DPP
DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Solutio

Subject : CHEMISTRY
DPP No. : 2

Topic :- Amines

1 **(b)**

$-\ddot{N}H$ and $-\overset{\overset{O}{\|}}{C}-$ gp. are *o*-and *p*-directing (activating) and *m*-directing gps.(deactivating)

respectively. In such case *o*-(minor) and *p*-isomers (major) predominates.

2 **(c)**

$C_2H_5NH_2$ is stronger base than NH_3. The presence of alkyl group on N-atom intensifies –ve charge on N-atom and thus, electron pair is donated more readily.

$R\rightarrow \ddot{N}H_2$ (+ve *IE* of alkyl gp.) $H-\ddot{N}H_2$

3 **(a)**

$(CH_3)_4N^+I^- + NaOH \rightarrow (CH_3)_4N^+OH^- + NaI$

$(CH_3)_4N^+OH^- \xrightarrow{\Delta} (CH_3)_3N + CH_3OH$

methanol

4 **(c)**

Electron deficient group decreases the electron density of N-atom, thus, makes its lone pair less available for donation

5 **(d)**

$C_6H_5NH_2 + Cl-COCH_3 \xrightarrow{NaOH} C_6H_5NHCOCH_3 + HCl$

aniline acetyl chloride acetanilide

6 **(d)**

C_3H_9N represent following structures

$CH_3CH_2CH_2NH_2$

Propanamine

(1°amine)

$CH_3CH_2-\underset{\underset{H}{|}}{N}-CH_3$

N-methyl ethanamine

(2°amine)

$CH_3-\underset{\underset{CH_3}{|}}{N}-CH_3$

N,N-dimethyl methanamine

(3°amine)

7 **(c)**

Presence of α-H atom is the main condition for exhibiting tautomerism.

The reactant taken in reaction (C) does not contain any α-H atom, thus the product (Y)will also show the absence of α-H atom, Hence, Y will show tautomerism

8 **(a)**

$R_2NH + HNO_2 \longrightarrow R_2N{-}N{=}O + H_2O$ Nitrosoamines are carcinogens.

9 **(b)**

Acetonitriles on hydrolysis produce carboxylic acids with the evolution of ammonia.

$$\underset{\text{Acetonitrile}}{CH_3 - C \equiv N} \xrightarrow{H_2O} \underset{\text{acetamide}}{CH_3 - \overset{\overset{O}{\|}}{C} - NH_2} \xrightarrow{H_2O} \underset{\text{acetic acid}}{CH_3 - \overset{\overset{O}{\|}}{C} - OH} + NH_3$$

11 **(b)**

Methyl cyanide gives acetic acid on hydrolysis.

$$CH_3CN \xrightarrow{H_2O/H^+} CH_3 - \overset{\overset{O}{\|}}{C} - NH_2 \xrightarrow{H_2O/H^+} CH_3COOH + NH_3$$

12 **(c)**

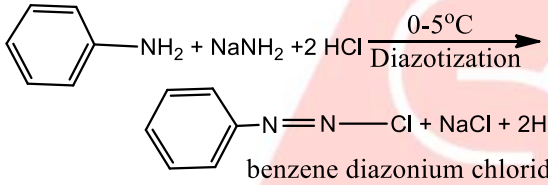
$2RNH_2 + 2HCl + PtCl_4 \longrightarrow (RNH_3)_2PtCl_6; RNH_3AuCl_4$

13 **(c)**

General formula for any amine is $C_nH_{2n+3}N$; also note that for primary amine, it is $C_nH_{2n+1}\ NH_2$; for secondary amine, it is $C_nH_{2n+2}NH$ and for tertiary amine, it is $C_nH_{2n+3}N$.

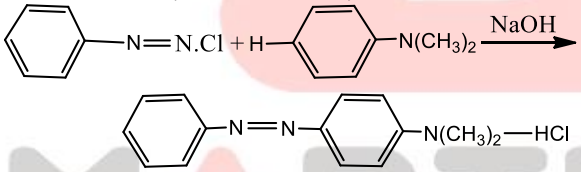
14 **(c)**

Aniline on diazotization in cold (at 0° to 5°C) gives benzene diazonium chloride.



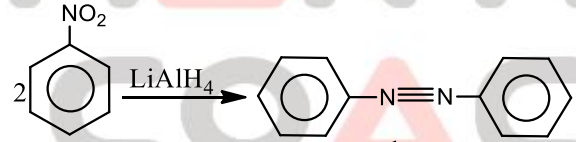
benzene diazonium chloride

This benzene diazonium chloride on coupling reaction with dimethyl aniline gives a coloured product *i.e.* ,*p*(N, N dimethyl)amino azobenzene (azodye)



16 **(c)**

Nitrobenzene on reduction with lithium aluminium hydride ($LiAlH_4$) gives azobenzene.



nitrobenzene azobenzene

17 **(c)**

Both gives alkane (RH) with Grignard reagents $RMgX$ due to the presence of acidic hydrogen (N—H)

19 **(c)**

Presence of methyl group increase the electron density on nitrogen. So, increases the basicity. Aniline is weaker base than the primary aliphatic amines and this may be explained by resonance. The lone pair of N is involved in resonance, thus not available for donation. That's why basic strength of aryl amines (aniline) is lowest.

20 **(d)**

All primary (aliphatic) amines give alcohol with HNO_2 except CH_3NH_2 which forms CH_3—O—N=O and CH_3OCH_3.

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