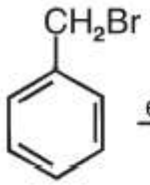
BRAIN INTERNATIONAL SCHOOL

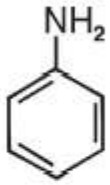
Chemistry Assignment **CLASS XII** **Dec.'24**

CH: Amine

1. How will you bring about the following conversions?
   (i) benzene to Aniline
   (ii) aniline to benzene
   (iii) ethanoic acid to ethanamine
   (iv) p-toluidine to 2-bromo-4-methylaniline.
   (v) methylbromide to ethanamine
   (vi) benzenediazonium chloride to nitrobenzene
   (vii) ethylamine to methylamine
   (ix) benzene to sulphanilic acid
   (x) hexanenitrile to 1-aminopentane

2. Identify the missing reagent/product in the following reactions

(i)  $\xrightarrow[NaCN]{\text{ethanolic}}$ B $\xrightarrow{H_2/Ni}$ C

(ii)  $+ (CH_3CO)_2O \longrightarrow$ A $\xrightarrow[H_2SO_3]{HNO_3}$ B $\xrightarrow{H^+/\,H_2O}$ C

(iii) $C_6H_5N_2^+Cl^- \xrightarrow{CuCN}$ A $\xrightarrow{H_2O/H^+}$ B

(iv) $C_6H_5NO_2 \xrightarrow{Fe/HCl}$ A $\xrightarrow{H_2SO_4}$ B $\xrightarrow{heat}$ C

(v)  $\xrightarrow{CH_3COCl}$ A $\xrightarrow{Br_2/Fe}$ B $\xrightarrow{H_2O/\,OH^-}$ C

3. Explain why :

(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) Garbriel phthalimide synthesis is preferably used for synthesizing primary amines.

(vi) ethylamine is soluble in water but aniline is not

(vii) amines are 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-tribromoaniline on reaction with bromine water.

(xiii) sulphanilic acid is soluble in water.

(xiv) methylamine in water reacts with ferric chloride to precipitate hydrated ferric oxide.

(xv) diazonium salt of aromatic amines are more stable than the diazonium salts of aliphatic amines.

(xvi) Although amino group is o, p-directing in aromatic electrophilic substitution reactions, aniline on nitration gives a substantial amount of m-nitroaniline.

s