

## Nitrogen Containing Compounds

## Self Evaluation Test -29

- Melting points are normally the highest for [AIIMS 2004]
  - Tertiary amides
  - Secondary amides
  - Primary amides
  - Amines
- Amines behave as [Karnataka (Med.) 1999]
  - Lewis acids
  - Lewis bases
  - Aprotic acids
  - Amphoteric compounds
- Which of the following compound gives dye test [MP PET/PMT 1998]
  - Aniline
  - Methylamine
  - Diphenylamine
  - Ethylamine
- In hydrolysis of aniline, the reagent used is [AFMC 1995]
  - Dil.  $HCl$
  - Acetyl chloride
  - $CH_3OH$
  - None of these
- A nitrogen containing organic compound on heating with chloroform and alcoholic  $KOH$ , evolved very unpleasant smelling vapour. The compound could be [BHU 2002; BVP 2003]
  - $N, N$ -dimethyl amine
  - Nitrobenzene
  - Aniline
  - Benzamide
- The reaction between a primary amine, chloroform and few drops of alcoholic  $KOH$  is known as [MNR 1987; MP PMT 1994; Bihar MEE 1996; AIIMS 1998; MP PET 2002]
  - Cannizzaro reaction
  - Carbylamine reaction
  - Wurtz's reaction
  - Reimer-Tiemann reaction
- Nitrolim is [BVP 2004]
  - $CaC_2 + N_2$
  - $CaCN_2 + C$
  - $Ca(CN)_2 + C$
  - $Ca(CN)_2 + NH_4CN$
- Phenyl isocyanides are prepared from which of the following reactions [CBSE PMT 1999]
  - Rosenmund's reaction
  - Carbylamine reaction
  - Reimer-Tiemann reaction
  - Wurtz reaction
- On strong heating, ammonium acetate gives [MNR 1995]
  - Acetamide
  - Methyl cyanide
  - Urea
  - Formamide
- Aniline is separated from a mixture by [UPSEAT 2000, 01]
  - Fractional crystallization
  - Fractional distillation
  - Vacuum distillation
  - Steam distillation
- Molecular formula of chloropicrin is [MH CET 2003]
  - $CHCl_3NO_2$
  - $CCl_3NO_3$
  - $CCl_2NO_2$
  - $CCl_3NO_2$
- In amines, the hybridisation state of  $N$  is [CPMT 1999]
  - $sp$
  - $sp^2$
  - $sp^3$
  - $sp^2d$
- Foul smelling compound formed, during carbylamine reaction is : [Pb. CET 2001]
  - Alcohol
  - Aldehyde
  - Alkyl isocyanide
  - Carboxylic acid
- The end product of the reaction
 
$$\text{ethyl amine} \xrightarrow{HNO_2} A \xrightarrow{PCl_5} B \xrightarrow{KCN} C$$
 is
  - Ethyl amine

## 1402 Nitrogen Containing Compounds

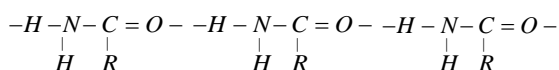
- (b) Diethyl amine  
(c) Propane nitrite

- (d) Triethyl amine  
(e) Methyl amine

# AS Answers and Solutions

(SET -29)

1. (c) The higher boiling points of amide is because of Intermolecular hydrogen bonding

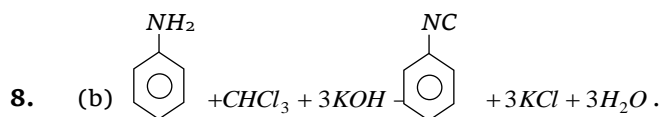


Due to intermolecular hydrogen bonding they have high boiling point than amine and amongst amide the order of Boiling point are

Primary > Sec > Tertiary

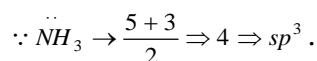
This is because of alkyl group by which the carbonyl oxygen do not form the hydrogen bond (other molecule) so primary amide have high boiling point and Tertiary amides does not have to form bond with O of other amide and have least B.P

2. (b) In amines nitrogen has a lone pair of  $e^-$ . It can donate a lone pair. So amines behave as a Lewis base.
3. (a) Basically all the Azo dye are derivatives of aniline.
4. (a) All amines react with mineral acids such as  $\text{HCl}$ ,  $\text{H}_2\text{SO}_4$ ,  $\text{HNO}_3$  etc. to form salts which are soluble in water.
5. (c)  $\text{C}_6\text{H}_5\text{NH}_2 + \text{CHCl}_3 + 3\text{KOH} \rightarrow \text{C}_6\text{H}_5\text{NC} + 3\text{KCl} + 3\text{H}_2\text{O}$   
(Alc)
6. (b)  $\text{CH}_3\text{NH}_2 + \text{CHCl}_3 + 3\text{KOH} \rightarrow \text{RN} \equiv \text{C} + 3\text{KCl} + 3\text{H}_2\text{O}$   
Isocyanide
7. (b) Nitrolim is a mixture of calcium cyanamide and carbon.

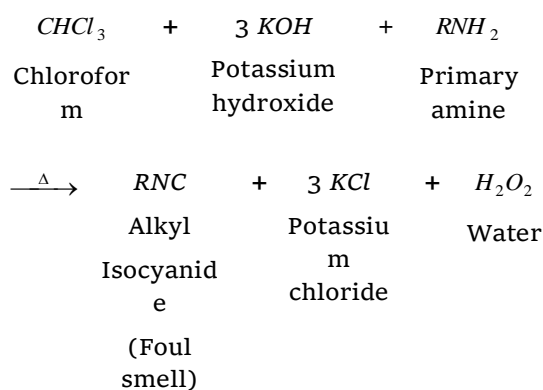


Carbyl amine reaction.

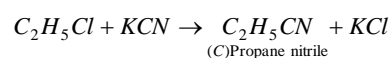
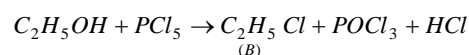
9. (b)  $\text{CH}_3\text{COONH}_4 \xrightarrow{\Delta} \text{CH}_3\text{CONH}_2 \xrightarrow{\Delta} \text{CH}_3\text{CN} + \text{H}_2\text{O}$
10. (d) Steam distillation is used for separation of aniline from mixture. Aniline is insoluble in water but it is steam soluble.
11. (d) Molecular formula of chloropicrin is  $\text{CCl}_3\text{NO}_2$
12. (c) It is similar that of  $\text{NH}_3$  except H- is replaced by -R group.



13. (c) On heating  $\text{CHCl}_3$  with ethanolic KOH and primary amine, isocyanide is formed and is readily detected by its offensive odour. This is called as carbyl amine test.



14. (c)  $\text{C}_2\text{H}_5\text{NH}_2 + \text{HNO}_2 \rightarrow \text{C}_2\text{H}_5\text{OH} + \text{N}_2 + \text{H}_2\text{O}$   
(A)



(C) Propane nitrile

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