INDIAN SCHOOL MUSCAT

CHEMISTRY DEPARTMENT

QUESTION BANK

Amines

1. Write the IUPAC names of the following.(one mark each)
   i. $(CH_3)_2CHNH_2$
   ii. $C_6H_5NHCH_3$
   iii. $(CH_3CH_2)_2NCH_3$
   iv. $(CH_3)_3CNH_2$
   v. m-$BrC_6H_4NH_2$
   vi. $C_6H_5NHCOCH_3$
   vii. NH_2-CH_2CH_2-CH_2-$CH=CH_2$
2. Complete the following reaction equations (one mark each)
   i. $C_6H_5N_2Cl + H_3PO_2 + H_2O \rightarrow$
   ii. $C_6H_5NH_2 + Br_{2\ (aq)} \rightarrow$
   iii. $C_6H_5N_2Cl + CH_3COCl \rightarrow$
   iv. $C_6H_5NH_2 + HNO_2 \rightarrow$
   v. $RNH_2 + CHCl_3 + KOH \rightarrow$
3. How will you bring about the following conversions? (one mark each)
   i. Benzene to Aniline
   ii. Aniline to benzonitrile
   iii. Ethanoic acid to ethanamine

iv. p-Toluidine to 2-Bromo-4-methylaniline.

v. Methylbromide to ethanamine

vi. Ethylamine to methylamine

vii. Benzene to sulphanilic acid

viii. Hexanenitrile to 1-aminopentane.

4. Giving an example of each describe the following reactions : (each carries one mark)

i. Hoffman bromamide reaction

ii. Gabriel phthalimide synthesis

iii. Gatterman reaction

iv. Coupling reaction

v. Hoffman's ammonolysis

5. Give one chemical test to distinguish between the following pairs of compounds : (one mark each)

i. Methylamine and dimethylamine

ii. Secondary and tertiary amines

iii. Ethylamine and aniline

iv. Aniline and benzylamine

v. Methylamine and methanol

vi. Methylamine and N, N-Dimethylamine

vii. Ethanol and ethanamine

6. Explain why : (one mark each)

i. The C–N–C bond angle in trimethyl amine is 108°

ii. The quaternary ammonium salts having four different alkyl groups are

optically active

iii. Alkylamines are more basic than ammonia

iv. Aniline cannot be prepared by Gabriel phthalimide synthesis

v. Garbrielphthalimide synthesis is preferably used for synthesising primary amines.

vi. Ethylamine is soluble in water but aniline is not

vii. Aniline is soluble in dilute HCl.

viii. Amines have lower boiling point than alcohols of comparable molecular masses.

ix. 1° Amines have higher boiling points than 2° amines which in turn are higher boiling than 3° amines.

x. The pKb value of benzeneamine is 9.33 while that of ammonia is 4.75.

xi. Aniline does not undergo Friedel Crafts reaction.

xii. Aniline readily forms 2, 4, 6-tribronoaniline on reaction with bromine water.

xiii. Sulphanillicacid is soluble in water.

xiv. Methylamine in water reacts with ferric chloride to precipitate hydrated ferric oxide.

7. Arrange the following substances

NH_3, $C_2H_5NH_2$, $C_6H_5NH_2$, $(C_2H_5)_2NH$

i. In an increasing order of basic strength

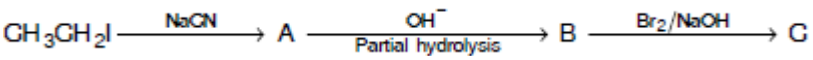
ii. In a decreasing order of basic strength in gas phase

8. Primary, secondary and tertiary amines can be distinguished by using Hinsberg's reagent.

i. What is Hinsberg's reagent?

ii. How will you distinguish primary, secondary and tertiary amines using this reagent.?

9. Write the products formed in the following sequence of reactions :



10. State the reactions and reaction conditions for the following conversions

i. Benzene diazonium chloride to nitrobenzene

ii. Aniline to benzene diazonium chloride

11. Arrange the following in the increasing order of given property :

i. Aniline, p-toluidine, p-nitroaniline. (Basic strength).

ii. NH_4^+, $C_6H_5NH_3^+$, p–F–$C_6H_5NH_3^+$. (Acid strength).

12. An organic compound [A] $C_3H_6O_2$ on reaction wish ammonia followed by heating yield B. Compound B on reaction with Br_2 and alc. NaOH gives compound C, (C_2H_7N). Compound C forms a foul smelling compound D on reaction with chloroform and NaOH. Identify A, B, C, D and the write the equations of reactions involved

13. An organic compound A (C_2H_3N) is used as a solvent of choice for many organic reactions because it is not reactive in mild acidic and basic conditions. Compound A on treatment with Ni/ H_2 forms B. When B is treated with nitrous acid at 273K ethanol is obtained. When B is warmed with chloroform and NaOH a foul smelling compound C formed. Identify A, B and C.