DPP
DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Solutions

Subject : CHEMISTRY
DPP No. : 10

Topic :- Amines

2 **(c)**

Hofmann's bromamide reaction is used to convert amide to amine.

$R\text{CONH}_2 + \text{Br} + 4\text{KOH} \rightarrow R\text{NH}_2 + \text{K}_2\text{CO}_3 + 2\text{KBr} + 2\text{H}_2\text{O}$

amide amine

4 **(d)**

Secondary amides such as N-methylethanamide on reduction with LiAlH_4 give secondary amines.

$$\text{CH}_3\text{CONHCH}_3 + [\text{H}] \xrightarrow{\text{LiAlH}_4} \text{CH}_3\text{CH}_2\text{NHCH}_3 + \text{H}_2\text{O}$$

N-methylethanamide 2°amine

5 **(d)**

$$\text{CH}_3\text{CN} \xrightarrow{\text{HOH}} \text{CH}_3\text{COOH}$$

6 **(c)**

$$\text{C}_2\text{H}_5\text{NH}_2 + \text{O} = \underset{\displaystyle \text{H}}{\underset{|}{\text{C}}} - \text{C}_6\text{H}_5 \rightarrow \text{C}_2\text{H}_5\text{N} = \text{HCC}_6\text{H}_5 + \text{H}_2\text{O}$$

Benzaldehyde

(A)

$$\underset{\text{urea}}{\text{NH}_2\text{CO}\boxed{\text{NH}_2} + \text{H}\boxed{\text{NH}\cdot\text{NH}_2}} \longrightarrow \text{NH}_2\text{CONHNH}_2 + \text{NH}_3$$

hydrazine

(*B*)

$$\text{C}_2\text{H}_5\text{NH}_2 + \text{NOCl} \rightarrow \text{C}_2\text{H}_5\text{Cl} + \text{H}_2\text{O} + \text{N}_2$$

(C)

11 **(c)**

The reaction is believed to follow the mechanism.

$$R\text{—CONH}_2 + \text{OBr}^- \longrightarrow R\text{CONHBr} + \text{OH}^-$$

$$R\text{CONHBr} + \text{OH}^- \longrightarrow R\text{CONBr} + \text{H}_2\text{O}$$

$$R\text{CONBr} \longrightarrow \underset{\displaystyle \text{N:}}{\underset{|}{R\text{—C=O}}} + \text{Br}^- \qquad \underset{\displaystyle \text{N:}}{\underset{|}{R\text{—C=O}}} \longrightarrow R\text{—}\ddot{\text{N}}\text{=C=O}$$

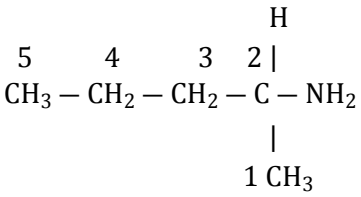
$$R\text{—N=C=O} + 2\text{OH}^- \longrightarrow R\text{NH}_2 + \text{CO}_3^{2-}$$

12 **(d)**

HNO_2 reacts to give an alcohol means the compound is primary amine.

$C_5H_{13}N$ means $C_5H_{11}NH_2$(primary amine)

Optically active alcohol means C_5H_{11} segment contain a chiral carbon.



Pentan-2-amine

13 **(b)**

$$R-CN+4[H]\xrightarrow{LiAlH_4}R-CH_2NH_2$$

Alkyl nitriles primary amine

14 **(d)**

Electron donors are bases. In the given choices structure which does not involve resonance will have electron easily available for donation, hence most basic.

∴ Only in choice (b) electrons are not in conjugation with double bond of adjacent atom.

∴ Compound in choice (b) is most basic.

15 **(b)**

$$R\text{Br}+\text{KCN}\longrightarrow R\text{CN}\xrightarrow{\text{Reduction}}R\text{CH}_2\text{NH}_2$$

16 **(d)**

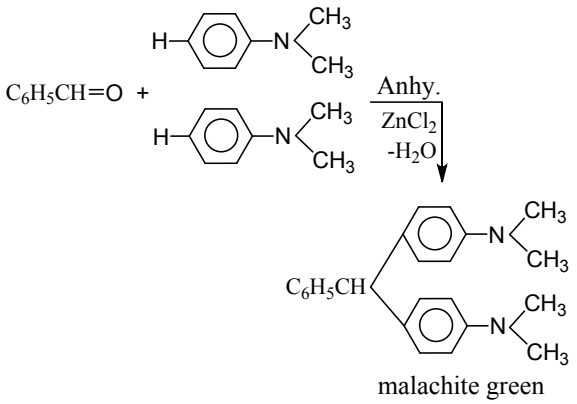
It is methyl amine which, being basic dissolves in dilute HCI. It with $NaNO_2$ evolves nitrogen gas leaving behind methyl alcohol which has smell of wood-spirit.

$$CH_3NH_2\xrightarrow{HCl}CH_3NH_2.HCl$$

$$CH_3NH_2+HNO_2\xrightarrow{NaNO_2/HCl}\underset{\text{methyl alcohol}}{CH_3OH}+N_2\uparrow+H_2O$$

17 **(b)**

Benzaldehyde condenses with N, N-diamethyl aniline in presence of anhydrous $ZnCl_2$ to give malachite green



malachite green

19 **(b)**

This is carbylamine reaction which is used to distinguish 1° amines from other amines. The reaction is given by 1° amines only.

$$C_2H_5NH_2+CHCl_3+3KOH\rightarrow C_2H_5N\overset{=}{\rightarrow}C+3KCl+3H_2O$$

$$RNH_2 + CHCl_3 + 3KOH \rightarrow R - N\overset{=}{\rightarrow}C + 3KCl + 3H_2O$$

1°amine chloroform isocyanide

(bad smelling)

20 **(b)**

$$NH_2CONH_2 + HNHCONH_2 \longrightarrow NH_2CONHCONH_2 + NH_3$$

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**C**	**C**	**C**	**D**	**D**	**C**	**A**	**C**	**C**	**C**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**C**	**D**	**B**	**D**	**B**	**D**	**B**	**B**	**B**	**B**