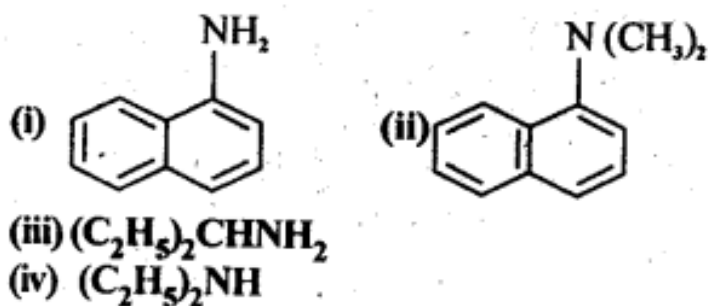




NCERT INTEXT QUESTIONS

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, $\text{C}_4\text{H}_{11}\text{N}$.

(ii) Write IUPAC names of all the isomers.

(iii) What type of isomerism is exhibited by different pairs of amines?

Ans:

(i) and (ii) :

Primary amines :

(a) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{NH}_2$ Butanamine

(b) $\text{CH}_3\text{CH}_2\text{CHCH}_3$

|

NH_2

Butan-2-amine

(c) $\text{CH}_3\text{CHCH}_2\text{NH}_2$

|
 CH_3

2-Methyl propanamine

CH_3

|

(d) $\text{CH}_3-\text{C}-\text{NH}_2$

|
 CH_3

2-Methyl propan-2-amine

Secondary amines :

(e) $\text{CH}_3\text{CH}_2-\text{NH}-\text{CH}_3$

N-Methylpropanamine

(f) $\text{CH}_3-\text{CH}-\text{NH}-\text{CH}_3$

|
 CH_3

N-Methylpropan-2-amine

(g) $\text{CH}_3-\text{CH}_2-\text{NH}-\text{CH}_2\text{CH}_3$

N-Ethylethanamine

Tertiary amines :

(h) $\text{CH}_3-\text{N}-\text{CH}_2\text{CH}_3$

|
 CH_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.

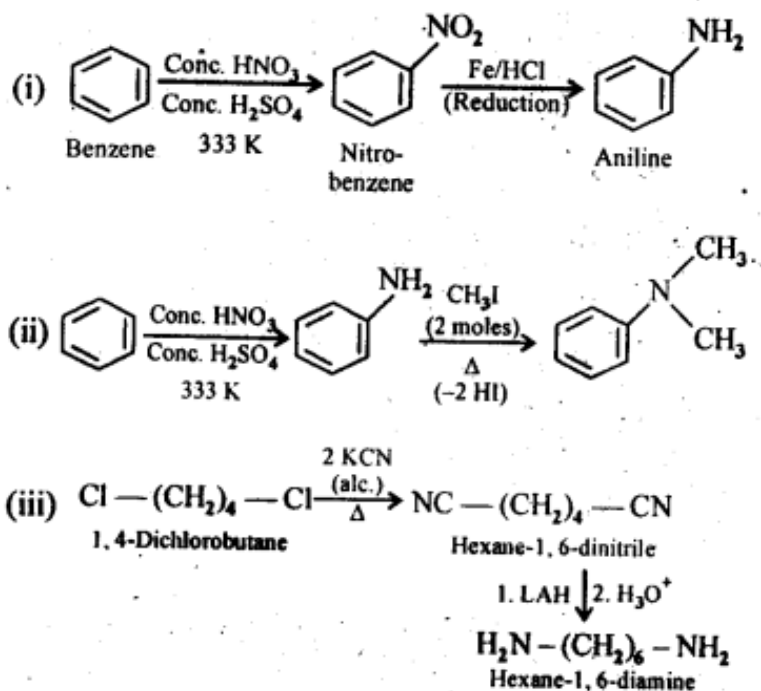
13.3 How will you convert:

(i) Benzene into aniline

(ii) Benzene into N,N-dimethylaniline

(iii) $\text{Cl}-(\text{CH}_2)_4-\text{Cl}$ into Hexane -1,6- diamine

Ans:



13.4. Arrange the following in increasing order of their basic strength:

(i) $\text{C}_2\text{H}_5\text{NH}_2$, $\text{C}_6\text{H}_5\text{NH}_2$, NH_3 , $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$ and $(\text{C}_2\text{H}_5)_2\text{NH}$

(ii) $\text{C}_6\text{H}_5\text{NH}_2$, $(\text{C}_2\text{H}_5)_2\text{NH}$, $(\text{C}_2\text{H}_5)_3\text{N}$, $\text{C}_6\text{H}_5\text{NH}_2$

(iii) CH_3NH_2 , $(\text{CH}_3)_2\text{NH}$, $(\text{CH}_3)_3\text{N}$, $\text{C}_6\text{H}_5\text{NH}_2$, $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$

Ans:

$\text{C}_6\text{H}_5\text{NH}_2 < \text{NH}_3 < \text{C}_6\text{H}_5\text{CH}_2\text{NH}_2 < \text{C}_2\text{H}_5\text{NH}_2 < (\text{C}_2\text{H}_5)_2\text{NH}$

(ii) $\text{C}_6\text{H}_5\text{NH}_2 < \text{C}_2\text{H}_5\text{NH}_2 < (\text{C}_2\text{H}_5)_3\text{N} < (\text{C}_2\text{H}_5)_2\text{NH}$

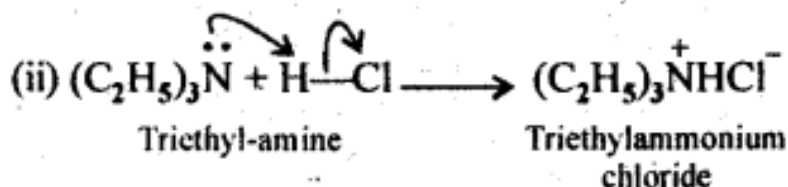
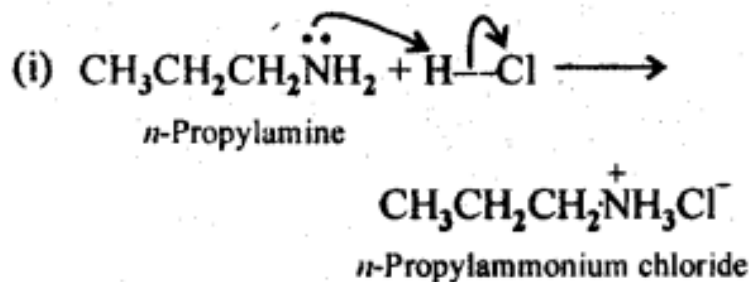
(iii) $\text{C}_6\text{H}_5\text{NH}_2 < \text{C}_6\text{H}_5\text{CH}_2\text{NH}_2 < (\text{CH}_3)_3\text{N} < \text{CH}_3\text{NH}_2 < (\text{CH}_3)_2\text{NH}$

13.5 Complete the following acid-base reactions and name the products:

(i) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2 + \text{HCl} \rightarrow$

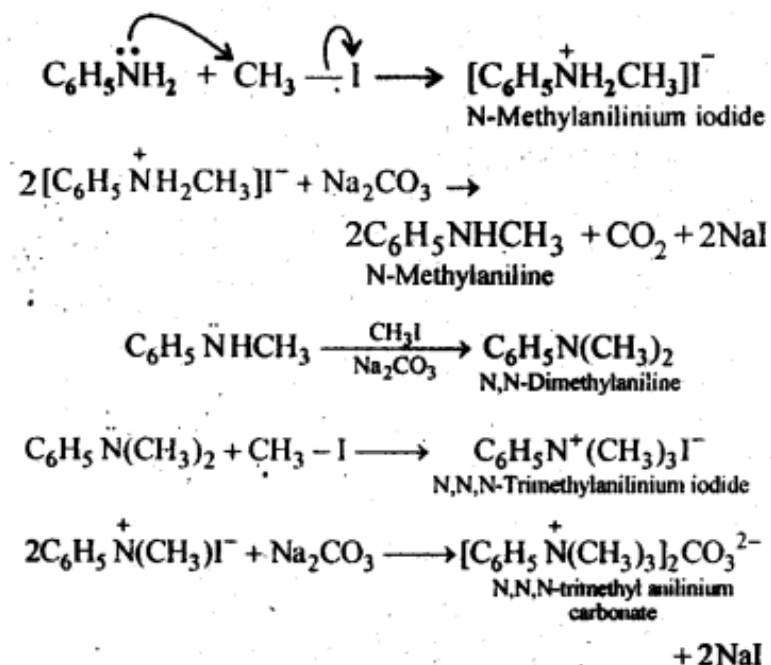
(ii) $(\text{C}_2\text{H}_5)_3\text{N} + \text{HCl} \rightarrow$

Ans:



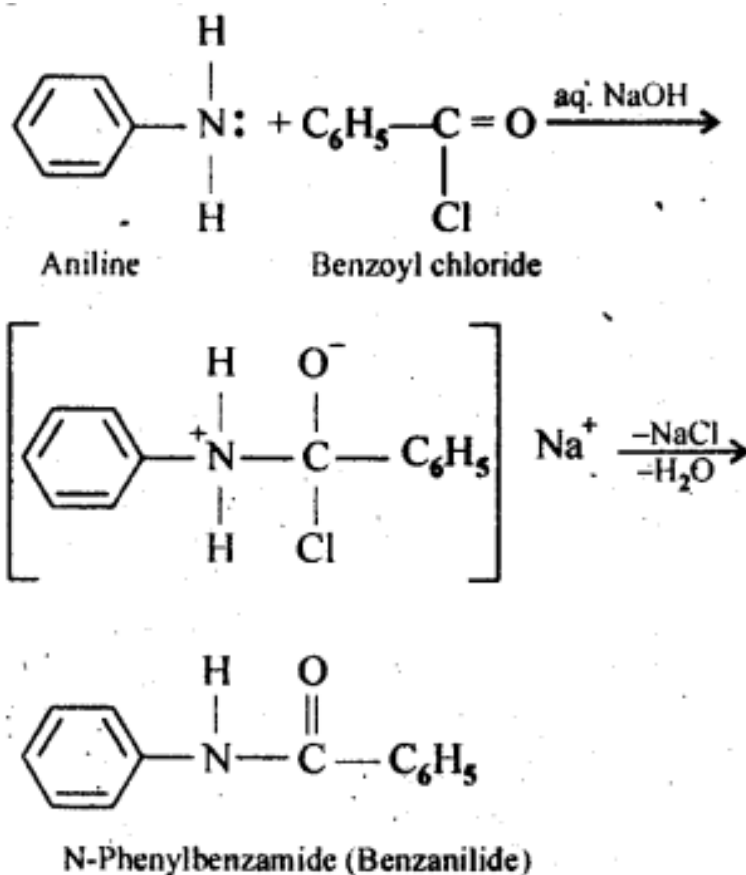
13.6. Write reactions of the final alkylation product of aniline with excess of methyl iodide in the presence of sodium carbonate solution.

Ans:



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

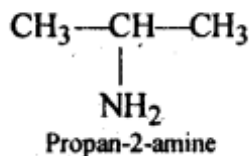
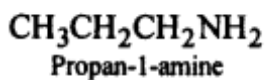
Ans:



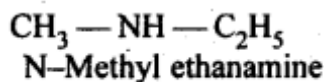
13.8. Write structures of different isomers corresponding to the molecular formula, C₃H₉N. Write IUPAC names of the isomers which will liberate N₂ gas on treatment with nitrous acid.

Ans: In all, four structural isomers are possible. These are:

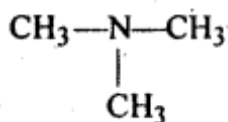
1° amines :



2° amine :

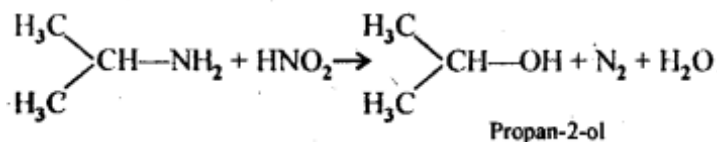
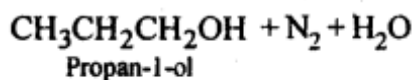
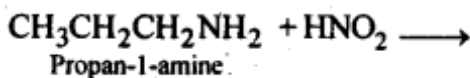


3° amine :



N, N-Dimethyl methanamine

only 1° amines react with HNO_2 to liberate N_2 gas

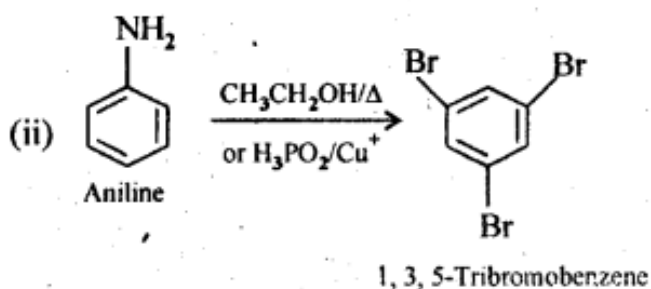
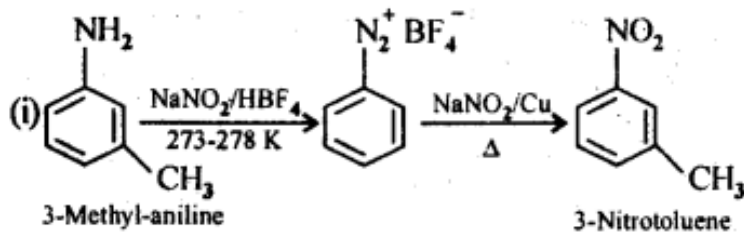


13.9. Convert:

(i) 3-Methylaniline into 3-nitrotoluene

(ii) Aniline into 1,3,5- Tribromo benzene

Ans:



***** END *****