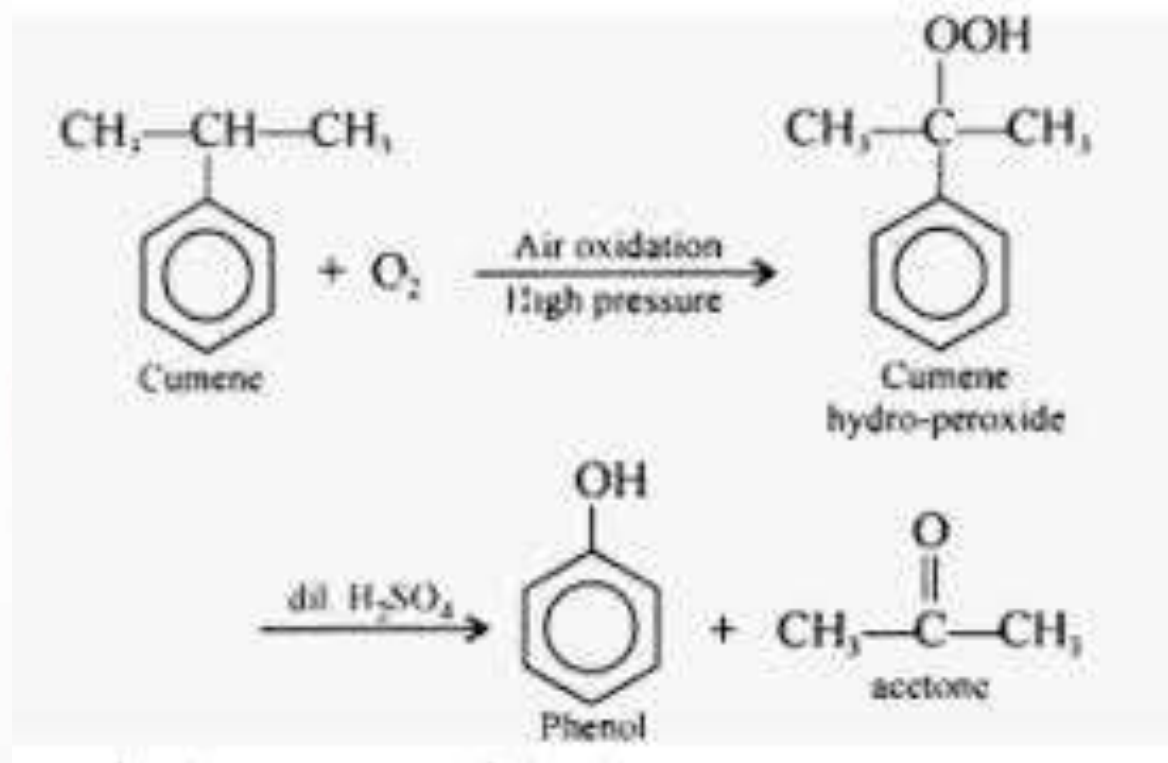
- **BASE HYDROLYSIS OF CHLOROBENZEN (DOW'S METHOD)**

- Chlorobenzene is hydrolysed by heating with 10% NaOH at 360°C under high pressure to form sodium phenoxide which on treating with HCl gives phenol



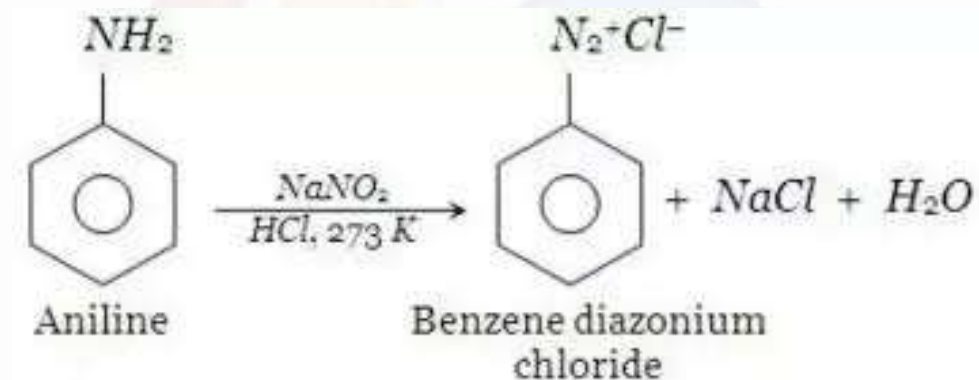
ACIDIC OXIDATION OF CUMENE

- It is recently developed commercial method for preparation of phenol.
- Cumene is oxidized by atmospheric oxygen in presence of metal catalyst into Cumene Hydroperoxide.
- The hydroperoxide is converted into phenol through acid catalyzed rearrangement

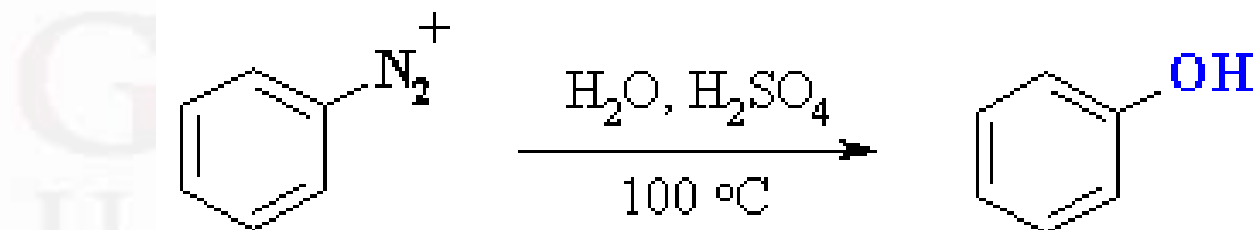


Preparation of phenol from Aryl Diazonium salts

- Aryl diazonium salts are prepared by reaction of aryl amines with nitrous acid

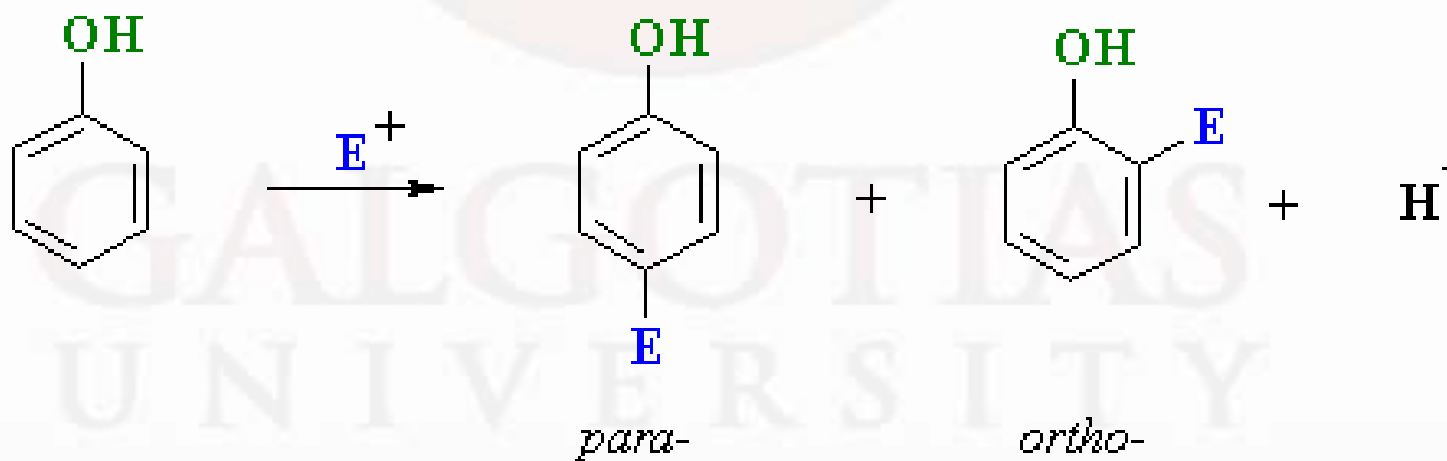


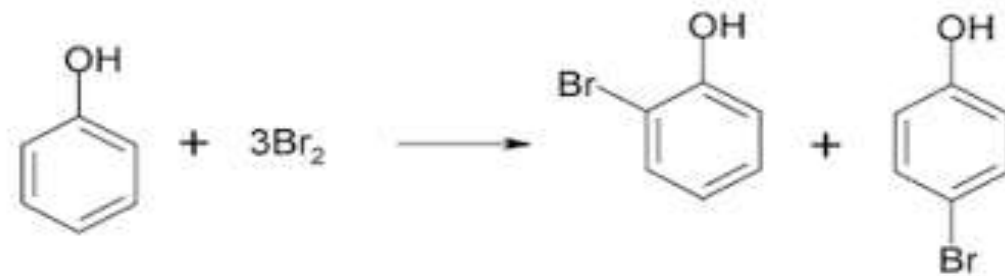
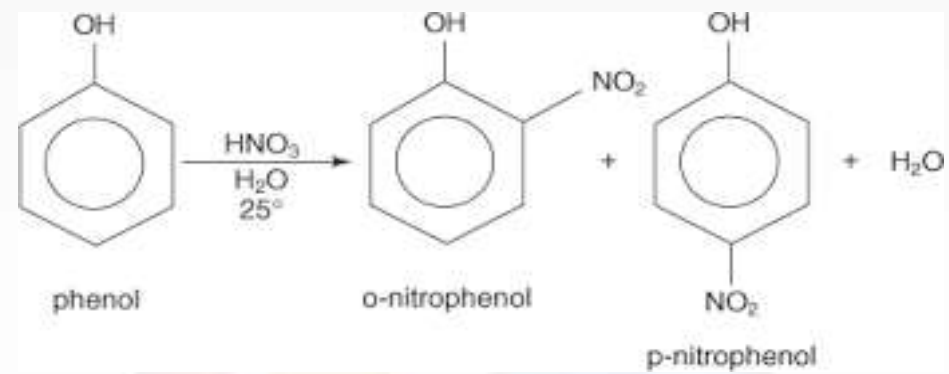
- Aryl diazonium salts can be converted into phenols using H_2O/H_2SO_4 /heat



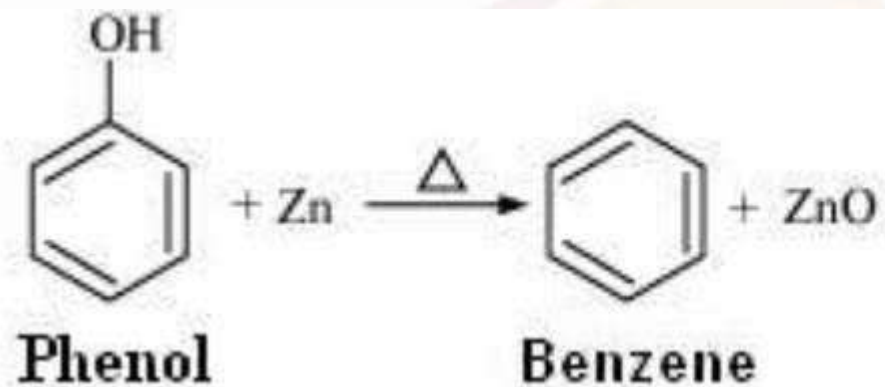
Reactions of phenol

1. Phenol gives a violet colour with ferric chloride. This is a characteristic of all compounds containing OH group linked to benzene ring.
2. Electrophilic substitution reaction: Phenols can be nitrated, halogenated and sulphonated to give ortho and para derivatives.

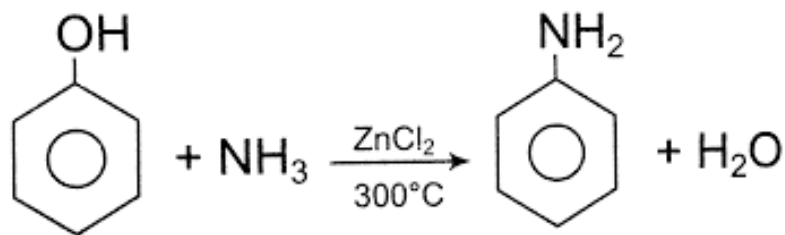




3. When phenol is distilled with zinc dust then it gives benzene and zinc oxide.



4. When phenol is heated with ammonia and zinc chloride or calcium chloride, it gives aniline.



REFERENCES

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