

**Chapter -13**  
**Amines** **Marks 3 with option 4**

**Multiple Choice Questions (1 Mark )**

- i) The following amine is the product of Gabriel phthalimide synthesis  
a) secondary aliphatic amine                      **b) primary aliphatic amine**  
c) primary aromatic amine                      d) tertiary aliphatic amine
- ii) Mendius' reaction is used to convert .....  
a) amide into amine                      b) alkyl halide into amine  
c) nitroalkane into amine                      **d) alkyl cyanide into amine**
- iii) The strongest base amongst the following is  
a) Methanamine                      **b) N-Methylmethanamine**  
c) N-Methylaniline                      d) N, N-Dimethylmethanamine
- iv) The reaction in which diazonium salt is used  
**a) Sandmeyer reaction**                      b) Mendius reaction  
c) Hofmann rearrangement reaction                      d) Carbylamine reaction
- v) The type of isopropylamine is a .....  
**a) primary amine**                      b) secondary amine  
c) tertiary amine                      d) quaternary ammonium salt
- vi) Aniline on reaction with bromine water produces .....  
a) 1,4-Dibromobenzene                      b) 1,2,4-Tribromobenzene  
c) 2,4-Dibromoaniline                      **d) 2,4,6-Tribromoaniline**
- vii) Tertiary amines have lowest boiling points because .....  
a) they possess polar N-C bonds  
b) they possess intermolecular dipole-dipole attraction forces

- c) they possess intermolecular H-bonding
- d) they do not possess intermolecular H-bonding

### Very short answer type of questions (1 mark )

1. Write the name of process of breaking the C-X bond of R-X by ammonia in preparation of amines.
2. Arrange the following compounds in increasing order of their boiling points.  
Ethyl alcohol, Ethyl amine, Ethanoic acid, Ethane
3. Write the number of moles of ethanoyl chloride required for complete acylation of N,N-Dimethylaniline.
4. Write the name of the gas evolved when a primary amine is reacted with nitrous acid.
5. Write the structure of Hinsberg's reagent.
6. Write the order of reactivity of alkyl halides with ammonia.
7. Write the structure of Methylphenylamine

### Short answer questions (Type-I) (2 Marks)

- i. What is the action of fluoroboric acid on arene diazonium salt and the product is heated.
- ii. Write the reactions to bring about the following conversions.  
a. Aniline to Sulfanilic acid                      b. Methyl chloride to Ethanamine
- iii. Explain carbylamine reaction.
- iv. Write IUPAC names of p-toluidine and Trimethylamine
- v. What is the action of nitrous acid on the following compounds?  
a. Isopropylamine                                      b. Aniline
- vi. Write the reactions to bring about the following conversions.  
a. Nitroalkane to Alkylamine                      b. Alkyl cyanide to Alkylamine

### Short answer questions (Type-II ) (3 marks )

- i. Distinguish between methanamine ,dimethanamine and triethanamine using Hinsberg's reagent.

ii. Write IUPAC name of  $\text{H}_2\text{N}-(\text{CH}_2)_6-\text{NH}_2$ .

Write reactions to bring about the following conversions.

a) Acetamide to Ethylamine

b) Benzene diazonium chloride to phenol.

iii. Explain Hoffmann's exhaustive alkylation with suitable reactions.

iv. Explain nitration of aniline. Write reactions for the preparation of p-nitroaniline?

v. Explain Hofmann degradation reaction with an example

### Long answer questions (4 marks)

i. Write reactions for preparation of ethanamine using Gabriel phthalimide synthesis. Why aniline cannot be prepared by Gabriel phthalimide synthesis?

ii. Explain the basicity of amine with suitable examples. Write the factors influencing basicity of amines.

iii. Explain the following reactions with suitable examples.

a) Gatterman reaction

b) Sandmeyer reaction.

c) Hofmann elimination reaction.

d) Hoffmann Carbylamine test.

iv. Write the chemical reaction of ethylamine with

i) moist  $\text{Ag}_2\text{O}$

ii) Methyl iodide

iii) Hinsberg reagent

iv) Ethanoyl chloride

v. Write the chemical reaction of Benzenediazonium chloride with following reagents

i) phosphinic acid (hypophosphorous acid,  $\text{H}_3\text{PO}_2$ )

ii) Ethanol

ii) Copper powder &  $\text{HCl}$

iv)  $\text{CuCN/KCN}$