

Chapter – 13

Amines

01. Write the IUPAC name $(\text{CH}_3\text{CH}_2)_2\text{NCH}_3$.

02. Write the IUPAC name $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \overset{\text{CH}_3}{\underset{|}{\text{N}}} - \text{C}_2\text{H}_5$.

03. Give the structural formula and name of the product of the following reaction: Chloroform is heated with aniline in the presence of alc. KOH.

04. Arrange the following in the order of their increasing basic strength in solution:

NH_3 , EtNH_2 , Et_2NH , Et_3N .

05. Write the IUPAC name of



06. State the reaction taking place when bromine water is added to an aqueous solution of aniline

07. Why do amines behave as nucleophiles?

08. Why is an arylamine less basic than ammonia?

09. Rearrange the following in increasing order of their basic strengths:

$\text{C}_6\text{H}_5\text{NH}_2$, $\text{C}_6\text{H}_5\text{N}(\text{CH}_3)_2$, $(\text{C}_6\text{H}_5)_2\text{NH}$ and CH_3NH_2 .

10. Arrange the following in the decreasing order of their basic strength in aqueous solutions:

CH_3NH_2 , $(\text{CH}_3)_2\text{NH}$, $(\text{CH}_3)_3\text{N}$ and NH_3 .

Short Answer Type Questions

11. Account for the following:

Ammonolysis of alkyl halides does not give a corresponding amine in the pure state.

12. Illustrate the following with suitable examples each.

(i) Hoffmann's bromamide reaction (ii) Coupling reaction.

13. Account for the following observations :

(i) Tertiary amine does not undergo an acylation reaction.

(ii) Aniline readily reacts with bromine to give 2, 4, 6-tribromoaniline.

14. (a) Suggest chemical reactions for the following conversions:

(i) Aniline to benzoic acid

(ii) n-Hexanenitrile to 1-aminopentane

(iii) p-Chloroaniline to p-chlorobenzyl-amine.



(b) Account for the following:

(i) An aqueous solution of methylamine reacts with iron (III) chloride to precipitate iron (III) hydroxide.

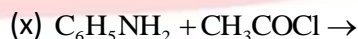
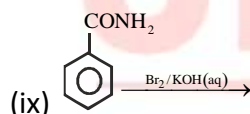
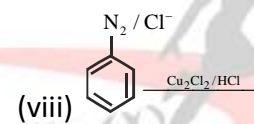
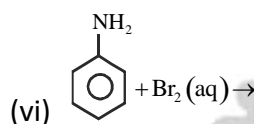
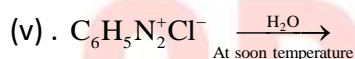
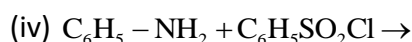
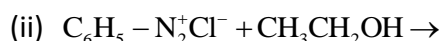
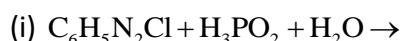
(ii) The boiling points of amines are lower than those of corresponding alcohols

15. Out of $\text{CH}_3 - \text{NH}_2$ and $(\text{CH}_3)_3\text{N}$, which one has a higher boiling point.

(a) Why does it act as a Lewis base?

(b) Write Hoffmann's bromamide reaction.

16. Complete the following reactions.



17. Write a chemical test to distinguish between the following pairs of compounds.

(i) Methylamine and dimethylamine

(ii) Ethylamine and aniline

(iii) Aniline and N-methyl aniline

18. Account for the following observation:

(i) pK_b value for aniline is more than that for methylamine.

(ii) Why aromatic amine can't be synthesized by Gabriel phthalimide method.

(iii) Aniline does not undergo Friedel-Crafts reaction.

19. Write notes on.

(i) Carbylamine reaction (ii) Gabriel phthalimide synthesis (iii) Coupling reaction.

20. Write notes on :

(i) Diazotisation (ii) Ammonolysis of primary amine (iii) Acetylation

21. How are the following conversions carried out?

(i) Aniline to nitrobenzene (ii) Ethanamine to N-ethylathanamide

(iii) Chloroethane to propan-1-amine

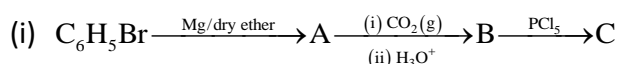
22. Explain the following giving a reason in each case:

- (i) Why is an alkyl amine more basic than ammonia?
 (ii) Why do primary amines have higher boiling points than the tertiary amines?

23. In the following cases rearrange the compounds as directed:

- (i) In increasing order of basic strength: $C_6H_5NH_2$, $C_6H_5N(CH_3)_2$, $(C_2H_5)_2NH$, and CH_3NH_2 .
 (ii) In decreasing order of basic strength: Aniline, p-nitroaniline, and p-toluidine.
 (iii) In increasing order of pK_b values: $C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$, and $C_6H_5NH_2$.

24. Identify A, B, C and D



25. Write chemical equations for the following conversions:

- (i) Nitrobenzene to benzoic acid (ii) Benzyl chloride to 2-phenylethanolamine.
 (iii) Aniline to benzyl alcohol.

Model Questions (Amines)

01. Write the IUPAC name of the following compound. $(CH_3)_2N-CH_2CH_3$
 02. Write the IUPAC name of the following compound $(CH_3CH_2)_2NCH_3$
 03. Arrange the following increasing order of basic strength aniline, p-nitroaniline, and p-toluidine.
 04. Which of the two is more basic and why? CH_3NH_2 or NH_3
 05. Out of CH_3-NH_2 and $(CH_3)_3N$, which one has a higher boiling point?