

[MCQ – 3, 5 M – 1]

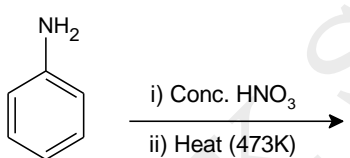
I. One Mark questions:

1. Name the foul smelling gas liberated when aniline is heated with chloroform and alcoholic potash.
2. What are the products obtained when primary amine is alkylated?
3. Among isomeric primary, secondary and tertiary amines, what is the increasing order of boiling points?
4. Which amine with the formula C_3H_9N has the least boiling point as compared to the other functional isomers?
5. Among ethyl amine and ethyl alcohol which has higher boiling point?
6. Arrange the following amines in their decreasing order of pK_b values. $C_2H_5NH_2$, $C_6H_5NHCH_3$, $(C_2H_5)_2NH$, $C_6H_5NH_2$.
7. What is diazotisation?
8. Give reason why diazonium salt solution should be used immediately after its preparation?
9. Name the reagent used to convert benzene diazonium chloride to benzene.
10. Which of the following compounds will liberate nitrogen gas on reaction with nitrous acid $C_2H_5NH_2$, $C_6H_5NH_2$?
11. Which functional group is identified by carbylamine reaction?
12. What is the IUPAC name of Acetanilide?
13. What is ammonolysis?
14. Write IUPAC names of the following compounds:

(a) $(CH_3)_3C-NH_2$	(b) $CH_3-CH_2-CH_2-NH_2$	(c) $C_6H_5NH_2$
(d) $C_6H_5NHCH_3$	(e) $(C_2H_5)_2NH$	(f) $(C_2H_5)_2N-CH_3$
(g) $(CH_3)_3-NH_2$	(h) $(CH_3)_2-CH-NH_2$	(i) $C_2H_5-CH(NH_2)-CH_3$
(j) $C_2H_5-NH-CH_3$	(k) $(CH_3)_2-N-C_2H_5$	
15. Which reagent is used to convert nitrobenzene to aniline under neutral conditions?
16. Why do primary amine have higher boiling point than tertiary amine?
17. What is Hinsberg's reagent?
18. Identify the reactant 'A' in the following reaction: $A + 2 R-X \longrightarrow R_4 N^+ X^-$.

II. TWO Markers:

1. What are primary amines? Give example.
2. What are secondary amines? Give example.
3. What are tertiary amines? Give an example.
4. What are aralkyl amines? Give an example.
5. Give reason primary amines have higher boiling point than tertiary amine.

6. Give reason why aniline is a weaker base than methyl amine?
7. How do you convert ethyl amine to ethyl alcohol?
8. Primary amines are prepared by Gabriel phthalimide synthesis .Can we prepare aniline or aryl primary amine by this method? If yes/not why?
9. Give reason why aryl amines cannot be prepared by Gabriel pthalimide synthesis?
10. Explain Sandmeyer's reaction with an example.
11. Explain Gatterman reaction with an example.
12. How does methyl amine and dimethyl amine react with acetyl chloride?
13. Explain a distinguishing test between 1° , 2° and 3° amines.
14. How aniline does reacts with benzene diazonium chloride?
15. How do you obtain a primary amine from a) Nitroalkane b) alkanenitrile?
16. How will you convert ethanoic acid to methanamine?
17. Boiling point of trimethyl amine (276K) is lower than that of n-propylamine (322K), explain.
18. Tertiary butyl bromide, does not react with NH_3 to form tertiary butyl bromide why?
19. How is the basic strength of aryl amines affected by the presence of a) electron donating group b) electron with drawing groups?
20. Arrange the following in increasing order of their basic strengths in the aqueous medium: CH_3NH_2 , $(\text{CH}_3)_2\text{NCH}_3$, $(\text{CH}_3)_2\text{NH}$. Give one reason for the trend observed.
21. Explain the trend in basic strength of 1° , 2° and 3° methyl amines in gaseous phase.
22. Explain diazotization reaction of aniline.
23. Identify he major product in the following reaction:
 - i) $\text{C}_2\text{H}_5\text{-NH}_2 + \text{CH}_3\text{COCl} \longrightarrow$
 - ii) 

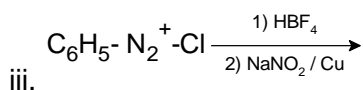
The reaction shows aniline (a benzene ring with an NH_2 group) reacting with concentrated HNO_3 followed by heat at 473K. The reaction arrow points to the right.
24. Explain Carbylamine reaction with an example. **OR** Explain Carbylamine reaction by taking methyl amine as an example.
25. Explain Mendius reduction with an example.
26. Explain Hoffmann's Bromamide reaction with an example. **OR** Explain Hoffmann's Bromamide degradation reaction for preparation of aniline. **OR** Explain Hoffmann's Bromamide degradation reaction for preparation of methanamine.
27. Give an example for a coupling reaction of diazonium salt and give its chemical equation.
28. How do you convert benzene diazonium chloride to chlorobenzene? Name the reaction.
29. Write the chemical reactions involved in conversion of aniline into phenol.
30. What is Hinsberg's reagent? Between CH_3NH_2 and $\text{C}_6\text{H}_5\text{NH}_2$ which is more basic?
31. Among aniline and ammonia which is more basic in aqueous medium? Give one reason.

32. Name the major products formed when nitrous acid is treated with i) methylamine ii) aniline at low temperature.

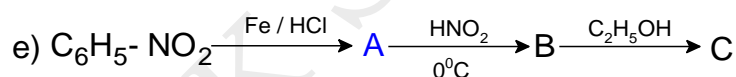
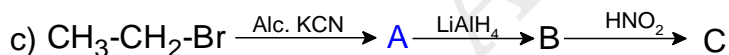
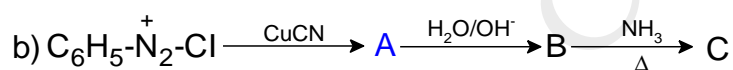
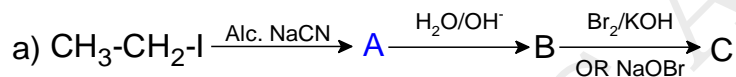
III. Three Markers:

- How do you convert benzene diazonium chloride to a) Benzene b) Nitro benzene c) p-hydroxy azo benzene?
- An aromatic compound 'A' on heating with aqueous ammonia forms a compound 'B' which upon heating with Br_2 and KOH forms a compound 'C' having the molecular formula $\text{C}_6\text{H}_7\text{N}$. Identify A, B and C, write the structure and IUPAC names of the compound.

3. Complete the following reactions:

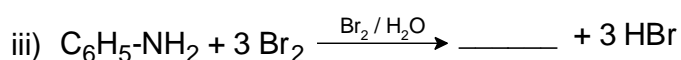
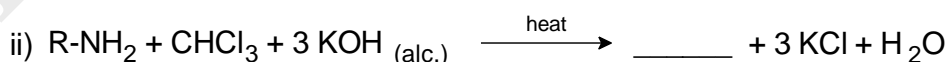
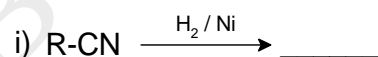


4. Identify A, B and C in the following reactions:



5. i. $\text{C}_6\text{H}_5\text{-CO-NH}_2 \xrightarrow{\text{Br}_2 / \text{NaOH}} \text{X}$ ii. $\text{X} \xrightarrow[0^\circ\text{C}]{\text{NaNO}_2 / \text{HCl}} \text{Y}$. What is 'X' and 'Y'? Name the reaction occurring in step i.

6. Complete the following reactions:



7. Give equations to synthesise methanamine by Gabriel phthalimide synthesis.

8. How do you convert aniline into a) 2, 4, 6-tribromoaniline b) o, p-dibromo aniline c) sulphanilic acid?
9. What is Hinsberg's reagent? How is it used to distinguish primary amine from a secondary amine? **OR** Explain how Hinsberg's reagent is used to distinguish primary, secondary and tertiary amines?
10. When aniline is treated with HNO_2 at 273K -278K, benzene diazonium chloride is formed. Write the reaction and name the reaction.
