

Amines — NEET Chemistry PYQ (2005-2021)

Class 12 Chemistry · 28 real NEET & AIPMT questions, year-tagged · answers checked by RankUp

NEET 2021

1. Identify the compound that will react with Hinsberg's reagent to give a solid which dissolves in alkali.

- (A) $\text{CH}_3\text{-CH}_2\text{-NO}_2$
- (B) $\text{CH}_3\text{-CH}_2\text{-NH-CH}_3$
- (C) $\text{CH}_3\text{-CH}_2\text{-NH}_2$
- (D) $\text{CH}_3\text{-CH}_2\text{-N(CH}_3\text{)-CH}_2\text{-CH}_3$

NEET 2021

2. The reagent 'R' in the given sequence of chemical reaction is :

2,4,6-Tribromoaniline $\xrightarrow{(\text{NaNO}_2, \text{HCl}, 0-5^\circ\text{C})}$ 2,4,6-Tribromobenzenediazonium chloride $\xrightarrow{\text{R}}$ 1,3,5-Tribromobenzene

- (A) H_2O
- (B) $\text{CH}_3\text{CH}_2\text{OH}$
- (C) HI
- (D) CuCN/KCN

NEET 2020 · Q102

3. Which of the following amine will give the carbylamine test ?

- (A) Aniline ($\text{C}_6\text{H}_5\text{NH}_2$)
- (B) N-Methylaniline ($\text{C}_6\text{H}_5\text{NHCH}_3$)
- (C) N,N-Dimethylaniline ($\text{C}_6\text{H}_5\text{N(CH}_3)_2$)
- (D) N-Ethylaniline ($\text{C}_6\text{H}_5\text{NHC}_2\text{H}_5$)

NEET 2019 · Q90

4. The correct order of the basic strength of methyl substituted amines in aqueous solution is:

- (A) $(\text{CH}_3)_2\text{NH} > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_3\text{N}$
- (B) $(\text{CH}_3)_3\text{N} > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_2\text{NH}$
- (C) $(\text{CH}_3)_3\text{N} > (\text{CH}_3)_2\text{NH} > \text{CH}_3\text{NH}_2$
- (D) $\text{CH}_3\text{NH}_2 > (\text{CH}_3)_2\text{NH} > (\text{CH}_3)_3\text{N}$

NEET 2018 · Q55

5. Nitration of aniline in strong acidic medium also gives m-nitroaniline because

- (A) In absence of substituents nitro group always goes to m-position.
- (B) In electrophilic substitution reactions amino group is meta directive.
- (C) In spite of substituents nitro group always goes to only m-position.
- (D) In acidic (strong) medium aniline is present as anilinium ion.

NEET 2017 · Q14

6. The correct increasing order of basic strength for the following compounds is: (I) aniline, $\text{C}_6\text{H}_5\text{NH}_2$ (II) p-nitroaniline, $\text{p-O}_2\text{N-C}_6\text{H}_4\text{-NH}_2$ (III) p-toluidine, $\text{p-CH}_3\text{-C}_6\text{H}_4\text{-NH}_2$

- (A) $\text{II} < \text{III} < \text{I}$
- (B) $\text{III} < \text{I} < \text{II}$
- (C) $\text{III} < \text{II} < \text{I}$
- (D) $\text{II} < \text{I} < \text{III}$

NEET 2017 · Q45

7. Which of the following reactions is appropriate for converting acetamide to methanamine?

- (A) Carbylamine reaction
- (B) Hoffmann hypobromamide reaction
- (C) Stephens reaction
- (D) Gabriels phthalimide synthesis

NEET 2016 Phase 2 · Q81

8. Which one of the following nitro-compounds does not react with nitrous acid?

- (A) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NO}_2$
- (B) $(\text{CH}_3)_2\text{CH}-\text{CH}_2\text{NO}_2$
- (C) $(\text{CH}_3)_3\text{C}-\text{NO}_2$
- (D) $\text{CH}_3\text{CO}-\text{CH}(\text{CH}_3)-\text{NO}_2$

NEET 2016 Phase 2 · Q85

9. A given nitrogen-containing aromatic compound A reacts with Sn/HCl , followed by HNO_2 to give an unstable compound B. B, on treatment with phenol, forms a beautiful coloured compound C with the molecular formula $\text{C}_{12}\text{H}_{10}\text{N}_2\text{O}$. The structure of compound A is

- (A) Aniline ($\text{C}_6\text{H}_5\text{NH}_2$)
- (B) Nitrobenzene ($\text{C}_6\text{H}_5\text{NO}_2$)
- (C) Benzonitrile ($\text{C}_6\text{H}_5\text{CN}$)
- (D) Benzamide ($\text{C}_6\text{H}_5\text{CONH}_2$)

NEET 2016 Phase 1 · Q88

10. The correct statement regarding the basicity of arylamines is:

- (A) Arylamines are generally less basic than alkylamines because the nitrogen lone-pair electrons are delocalized by interaction with the aromatic ring π electron system.
- (B) Arylamines are generally more basic than alkylamines because the nitrogen lone-pair electrons are not delocalized by interaction with the aromatic ring π electron system.
- (C) Arylamines are generally more basic than alkylamines because of aryl group.
- (D) Arylamines are generally more basic than alkylamines, because the nitrogen atom in arylamines is sp -hybridized.

AIPMT 2015

11. The electrolytic reduction of nitrobenzene in strongly acidic medium produces:

- (A) Aniline
- (B) p-Aminophenol
- (C) Azoxybenzene
- (D) Azobenzene

AIPMT 2014

12. Which of the following will be most stable diazonium salt RN_2^+X^- ?

- (A) $\text{C}_6\text{H}_5\text{N}_2^+\text{X}^-$
- (B) $\text{CH}_3\text{CH}_2\text{N}_2^+\text{X}^-$
- (C) $\text{C}_6\text{H}_5\text{CH}_2\text{N}_2^+\text{X}^-$
- (D) $\text{CH}_3\text{N}_2^+\text{X}^-$

AIPMT 2014

13. In the following reaction, the product (A) is: Benzenediazonium chloride ($\text{C}_6\text{H}_5\text{N}_2^+\text{Cl}^-$) + Aniline ($\text{C}_6\text{H}_5\text{NH}_2$) $\xrightarrow{-\text{H}^+}$ (A) Yellow dye

- (A) $\text{C}_6\text{H}_5-\text{N}=\text{N}-\text{C}_6\text{H}_4-\text{NH}_2$ (NH_2 ortho to the azo group)
- (B) $\text{C}_6\text{H}_5-\text{N}=\text{N}-\text{C}_6\text{H}_4-\text{NH}_2$ (NH_2 meta to the azo group)
- (C) $\text{C}_6\text{H}_5-\text{N}=\text{N}-\text{C}_6\text{H}_4-\text{NH}_2$ (NH_2 para to the azo group)
- (D) $\text{C}_6\text{H}_5-\text{N}=\text{N}-\text{NH}-\text{C}_6\text{H}_5$

NEET 2013

14. In the reaction

2-bromo-4-nitrobenzenediazonium chloride $\xrightarrow{\text{A}}$ m-bromonitrobenzene

A is

- (A) $\text{HgSO}_4/\text{H}_2\text{SO}_4$
- (B) Cu_2Cl_2
- (C) H_3PO_2 and H_2O
- (D) $\text{H}^+/\text{H}_2\text{O}$

15. An organic compound C_3H_9N (A), when treated with nitrous acid, gave an alcohol and N_2 gas was evolved. (A) on warming with $CHCl_3$ and caustic potash gave (C) which on reduction gave isopropylmethanamine. Predict the structure of (A).

- (A) $(CH_3)_2CH-NH_2$
- (B) $CH_3CH_2-NH-CH_3$
- (C) $(CH_3)_3N$
- (D) $CH_3CH_2CH_2-NH_2$

16. An organic compound 'A' on treatment with NH_3 gives 'B' which on heating gives 'C'. 'C' when treated with Br_2 in the presence of KOH produces ethylamine.

Compound 'A' is

- (A) $CH_3-CH(CH_3)-COOH$
- (B) CH_3CH_2COOH
- (C) CH_3COOH
- (D) $CH_3CH_2CH_2COOH$

17. Which of the following compounds is most basic?

- (A) Acetanilide ($C_6H_5-NH-COCH_3$)
- (B) Aniline ($C_6H_5-NH_2$)
- (C) p-Nitroaniline ($O_2N-C_6H_4-NH_2$)
- (D) Benzylamine ($C_6H_5-CH_2NH_2$)

18. What is the product obtained in the following reaction?

$C_6H_5NO_2 \xrightarrow{(Zn, NH_4Cl)} ?$

- (A) $C_6H_5NH_2$ (aniline)
- (B) C_6H_5NHOH (N-phenylhydroxylamine)
- (C) $C_6H_5-N=N-C_6H_5$ (azobenzene)
- (D) $C_6H_5-N(O^-)=N^+-C_6H_5$ (azoxybenzene)

19. In a set of reactions m-bromobenzoic acid (A) gave a product D:

$A \xrightarrow{(SOCl_2)} B \xrightarrow{(NH_3)} C \xrightarrow{(NaOH, Br_2)} D$

Identify the product D.

- (A) 3-Bromobenzamide ($m-Br-C_6H_4-CONH_2$)
- (B) 3-Bromobenzenesulphonamide ($m-Br-C_6H_4-SO_2NH_2$)
- (C) 3-Aminobenzoic acid ($m-H_2N-C_6H_4-COOH$)
- (D) 3-Bromoaniline ($m-Br-C_6H_4-NH_2$)

20. Match the compounds given in List-I with their characteristic reactions given in List-II. Select the correct option.

List-I: a. $CH_3CH_2CH_2CH_2NH_2$; b. $CH_3C\equiv CH$; c. $CH_3CH_2COOCH_3$; d. $CH_3CH(OH)CH_3$

List-II: (i) Alkaline hydrolysis; (ii) With KOH (alcohol) and $CHCl_3$ produces bad smell; (iii) Gives white ppt. with ammoniacal $AgNO_3$; (iv) With Lucas reagent cloudiness appears after 5 minutes

- (A) a(ii), b(i), c(iv), d(iii)
- (B) a(iii), b(ii), c(i), d(iv)
- (C) a(ii), b(iii), c(i), d(iv)
- (D) a(iv), b(ii), c(iii), d(i)

21. Aniline in a set of the following reactions yielded a coloured product Y:
 $\text{C}_6\text{H}_5\text{NH}_2 \xrightarrow{(\text{NaNO}_2/\text{HCl}, 273-278 \text{ K})} \text{X} \xrightarrow{(\text{N,N-dimethylaniline})} \text{Y}$
The structure of Y would be

- (A) $\text{CH}_3\text{NH}-\text{C}_6\text{H}_4-\text{N}=\text{N}-\text{C}_6\text{H}_4-\text{NHCH}_3$ (both para)
- (B) $\text{C}_6\text{H}_5-\text{N}=\text{N}-\text{C}_6\text{H}_4-\text{N}(\text{CH}_3)_2$ (para)
- (C) $\text{CH}_3\text{NH}-\text{C}_6\text{H}_4-\text{NH}-\text{C}_6\text{H}_4-\text{NHCH}_3$ (both para)
- (D) $\text{CH}_3-\text{C}_6\text{H}_4-\text{N}=\text{N}-\text{C}_6\text{H}_4-\text{NH}_2$ (both para)

22. Acetamide is treated with the following reagents separately. Which one of these would yield methyl amine?

- (A) PCl_5
- (B) $\text{NaOH}-\text{Br}_2$
- (C) Sodalime
- (D) Hot conc. H_2SO_4

23. Predict the product :
 $\text{C}_6\text{H}_5-\text{NHCH}_3 + \text{NaNO}_2 + \text{HCl} \rightarrow \text{Product}$

- (A) $\text{C}_6\text{H}_5-\text{N}(\text{CH}_3)-\text{NO}_2$
- (B) Mixture of o- and p-nitroso-N-methylaniline ($\text{ON}-\text{C}_6\text{H}_4-\text{NHCH}_3$)
- (C) $\text{C}_6\text{H}_5-\text{N}(\text{OH})-\text{CH}_3$
- (D) $\text{C}_6\text{H}_5-\text{N}(\text{CH}_3)-\text{N}=\text{O}$

24. In a reaction of aniline a coloured product C was obtained.
 $\text{C}_6\text{H}_5\text{NH}_2 \xrightarrow{(\text{A})} \text{B} \xrightarrow{(\text{C}_6\text{H}_5\text{N}(\text{CH}_3)_2, \text{ cold})} \text{C}$
The structure of C would be

- (A) $\text{C}_6\text{H}_5-\text{N}=\text{N}-\text{C}_6\text{H}_4-\text{N}(\text{CH}_3)_2$ (para)
- (B) $\text{C}_6\text{H}_5-\text{N}=\text{N}-\text{CH}_2-\text{N}(\text{CH}_3)-\text{C}_6\text{H}_5$
- (C) $2-\text{CH}_3\text{C}_6\text{H}_4-\text{N}=\text{N}-\text{C}_6\text{H}_4-2-\text{CH}_3$
- (D) $\text{C}_6\text{H}_5-\text{NH}-\text{NH}-\text{C}_6\text{H}_4-\text{N}(\text{CH}_3)_2$ (para)

25. Which one of the following on reduction with lithium aluminium hydride yields a secondary amine?

- (A) Methyl isocyanide
- (B) Acetamide
- (C) Methyl cyanide
- (D) Nitroethane

26. In a set of reactions propionic acid yielded a compound D.
 $\text{CH}_3\text{CH}_2\text{COOH} \xrightarrow{(\text{SOCl}_2)} \text{B} \xrightarrow{(\text{NH}_3)} \text{C} \xrightarrow{(\text{KOH}, \text{Br}_2)} \text{D}$
The structure of D would be :

- (A) $\text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$
- (B) $\text{CH}_3\text{CH}_2\text{CONH}_2$
- (C) $\text{CH}_3\text{CH}_2\text{NHCH}_3$
- (D) $\text{CH}_3\text{CH}_2\text{NH}_2$

27. Which of the following is more basic than aniline ?

- (A) Diphenylamine
- (B) Triphenylamine
- (C) p-nitroaniline
- (D) Benzylamine

28. Aniline in a set of reactions yielded a product D.



The structure of the product D would be :

- (A) $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$
- (B) $\text{C}_6\text{H}_5\text{NHCH}_2\text{CH}_3$
- (C) $\text{C}_6\text{H}_5\text{NHOH}$
- (D) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$

Answer key and explanations

1. Answer: (C) $\text{CH}_3\text{-CH}_2\text{-NH}_2$

A primary amine ($\text{CH}_3\text{CH}_2\text{NH}_2$) reacts with benzenesulphonyl chloride to give N-ethylbenzenesulphonamide, whose N-H is acidic, so it dissolves in alkali. The secondary amine gives a sulphonamide without N-H (insoluble in alkali), and tertiary amines and nitroalkanes do not react.

2. Answer: (B) $\text{CH}_3\text{CH}_2\text{OH}$

Ethanol (like H_3PO_2) reduces an arenediazonium salt, replacing $-\text{N}_2^+\text{Cl}^-$ by $-\text{H}$ and itself being oxidised to ethanal. This converts 2,4,6-tribromobenzenediazonium chloride into 1,3,5-tribromobenzene. Water would give a phenol and CuCN/KCN a nitrile.

3. Answer: (A) Aniline ($\text{C}_6\text{H}_5\text{NH}_2$)

The carbylamine (isocyanide) test, heating with CHCl_3 and alcoholic KOH , is given only by primary amines, so aniline gives foul-smelling phenyl isocyanide. N-methylaniline and N-ethylaniline are secondary and N,N-dimethylaniline is tertiary, so none of them respond.

4. Answer: (A) $(\text{CH}_3)_2\text{NH} > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_3\text{N}$

In water, basicity depends on inductive effect, solvation of the ammonium ion and steric hindrance together; for methyl amines this gives $(\text{CH}_3)_2\text{NH} > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_3\text{N}$. Trimethylamine as strongest is the gas-phase order, where solvation does not act.

5. Answer: (D) In acidic (strong) medium aniline is present as anilinium ion.

In strongly acidic nitrating mixture, aniline is protonated to the anilinium ion $\text{C}_6\text{H}_5\text{NH}_3^+$, whose $-\text{NH}_3^+$ group is electron-withdrawing and meta-directing. The free $-\text{NH}_2$ group itself is ortho/para-directing.

6. Answer: (D) $\text{II} < \text{I} < \text{III}$

The electron-donating $-\text{CH}_3$ at the para position increases electron density on nitrogen, so p-toluidine is more basic than aniline, while the $-\text{NO}_2$ group withdraws the lone pair by resonance and makes p-nitroaniline the weakest base. Hence $\text{II} < \text{I} < \text{III}$.

7. Answer: (B) Hoffmann hypobromamide reaction

$\text{CH}_3\text{CONH}_2 + \text{Br}_2 + 4\text{NaOH} \rightarrow \text{CH}_3\text{NH}_2 + \text{Na}_2\text{CO}_3 + 2\text{NaBr} + 2\text{H}_2\text{O}$: the Hofmann bromamide (hypobromite) degradation gives an amine with one carbon fewer, exactly acetamide to methanamine. Gabriel synthesis starts from an alkyl halide, Stephens reduction gives aldehydes from nitriles, and the carbylamine reaction is a test for primary amines.

8. Answer: (C) $(\text{CH}_3)_3\text{C-NO}_2$

Nitroalkanes react with nitrous acid through the hydrogen on the carbon carrying the nitro group (primary give nitrolic acids, secondary give pseudonitroles). 2-Methyl-2-nitropropane is a tertiary nitro compound with no α -hydrogen, so it does not react. The other compounds all have at least one α -H.

9. Answer: (B) Nitrobenzene ($\text{C}_6\text{H}_5\text{NO}_2$)

Sn/HCl reduces nitrobenzene to aniline; HNO_2 converts aniline to the unstable benzenediazonium salt, which couples with phenol to give p-hydroxyazobenzene, $\text{C}_6\text{H}_5\text{-N=N-C}_6\text{H}_4\text{OH}$ ($\text{C}_{12}\text{H}_{10}\text{N}_2\text{O}$). Aniline needs no reduction, so Sn/HCl would be pointless as the first step.

10. Answer: (A) Arylamines are generally less basic than alkylamines because the nitrogen lone-pair electrons are delocalized by interaction with the aromatic ring π electron system.

In aniline the nitrogen lone pair is delocalised into the benzene ring by resonance, so it is less available to accept a proton; arylamines are therefore weaker bases than alkylamines, whose alkyl groups push electron density onto nitrogen. The nitrogen in arylamines is not sp -hybridised.

11. Answer: (B) p-Aminophenol

In strongly acidic medium nitrobenzene is reduced electrolytically to phenylhydroxylamine, which rearranges in acid to p-aminophenol. Aniline is the product of complete reduction in mildly acidic conditions (e.g. Sn/HCl), and azo/azoxy compounds form in alkaline medium.

12. Answer: (A) $C_6H_5N_2^+X^-$

Benzenediazonium salts are stabilised by resonance of the $-N_2^+$ group with the ring and are stable below about $5^\circ C$. Aliphatic and benzyl diazonium salts lack this delocalisation and decompose immediately, losing N_2 .

13. Answer: (C) $C_6H_5-N=N-C_6H_4-NH_2$ (NH_2 para to the azo group)

In mildly acidic medium the diazonium ion couples with aniline at the para position (electrophilic substitution) to give p-aminoazobenzene, a yellow dye. The N-coupled diazoamino compound is not the dye described.

14. Answer: (C) H_3PO_2 and H_2O

Removing the diazonium group at C-1 leaves Br at C-2 and NO_2 at C-4, which are meta to each other, so the reagent must replace $-N_2^+$ by H. Hypophosphorous acid (H_3PO_2) with water does this. Cu_2Cl_2 would introduce Cl and H^+/H_2O would give a phenol.

15. Answer: (A) $(CH_3)_2CH-NH_2$

Evolving N_2 with nitrous acid and giving a carbylamine (isocyanide) with $CHCl_3/KOH$ both show A is a primary amine. Reducing $(CH_3)_2CH-NC$ gives $(CH_3)_2CH-NH-CH_3$ (isopropylmethylamine), so A is isopropylamine, $(CH_3)_2CH-NH_2$. n-Propylamine would give n-propylmethylamine instead.

16. Answer: (B) CH_3CH_2COOH

Hoffmann bromamide degradation removes one carbon, so ethylamine must come from propanamide (compound 'C'), which forms on heating ammonium propanoate ('B'), made from propanoic acid ('A') and NH_3 . Acetic acid would give methylamine and butanoic acid would give propylamine.

17. Answer: (D) Benzylamine ($C_6H_5-CH_2NH_2$)

In benzylamine the $-NH_2$ is attached to a CH_2 group, so its lone pair is not delocalised into the ring and it behaves like an alkylamine. In aniline the lone pair is delocalised into the ring, a para $-NO_2$ withdraws it further, and in acetanilide it is also delocalised into the $C=O$ group, so these are much weaker bases.

18. Answer: (B) C_6H_5NHOH (N-phenylhydroxylamine)

Nitrobenzene in neutral medium (Zn dust with NH_4Cl) is reduced only as far as N-phenylhydroxylamine, C_6H_5NHOH . Aniline forms in acidic medium (Sn/HCl or Fe/HCl), and azo/azoxy compounds in alkaline reductions.

19. Answer: (D) 3-Bromoaniline ($m-Br-C_6H_4-NH_2$)

$SOCl_2$ converts the acid to m-bromobenzoyl chloride, NH_3 converts it to m-bromobenzamide, and $Br_2/NaOH$ (Hoffmann bromamide degradation) removes the carbonyl carbon to give m-bromoaniline. The amide is only the intermediate C, not the final product.

20. Answer: (C) a(ii), b(iii), c(i), d(iv)

n-Butylamine, a primary amine, gives the foul-smelling isocyanide with $CHCl_3$ /alcoholic KOH ; propyne, a terminal alkyne, gives a white precipitate with ammoniacal $AgNO_3$; the ester undergoes alkaline hydrolysis; 2-propanol, a secondary alcohol, turns cloudy with Lucas reagent in about 5 minutes. So a(ii), b(iii), c(i), d(iv). Assigning the silver test to the amine misses that only terminal alkynes have an acidic H.

21. Answer: (B) $C_6H_5-N=N-C_6H_4-N(CH_3)_2$ (para)

Aniline with $NaNO_2/HCl$ at 273–278 K gives benzenediazonium chloride (X). This couples with N,N-dimethylaniline at the para position to give the yellow azo dye p-(dimethylamino)azobenzene, $C_6H_5-N=N-C_6H_4-N(CH_3)_2$. The other structures do not contain the unchanged phenyl ring from aniline joined to the dimethylamino ring.

22. Answer: (B) $NaOH-Br_2$

Hofmann bromamide degradation: $CH_3CONH_2 + Br_2 + 4NaOH \rightarrow CH_3NH_2$, losing one carbon. PCl_5 or hot conc. H_2SO_4 dehydrate acetamide to acetonitrile, and soda lime does not give methylamine.

23. Answer: (D) $C_6H_5-N(CH_3)-N=O$

N-methylaniline is a secondary amine; with HNO_2 (from $NaNO_2 + HCl$) the N-H hydrogen is replaced by $-N=O$, giving N-nitroso-N-methylaniline, $C_6H_5N(CH_3)-N=O$. Ring nitrosation happens with tertiary aromatic amines such as N,N-dimethylaniline.

24. Answer: (A) $C_6H_5-N=N-C_6H_4-N(CH_3)_2$ (para)

Diazotisation of aniline gives benzenediazonium chloride, the intermediate B. In the cold it couples with N,N-dimethylaniline at the activated para position, giving the coloured azo dye p-(dimethylamino)azobenzene. The $-NH-NH-$ (hydrazo) compound has no $N=N$ chromophore, so it would not be the coloured coupling product.

25. Answer: (A) Methyl isocyanide

LiAlH_4 reduces methyl isocyanide $\text{CH}_3\text{-N}\equiv\text{C}$ to $\text{CH}_3\text{-NH-CH}_3$, a secondary amine. Acetamide and methyl cyanide both give ethylamine (primary), and nitroethane also gives a primary amine.

26. Answer: (D) $\text{CH}_3\text{CH}_2\text{NH}_2$

SOCl_2 converts the acid to propanoyl chloride, $\text{CH}_3\text{CH}_2\text{COCl}$, and NH_3 then gives propanamide, $\text{CH}_3\text{CH}_2\text{CONH}_2$. Br_2/KOH carries out the Hofmann bromamide degradation, removing one carbon to give ethylamine, $\text{CH}_3\text{CH}_2\text{NH}_2$, as the final compound. Propylamine would keep all three carbons, and propanamide is only the intermediate before the Hofmann step.

27. Answer: (D) Benzylamine

In benzylamine, $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$, the CH_2 group separates nitrogen from the ring, so its lone pair is not delocalised and it behaves like an alkylamine, more basic than aniline. In diphenylamine and triphenylamine the lone pair is spread over two or three rings, and the nitro group in p-nitroaniline withdraws electrons, so all three are weaker than aniline.

28. Answer: (D) $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$

Aniline $\rightarrow$ benzenediazonium chloride $\rightarrow$ (CuCN) benzonitrile $\rightarrow$ (H_2/Ni) benzylamine $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2 \rightarrow$ (HNO_2) benzyl alcohol $\text{C}_6\text{H}_5\text{CH}_2\text{OH}$. Benzylamine is only intermediate C; nitrous acid converts this primary aliphatic amine to the alcohol.

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