

CHEMISTRY STUDY MATERIALS FOR CLASS 12

(NCERT Based Notes of Chapter - 11)

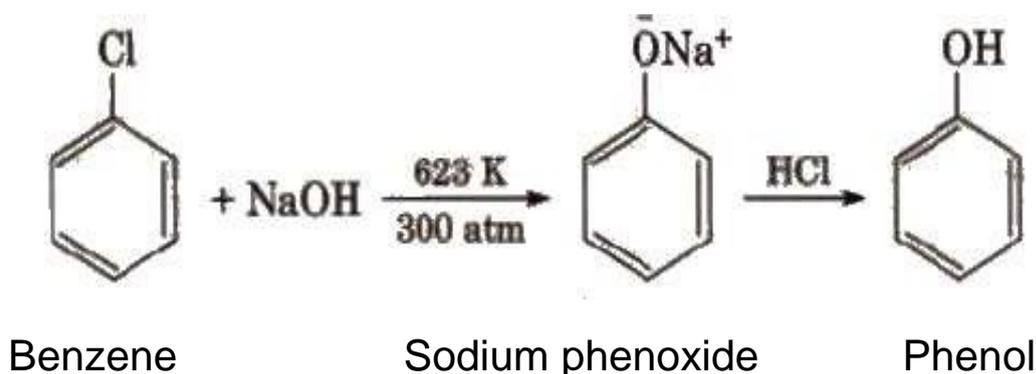
GANESH KUMAR

DATE:- 03/10/2020

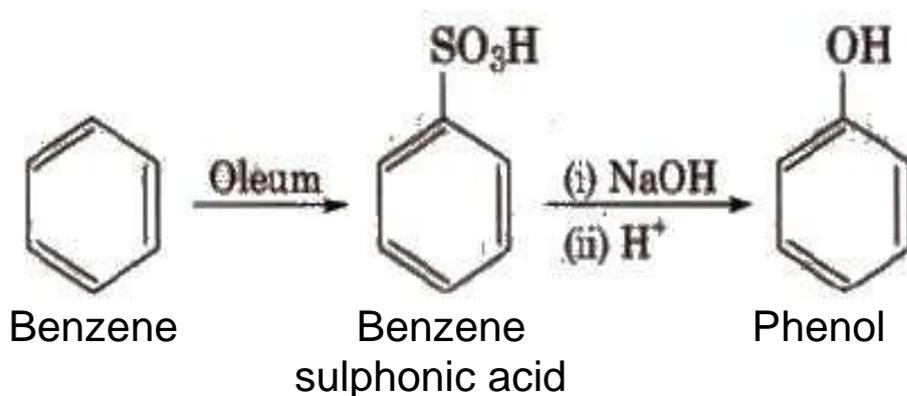
Alcohols, Phenols and Ethers

Preparation of Phenols

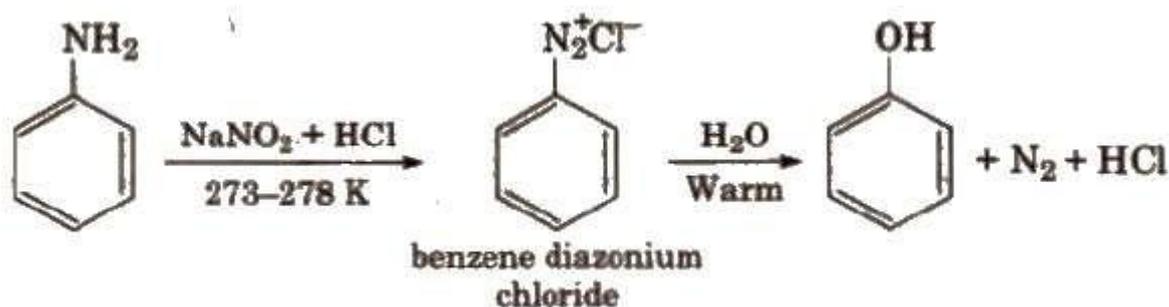
(i) From haloarenes



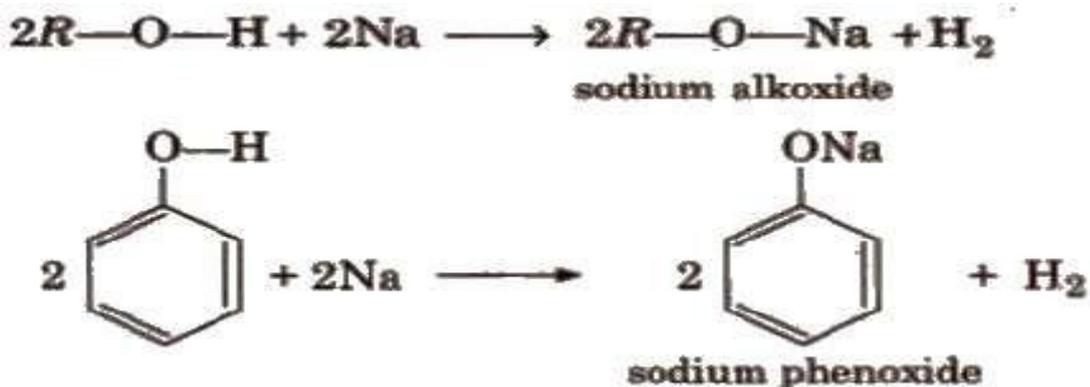
(ii) From benzene sulphonic acid



(iii) From diazonium salts

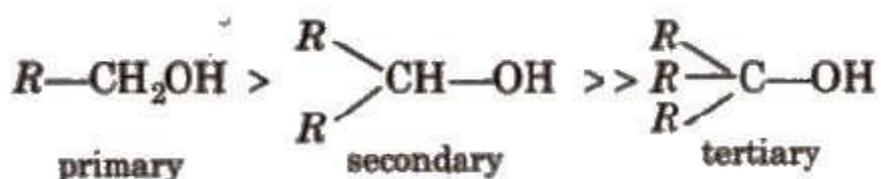


(iv) From cumene



Alcohols are weaker acids than water due to +I group present in alcohols, which decreases the polarity of -O-H bond.

Acid strength of alcohols



Electron releasing group increases electron density on oxygen to decrease the polarity of -OH bond.

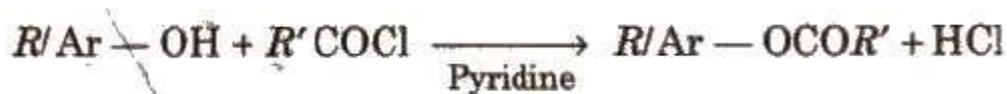
Order of acidity is $RCOOH > H_2CO_3 > C_6H_5OH > H_2O > R-OH$.

Phenol is more acidic than alcohols due to stabilization of phenoxide ion through resonance. Presence of electron withdrawing group increases the acidity of phenol by stabilizing phenoxide ion while presence of electron releasing group decreases the acidity of phenol by destabilizing phenoxide ion.

Thus, increasing acidic strength is **o-cresol < p-cresol < m-cresol < phenol < o-nitrophenol < 2, 4, 6-trinitrophenol (picric acid)**

Higher K_a and lower pK_a value corresponds to the stronger acid.

(b) Esterification: The reaction of an alcohol with carboxylic acid in presence of mineral acid produces an ester is called Esterification.



The reaction with $R'COOH$ and $(R'CO)_2O$ is reversible, so conc. H_2SO_4 is used to remove water.

The reaction with $R'COCl$ is carried out in the presence of pyridine so as to neutralise HCl which is formed during the reaction.

The introduction of acetyl (CH_3CO-) group in phenols is known as acetylation. Acetylation of salicylic acid produces aspirin.

