

SARALA BIRLA PUBLIC SCHOOL

Birla Knowledge City, Mahilong, Ranchi
CLASS-XII (2020-21)



(SARALA BIRLA GROUP OF SCHOOLS)

Sub: Chemistry Assignment-3

Amines

- Q.1. Write the IUPAC names of the following compounds and classify them into primary, secondary and tertiary amines. (i) $C_2H_5NH_2$ (ii) $C_6H_5NHCH_3$ (iii) $(C_2H_5)_2NH$ (iv) $C_6H_5NH_2$ (v) $C_6H_5N(CH_3)_2$ (vi) $(C_2H_5)_3N$
- Q.2. Write the structures of the following organic compound:
(i) N-Methylethanamine (ii) N,N-Dimethylaniline (iii) N-Phenylbenzamide.
- Q.3. Explain why :
- (i) pK_b of aniline is more than that of methylamine.
 - (ii) Ethylamine is soluble in water whereas aniline is not.
 - (iii) Although amino group is o- and p-directing in aromatic electrophilic substitution reactions, aniline on nitration gives a substantial amount of m-nitroaniline.
 - (iv) Aniline does not undergo Friedel Crafts reaction.
 - (v) Diazonium salts of aromatic amines are more stable than those of aliphatic amines.
 - (vi) Gabriel phthalimide synthesis is preferred for synthesising primary amines.
- Q.5. Complete the following reactions equations:
- (a) $C_6H_5NH_2 + CHCl_3 + KOH(alc.) \longrightarrow$
 - (b) $C_6H_5NH_2 + H_2SO_4(conc.) \longrightarrow$
 - (c) $C_6H_5NH_2 + Br_2(aq.) \longrightarrow$
 - (d) $C_6H_5N_2Cl + C_2H_5OH \longrightarrow$
 - (e) $C_6H_5NH_2 + (CH_3CO)_2O \longrightarrow$
- Q.6. Arrange the following:
- (a) In decreasing order of pK_b values : $C_2H_5NH_2, C_6H_5NHCH_3, (C_2H_5)_2NH$ and $C_6H_5NH_2$
 - (b) In decreasing order of basic strength: $C_6H_5NH_2, C_6H_5N(CH_3)_2, (C_2H_5)_2NH$ and CH_3NH_2
 - (c) Increasing order of basic strength: Aniline, p-Nitroaniline and p-Toluidine
 - (d) Decreasing order of basic strength in gas phase: $C_2H_5NH_2, (C_2H_5)_2NH, (C_2H_5)_3N$ and NH_3
 - (e) Increasing order of solubility in water: $C_6H_5NH_2, (C_2H_5)_2NH$ and $C_2H_5NH_2$.

- Q.7. What happens when:
- (i) Benzylamine is treated with nitrous acid (HNO_2)
 - (ii) Aniline is treated with nitrous acid (HNO_2).
 - (iii) Benzoic acid is heated with ammonia.
 - (iv) Aniline is treated with bromine water.
 - (v) Primary amines are treated with chloroform and alcoholic solution of KOH.
- Q. 8. An aromatic compound 'A' on treatment with aqueous ammonia and heating forms compound 'B' which on heating with Br_2 and KOH forms a compound 'C' of molecular formula $\text{C}_6\text{H}_7\text{N}$. Write the structures and IUPAC names of compounds A, B and C.
- Q.9. Distinguish between:
- (i) Methylamine and Dimethylamine
 - (ii) Secondary and tertiary amines
 - (iii) Ethylamine and Aniline
 - (iv) Aniline and Benzylamine
 - (v) Aniline and N-Methylaniline
- Q.10. How the following conversion can be carried out?
- (i) Nitrobenzene to benzoic acid
 - (ii) Benzene to m-Bromophenol
 - (iii) Benzoic acid to aniline
 - (iv) Aniline to 2,4,6-tribromofluorobenzene
 - (v) Benzyl chloride to 2-Phenylethanamine
 - (vi) Aniline to p-Bromoaniline
 - (vii) Benzamide to Toluene
 - (viii) Aniline to Benzyl alcohol.
- Q.11 Write short notes of the following reactions;
- a) Carbyl amine reaction
 - b) Coupling reaction
 - c) Hoffmann's bromamide reaction
 - d) Diazotisation
 - e) Ammonolysis
 - f) Gabriel phthalimide synthesis.