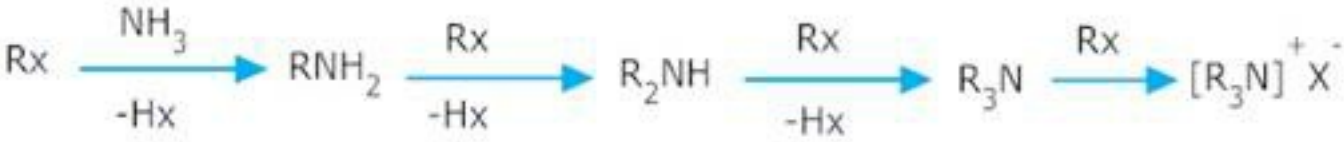
CBSE Class 12 physics
Important Questions
Chapter 13
Amines

2 Mark Questions

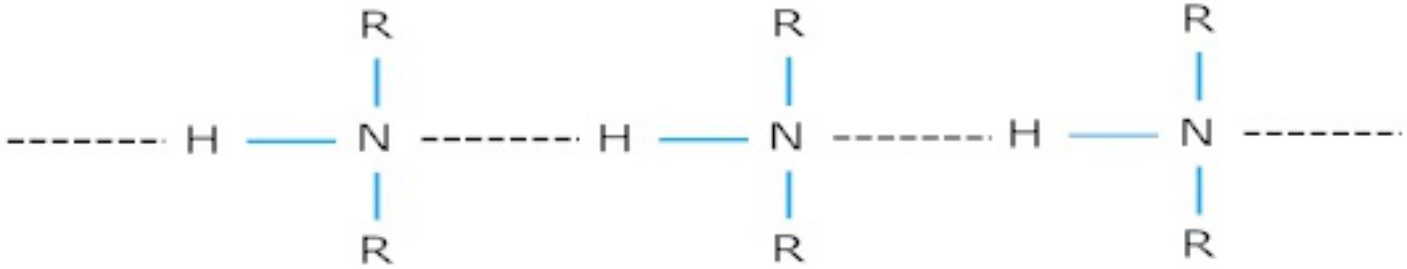
1. It is difficult to prepare pure amines by ammonolysis of alkylhalides.

Ans. The process of ammonolysis yields a mixture of primary, secondary, tertiary amines and quaternary salts. The separation of this amines is a very complicated process and difficult. Therefore it is difficult to prepare pure amines by ammonolysis of alkyl halides.



2. Amines have higher boiling points than hydrocarbons of similar molecular mass.

Ans. Amines have higher boiling points than hydrocarbons of comparable molecular mass due to the presence of intermolecular hydrogen bond in amines which is absent in hydrocarbons. Therefore, amines exist as associated molecules and have higher boiling points.



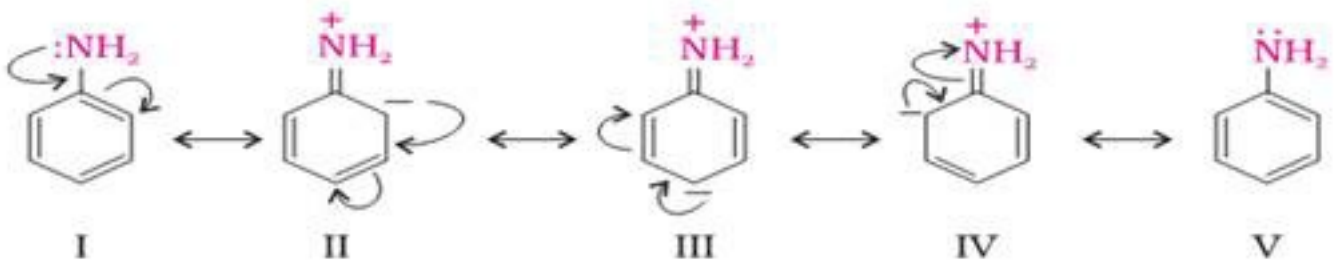
In alcohols and carboxylic acids, the electro- negativity of oxygen is more than nitrogen of amines. Therefore the hydrogen bonds of alcohols and acids are stronger than in amines and alcohols & carboxylic acids have higher boiling points.

3. Aniline is weaker base than cyclohexylamine.

Ans. As a result of resonance in aniline; the lone pair on nitrogen delocalized over the

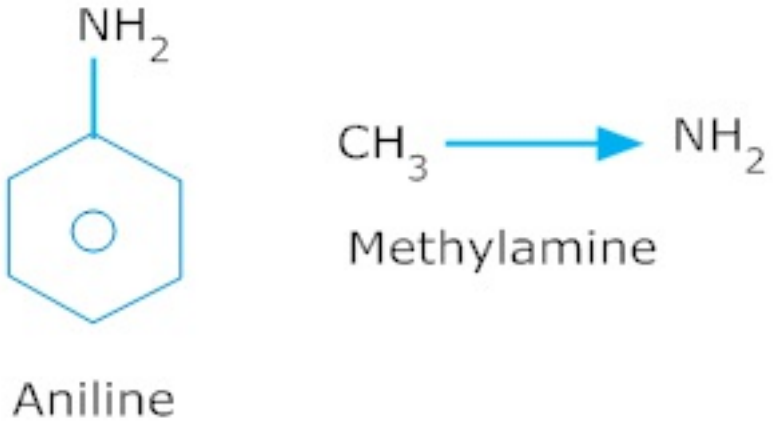
benzene ring and is less available for protonation than in cyclohexyl amine which does not undergo resonance.

Resonating structure of aniline –



4. Methylamine is a stronger base than aniline.

Ans. Due to electron donating nature of CH_3, group, electron pair. Availability at N- atom in methyl amine is much higher than that in aniline; in aniline the benzene ring decreases the electron density at N- atom in aniline. Thus CH_3NH_2 is a stronger base than aniline.



5. Before nitration, aniline is converted to acetanilide.

Ans. Aniline is very much susceptible to nitration and nitric acid is a strong oxidizing agent. Therefore to avoid oxidation of aniline, $-NH_2$ group is protected by its acetylation to acetanilide which undergo nitration smoothly without any oxidation.

Aniline

Benzene

6. It is easier to brominate aniline as compared to benzene.

Ans. In aniline, due to +R effect of $-NH_2$ group the benzene ring gets activated to a large extent and it becomes easier to brominates aniline as compared to benzene.

7. Reduction of nitro compound to aniline using iron scrap and HCl is preferred.

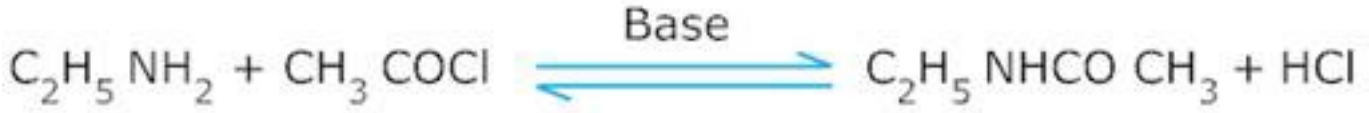
Ans. For reduction of nitro compounds to aniline, iron scrap and HCl is preferred because $FeCl_2$ formed gets hydrolysed to release HCl during the reaction & therefore only a small amount of HCl is required to initiate the reaction.

8. Aromatic amines cannot be prepared by Gabriel Phthalimide synthesis.

Ans. Aromatic amines cannot be prepared by Gabriel pythalimide synthesis as aryl halides do not undergo nucleophilic substitution with the anion formed by pythalimide.

9. During acylation of amines, pyridine is added.

Ans. Acylation of amines is carried out in presence of pyridine or another base stronger than amines as it removes HCl so formed and shifts the equilibrium in forward direction.



10. Aniline does not undergo Friedel – Craft's reaction.

Ans. During Fridel Craft's reaction, aniline forms salt with aluminum chloride, the catalyst of reaction due to which nitrogen acquires a positive charge and acts as a strong deactivating group for further reaction.

11. Complete the following acid-base reactions and name the products:

(i) $CH_3CH_2CH_2NH_2 + HCl \rightarrow$

(ii) $(C_2H_5)_3N + HCl \rightarrow$

Ans. (i)

$$\underset{\text{n–Propylamine}}{CH_3CH_2CH_2NH_2} + HCl \longrightarrow \underset{\text{n–Propylammonium chloride}}{CH_3CH_2CH_2\overset{+}{N}H_3\,\overset{-}{Cl}}$$

(ii)

$$\underset{\text{Triethylamine}}{(C_2H_5)_3N} + HCl \longrightarrow \underset{\text{Triemethylammonium chloride}}{(C_2H_5)_3\overset{+}{N}H_3\,\overset{-}{Cl}}$$

12. Write chemical reaction of aniline with benzoyl chloride and write the name of the product obtained.

Ans.