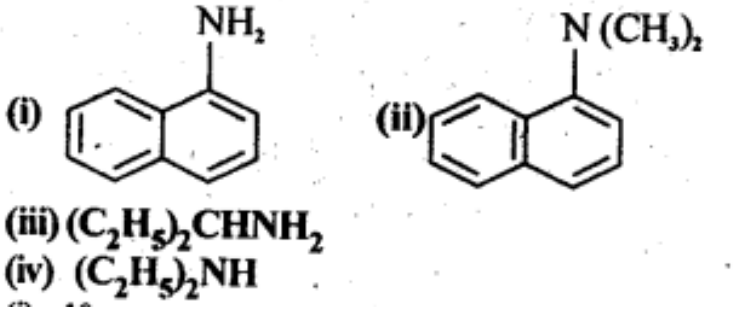
NCERT INTEXT QUESTIONS

13.1. Classify the following amines as primary, secondary and tertiary:



Ans:
(i) 1° (ii) -3° (iii) 1° (iv) 2°

13.2. (i) Write the structures of different isomeric amines corresponding to the molecular formula, $C_4H_{11}N$.
(ii) Write 1UPAC names of all the isomers.
(iii) What type of isomerism is exhibited by different pairs of amines?
Ans:

(i) and (ii) :

Primary amines :

(a) $CH_3CH_2CH_2CH_2NH_2$ Butanamine

(b) $CH_3CH_2CH(NH_2)CH_3$ Butan–2–amine

(c) $CH_3CH(CH_3)CH_2NH_2$ 2-Methyl propanamine

(d) $CH_3-C(CH_3)_2-NH_2$ 2–Methyl propan–2–amine

Secondary amines :

(e) $CH_3CH_2-NH-CH_3$ N–Methylpropanamine

(f) $CH_3-CH(CH_3)-NH-CH_3$ N–Methylpropan–2–amine

(g) $CH_3-CH_2-NH-CH_2CH_3$ N–Ethylethanamine

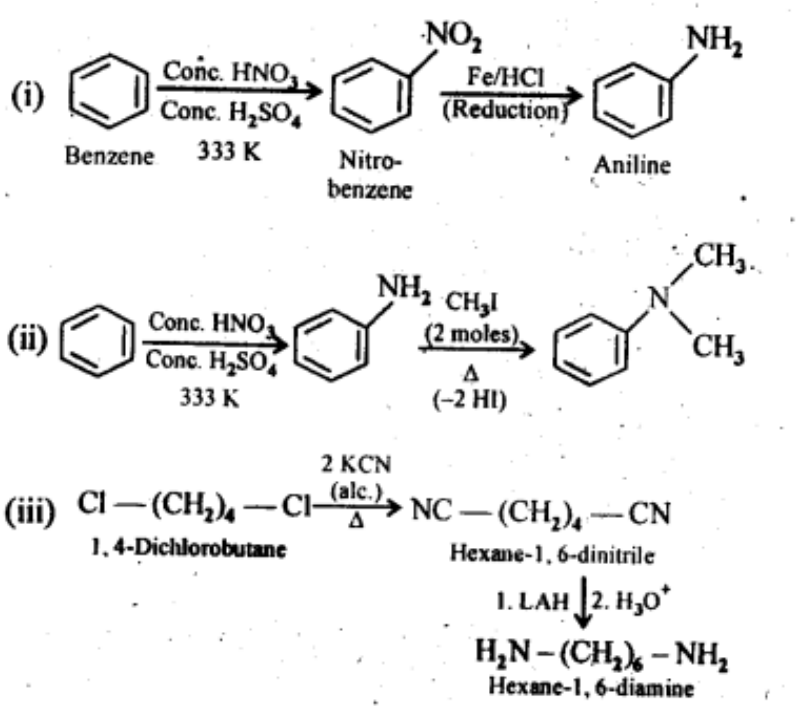
Tertiary amines :

(h) $CH_3-N(CH_3)-CH_2CH_3$ N, N–Dimethylethanamine

(iii) Position isomers : (a) and (b); (e) and (f)

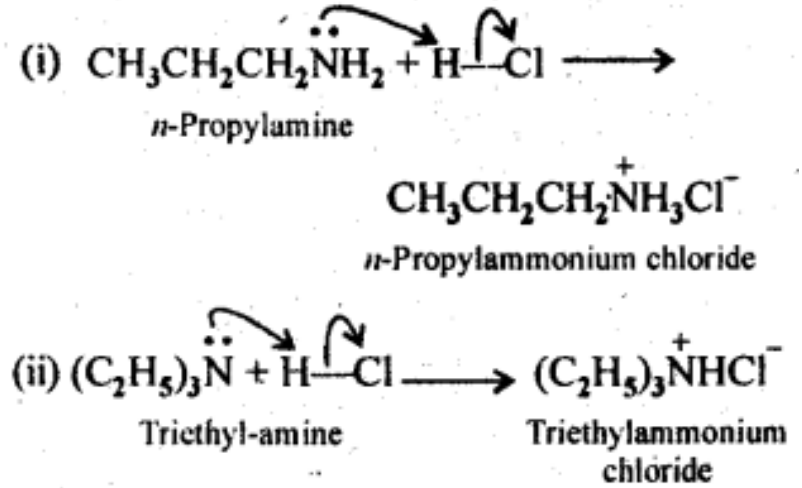
Chain isomers: (a) and (c); (a) and (d); (b) and (c); (b) and (d) Metamers: (e) and (g); (f) and (g) Functional isomers: All 10 amines are functional isomers of 2° and 3° amines and vice-versa.

13.3 How will you convert:
(i) Benzene into aniline
(ii) Benzene into N,N-dimethylaniline
(iii) Cl-$(CH_2)_4$-Cl into Hexane -1,6- diamine
Ans:

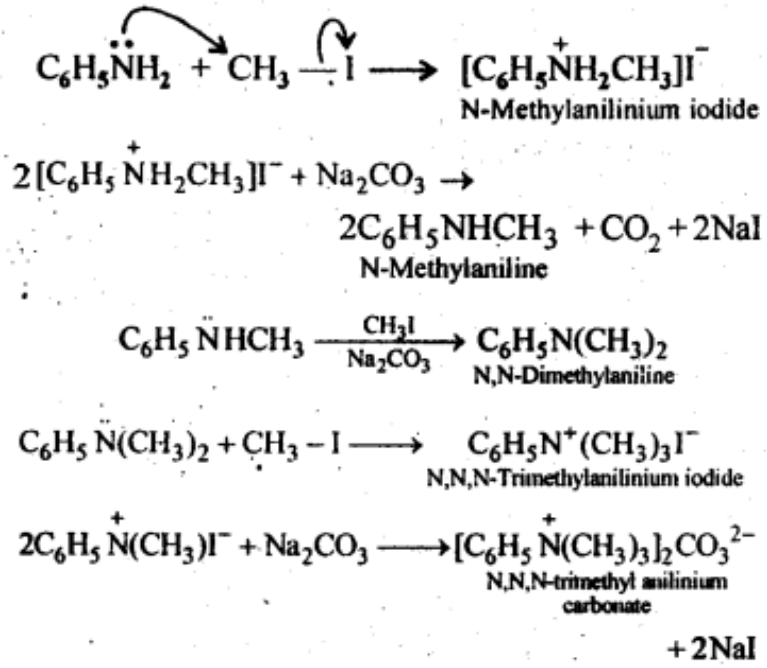


13.4. Arrange the following in increasing order of their basic strength:
(i) $C_2H_5NH_2$, $C_6H_5NH_2$, NH_3, $C_6H_5CH_2NH_2$ and $(C_2H_5)_2$ NH
(ii) $C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$, $C_6H_5NH_2$
(iii) CH_3NH_2, $(CH_3)_2NH$, $(CH_3)_3N$, $C_6H_5NH_2$, $C_6H_5CH_2NH_2$
Ans:
$C_6H_5NH_2 < NH_3 < C_6H_5CH_2NH_2 < C_2H_5NH_2 < (C_2H_5)_2NH$
(ii) $C_6H_5NH_2 < C_2H_5NH_2 < (C_2H_5)_3N < (C_2H_5)_2NH$
(iii) $C_6H_5NH_2 < C_6H_5CH_2NH_2 < (CH_3)_3 N < CH_3NH_2 < (CH_3)_2NH$

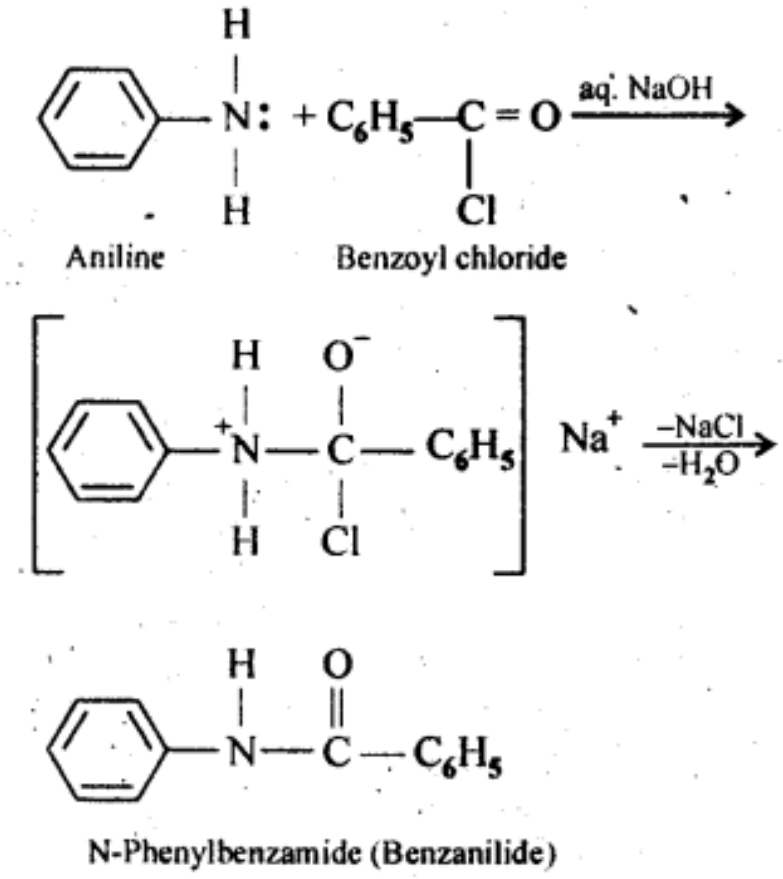
13.5 Complete the following acid-base reactions and name the products:
(i) $CH_3CH_2CH_2NH_2+HCl \rightarrow$
(ii) $(C_2H_5)_3 N+HCl \rightarrow$
Ans:



13.6. Write reactions of the final alkylation product of aniline with excess of methyl iodide in the presence of sodium carbonate solution.
Ans:

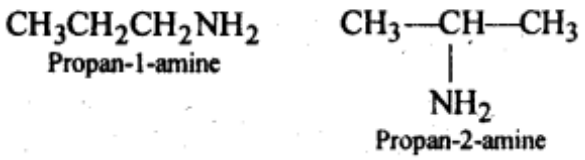


13.7. Write chemical reaction of aniline with benzoyl chloride and write the name of the product obtained.
Ans:



13.8. Write structures of different isomers corresponding to the molecular formula, C_3H_9N. Write IUPAC names of the isomers which will liberated N_2 gas on treatment with nitrons acid.
Ans: In all, four structural isomers are possible. These are:

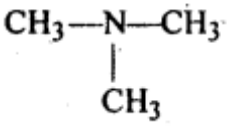
1° amines :



2° amine : $CH_3 — NH — C_2H_5$

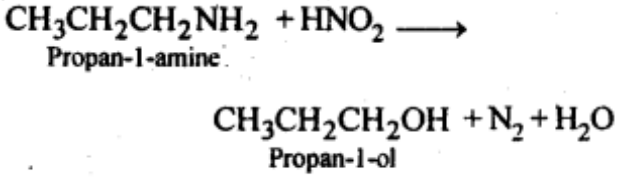
N–Methyl ethanamine

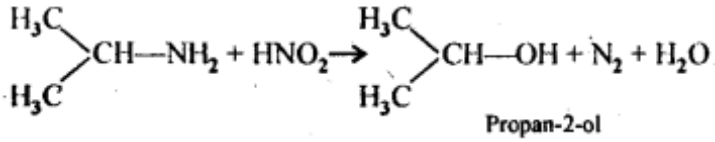
3° amine :



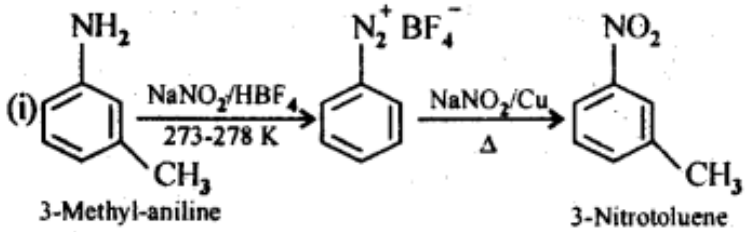
N, N–Dimethyl methanamine

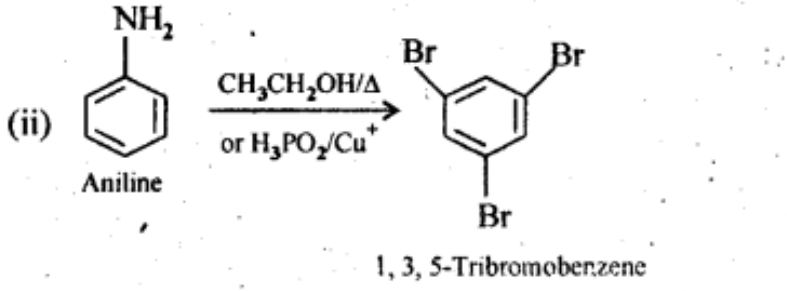
only 1° amines react with HNO_2 to liberate N_2 gas





13.9. Convert:
(i) 3-Methylanilineinto3-nitrotoluene
(ii) Aniline into 1,3,5- Tribromo benzene
Ans:





********** END **********