EXERCISE-I (Conceptual Questions) Build Up Your Understanding

Amines

1. Among the following which one is not formed in Hoffmann degradation

(1) RNCO (2) $R-\ddot{N}H_2$

(3) $RCO\ddot{N}HBr$ (4) RNC

CAM001

2. $CH_3CH_2CONH_2 \xrightarrow[Br_2]{NaOH} A$,

Aqueous solution of A

(1) Turns blue litmus to red

(2) Turns red litmus to blue

(3) Does not affect the litmus

(4) Decolourise the litmus

CAM002

3. Ethanamine can be obtained if the following compound is heated with [KOH + Br_2]

(1) Ethanamide (2) Methanamide

(3) Propionamide (4) All the above

CAM003

4. Tertiary amine is obtained in the reaction :-

(1) Aniline $\xrightarrow{CH_3I}$ $\xrightarrow{CH_3I}$

(2) Aniline $\xrightarrow{CH_3I}$

(3) Nitrobenzene $\xrightarrow{Sn/HCl}$

(4) None of the above

CAM005

5. $C_2H_5NH_2$ cannot be prepared by the reduction of

(1) $C_2H_5NO_2$ (2) $CH_3CH{=}NOH$

(3) C_2H_5NC (4) CH_3CN

CAM006

6. Gabriel reaction for the synthesis of amines, involves the use of

(1) 1° amide (2) 2° amide

(3) Imides (4) Aliphatic amide

CAM007

7. Gabriel phthalimide reaction is used in the synthesis of

(1) Primary aromatic amines

(2) Secondary amines

(3) Primary aliphatic amines

(4) Tertiary amines

CAM008

8. The reaction: [C_2H_5Br + NH_3] is in fact an example of

(1) Ammonolysis only

(2) Nucleophilic substitution only

(3) Ammonolysis as well as nucleophilic substitution

(4) None

CAM009

9. $CH_3CONH_2 \xrightarrow[I]{P_2O_5} A \xrightarrow[II]{Na/EtOH} B$

Product 'B' is

(1) $CH_3—CH_2—OH$

(2) $CH_3—NH_2$

(3) $CH_3—CH_2—NH_2$

(4) $CH_3—CHO$

CAM004

10. The product obtained by the alkaline hydrolysis of C_2H_5—NCO when treated with t–butyl magnesiumbromide, the compound obtained will be

(1) t–butylamine (2) n–butylamine

(3) Isobutane (4) n–butane

CAM013

11. Aniline can be obtained by :-

(1) Benzoyl chloride and ammonia

(2) Reduction of benzamide

(3) Phenol and ammonia in presence of $ZnCl_2$

(4) Benzoic anhydride and ammonia

CAM029

12. Melting points are normally the highest for

(1) Tertiary amides (2) Secondary amides

(3) Primary amides (4) Amines

CAM010

13. Solubility of ethylamine in water is due to

(1) Low molecular weight

(2) Ethyl group is present in ethyl amine

(3) Formation of H–bonding with water

(4) Being a derivative of ammonia

CAM011

14. Hydrogen attached to nitrogen is released in the reaction

(1) $RCONH_2 + NaNH_2$ (2) $RNH_2 + Na$

(3) Both the above (4) None of the above

CAM017

15. This compound does not respond to carbylamine reaction :-

(1) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-NH_2$ (2) $C_2H_5-NH-C_2H_5$

(3) $CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-NH_2$ (4) $CH_3-\underset{\displaystyle NH_2}{\underset{|}{CH}}-CH_2-CH_3$

CAM020

16. Chloroform and ethanolic KOH is used as a reagent in the following reaction :-

(a) Hoffmann carbylamine reaction

(b) Hoffmann degradation reaction

(c) Reimer–Tieman reaction

(d) Kolbe's reaction

Code is :-

(1) Only for a (2) Only for a and b

(3) Only for b and d (4) Only for a and c

CAM033

17. Reaction of RCN with sodium and alcohol leads to the formation of :-

(1) $RCONH_2$ (2) $RCOO^-NH_4^+$

(3) RCH_2NH_2 (4) $R(CH_2)_3NH_2$

CAM041

18. Which of the following when heated with KOH and primary amine gives carbylamine test

(1) $CHCl_3$ (2) CH_2Cl_2

(3) CH_3OH (4) CCl_4

CAM046

19. Chloroform reacts with aniline and aqueous KOH gives :-

(1) Ph–N ≡ C (Phenyl isocyanide)

(2) Benzene

(3) Phenyl cyanide

(4) None of these

CAM047

20. Acidic nature of amino group is shown by the reaction :-

(1) $R-NH_2 + NaCl \rightarrow NaNH_2$

(2) $2RNH_2 + 2Na \rightarrow 2RNH.Na + H_2$

(3) $R.CH_2NH_2 + HNO_2 \rightarrow R.CH_2OH + N_2 + H_2O$

(4) $R.NH_2 + HCl \rightarrow \overset{\oplus}{R}\overset{\ominus}{NH_3}\,Cl$

CAM015

21. Which one of the following amine compound gives alcohol with HNO_2 :-

(1) N, N–Dimethylaniline

(2) Benzylamine

(3) N–methylaniline

(4) Aniline

CAM022

22. Which of the following compound liberates CO_2 when treated with $NaHCO_3$

(1) $CH_3COCH_2NH_2$ (2) CH_3NH_2

(3) $(CH_3)_4\overset{\oplus}{N}OH$ (4) $CH_3\overset{\oplus}{N}H_3Cl$

CAM012

23. If primary amines are treated with ketones the product is

(1) Urea (2) Guanidine

(3) Amide (4) Schiff's base

CAM018

24. Blue litmus can be turned to red by the compound

(1) ROH (2) RNH_2

(3) $R\overset{\oplus}{N}H_3OH$ (4) $R\overset{\oplus}{N}H_3Cl$

CAM021

25. Reaction $C_6H_5NH_2 + HAuCl_4 \longrightarrow [C_6H_5\overset{\oplus}{N}H_3]Au\overset{\ominus}{Cl}_4$ shows ... behaviour of aniline:-

(1) Acidic (2) Neutral

(3) Basic (4) Amphoteric

CAM024

26. Which of the following does not reduce Tollen's reagent :-

(1) CH_3CHO (2) HCOOH

(3) $CH_3-\underset{\displaystyle O}{\underset{\|}{C}}-CH_2-OH$ (4) $C_6H_5NH_2$

CAM028

27. Aromatic nitriles (ArCN) are not prepared by reaction

(1) ArX + KCN (2) $ArN_2^+ + CuCN$

(3) $ArCONH_2 + P_2O_5$ (4) $ArCONH_2 + POCl_3$

CAM035

28. $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-NC \xrightarrow{\text{reduction}} ?$

(1) $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-NH_2$

(2) $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-NH-CH_3$

(3) $CH_3-\underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}}-NH-CH_2CH_3$

(4) None

CAM040

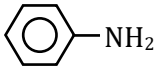
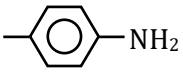
29. Which of the following is used as a solvent in the Friedel–Crafts reaction :-

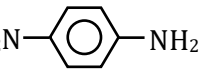
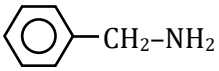
(1) Toluene (2) Nitrobenzene

(3) Benzene (4) Aniline

CAM044

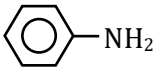
30. Which compound does not show diazo coupling reaction :-

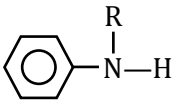
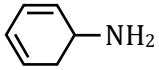
(1)  (2) 

(3)  (4) 

CAM026

31. Which of the following amines give N–nitroso derivative with $NaNO_2$ and HCl :-

(1) $C_2H_5NH_2$ (2) 

(3)  (4) 

CAM027

32. $C_6H_5NH_2 \xrightarrow[0-5°C]{NaNO_2/HCl}$ A, Which is the incorrect structure of the product 'A' :-

(1) $[C_6H_5-\overset{\oplus}{N}=N]\overset{\ominus}{Cl}$ (2) $[C_6H_5\overset{\oplus}{N}_2]\overset{\ominus}{Cl}$

(3) $[C_6H_5-\overset{\oplus}{N}\equiv N]\overset{\ominus}{Cl}$ (4) $[C_6H_5-N\equiv\overset{\oplus}{N}]\overset{\ominus}{Cl}$

CAM032

33. Aniline in a set of reactions yielded end product D

 $\xrightarrow[0-5°C]{NaNO_2+HCl}$ A $\xrightarrow{CuCN}$ B $\xrightarrow[Ni]{H_2}$ C $\xrightarrow{HNO_2}$ D

The structure of the product D would be

(1) $C_6H_5CH_2OH$ (2) $C_6H_5CH_2NH_2$

(3) C_6H_5NHOH (4) $C_6H_5NHCH_2CH_3$

CAM036

34. $\phi-X \xrightarrow{NaNO_2/HCl} C_6H_5N_2Cl \xrightarrow[\Delta]{Water} \phi-Y$,

In the above sequence X and Y are :-

(1) o–, p– and m–directing

(2) o–, p– and o–, p–directing

(3) m and m directing

(4) m and o, p directing

CAM037

35. $C_6H_5NO_2 \xrightarrow{Sn/HCl} A \xrightarrow[0°C]{NaNO_2/HCl} B$;

In the above sequence Benzene from B, is suitably obtained by using :-

(1) Ethanol (2) H_3PO_2

(3) Both the above (4) Methanol

CAM042

36. Which reagent is used to get iodo benzene from benzene diazonium acid sulphate $[C_6H_5N_2HSO_4]$:

(1) CuBr, Δ (2) Cu powder + HI

(3) KI, Δ (4) None

CAM043

37. In the Sandmeyer's reaction, –N=N–X group of diazonium salt is replaced by :-

(1) Halide group (2) Nitro group

(3) —OH group (4) —$NHNH_2$ group

CAM045

38. $C_6H_5NH_2 \xrightarrow{Br_2/CCl_4}$? The product is :-
(1) Only o– bromoaniline
(2) 2, 4, 6–tribromoaniline
(3) o–and p–bromoaniline
(4) Only p–bromoaniline

CAM023

39. Aniline on treatment with bromine water yields white precipitate of :-
(1) o–Bromoaniline
(2) p–Bromonailine
(3) 2, 4, 6–Tribromoaniline
(4) m–Bromoaniline

CAM025

40. Aniline on direct nitration produces :-
(1) o–Nitroaniline (2) m–Nitroaniline
(3) p–Nitroaniline (4) All

CAM030

41. Nitration of acetanilide followed by hydrolysis gives
(1) o–Nitroaniline only
(2) p–Nitroaniline only
(3) o– & p–Nitroaniline
(4) o–Nitroanilinium ion

CAM031

42. Acetanilide when treated with bromine in acetic acid mainly gives :-
(1) o–Bromoacetanilide
(2) N–Bromoacetanilide
(3) p–Bromoacetanilide
(4) m–Bromoacetanilide

CAM034

43. Which of the following compound gives an explosive on decarboxylation :-
(1) 2,4, 6–Trinitrobenzoicacid
(2) 2, 4–Dinitrobenzoicacid
(3) o–Aminobenzoicacid
(4) o–Hydroxybenzoicacid

CAM038

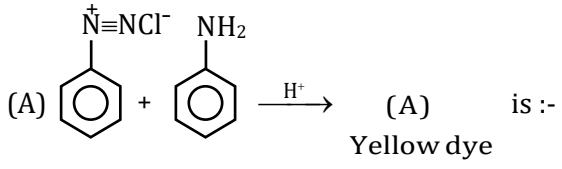
EXERCISE-I (Conceptual Questions) ANSWER KEY

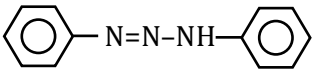
Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**2**	**3**	**1**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**4**	**3**	**1**	**1**	**2**	**2**	**4**	**4**	**4**	**3**	**4**	**1**	**2**	**2**	**4**
Question	31	32	33	34	35	36	37	38	39	40	41	42	43		
Answer	**3**	**4**	**1**	**2**	**3**	**3**	**1**	**2**	**3**	**4**	**3**	**3**	**1**		

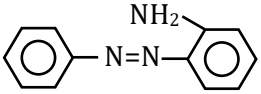
EXERCISE-II (Previous Year Questions) AIPMT/NEET

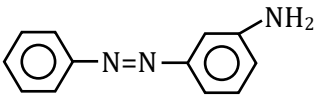
AIPMT 2014

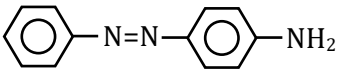
1. In the following reaction, the product



(1) 

(2) 

(3) 

(4) 

CAM063

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

(1) $CH_3N_2^+X^-$ (2) $C_6H_5N_2^+X^-$

(3) $CH_3CH_2N_2^+X^-$ (4) $C_6H_5CH_2N_2^+X^-$

CAM064

AIPMT 2015

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

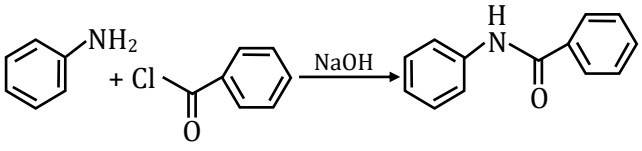
(1) Azoxybenzene (2) Azobenzene

(3) Aniline (4) p-Aminophenol

CAM065

RE-AIPMT 2015

4. The following reaction



is known by the name :

(1) Acetylation reaction

(2) Schotten-Baumann reaction

(3) Friedel–Craft's reaction

(4) Perkin's reaction

CAM066

5. Method by which Aniline cannot be prepared is:-

(1) Reduction of nitrobenzene with H_2/Pd in ethanol

(2) Potassium salt of phthalimide treated with chlorobenzene followed by hydrolysis with aqueous NaOH solution

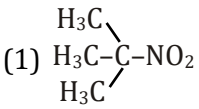
(3) Hydrolysis of phenyl isocyanide with acidic solution

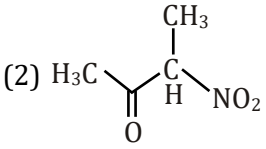
(4) Degradation of benzamide with bromine in alkaline solution

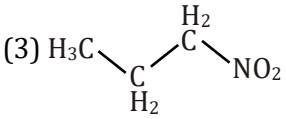
CAM067

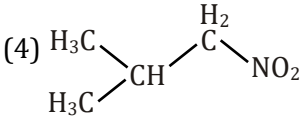
NEET-II 2016

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

(1) 

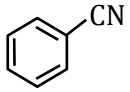
(2) 

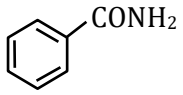
(3) 

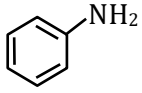
(4) 

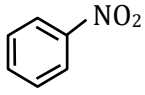
CAM068

7. 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 $C_{12}H_{10}N_2O$. The structure of compound (A) is :-

(1) 

(2) 

(3) 

(4) 

CAM069

NEET(UG) 2017

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

(1) Hoffmarnn hypobromamide reaction

(2) Stephens reaction

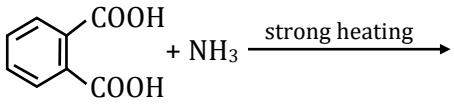
(3) Gabriels phthalimide synthesis

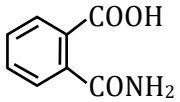
(4) Carbylamine reaction

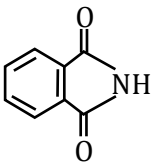
CAM070

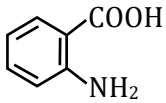
NEET(UG) 2019

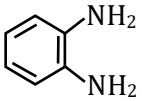
9. The major product of the following reaction is :



(1) 

(2) 

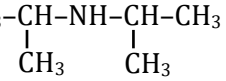
(3) 

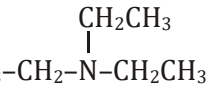
(4) 

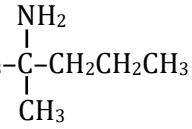
CAM071

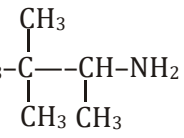
NEET(UG) 2019 (ODISHA)

10. The amine that reacts with Hinsberg's reagent to give an alkali insoluble product is:-

(1) 

(2) 

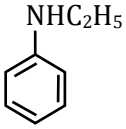
(3) 

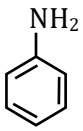
(4) 

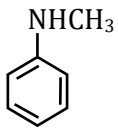
CAM072

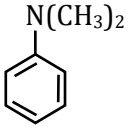
NEET(UG) 2020

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

(1) 

(2) 

(3) 

(4) 

CAM073

NEET(UG) 2020 (COVID-19)

12. Reaction of propanamide with ethanolic sodium hydroxide and bromine will give

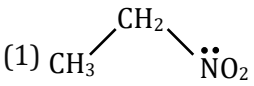
(1) Ethylamine (2) Methylamine

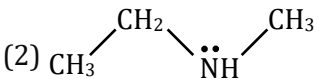
(3) Propylamine (4) Aniline

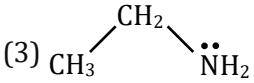
CAM074

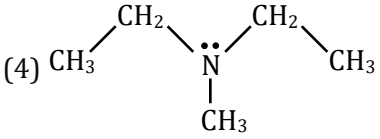
NEET(UG) 2021

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

(1) 

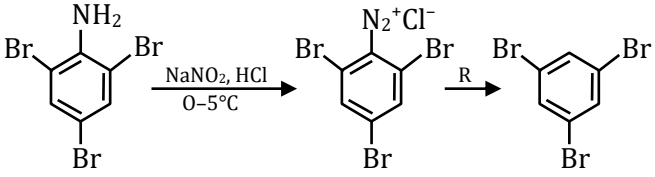
(2) 

(3) 

(4) 

CAM075

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



(1) H_2O (2) CH_3CH_2OH

(3) HI (4) CuCN/KCN

CAM076

NEET(UG) 2022

15. Given below are two statements :

Statement-I : Primary aliphatic amines react with HNO_2 to give unstable diazonium salts.

Statement-II : Primary aromatic amines react with HNO_2 to form diazonium salts which are stable even above 300 K.

In the light of the above statements, choose the most appropriate answer from the options given below :

(1) Both Statement-I and Statement-II are incorrect.

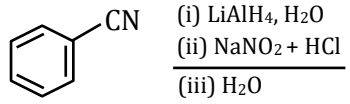
(2) Statement-I is correct but Statement-II is incorrect.

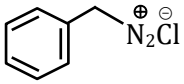
(3) Statement-I is incorrect but Statement-II is correct.

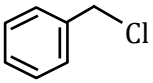
(4) Both Statement-I and Statement-II are correct.

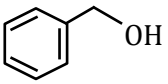
CAM131

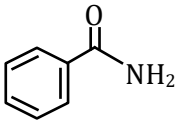
16. The product formed from the following reaction sequence is



(1) 

(2) 

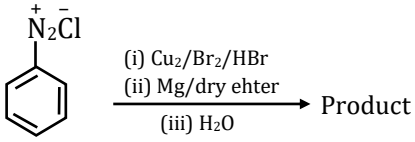
(3) 

(4) 

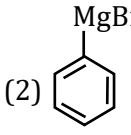
CAM132

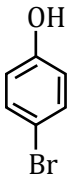
NEET(UG) 2023

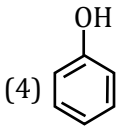
17. Identify the product in the following reaction:



(1) 

(2) 

(3) 

(4) 

CAM133

18. Which of the following reactions will NOT give primary amine as the product?

(1) $CH_3CN \xrightarrow[(ii)H_3O^{\oplus}]{(i)LiAlH_4}$ Product

(2) $CH_3NC \xrightarrow[(ii)H_3O^{\oplus}]{(i)LiAlH_4}$ Product

(3) $CH_3CONH_2 \xrightarrow[(ii)H_3O^{\oplus}]{(i)LiAlH_4}$ Product

(4) $CH_3CONH_2 \xrightarrow{Br_2/KOH}$ Product

CAM134

19. Choose the **correct** sequence of reagents in the conversion of 4-nitrotoluene to 2-bromotoluene.

(1) $NaNO_2/HCl$; Sn/HCl; Br_2; H_2O/H_3PO_2

(2) Sn/HCl; $NaNO_2/HCl$; Br_2; H_2O/H_3PO_2

(3) Br_2; Sn/HCl; $NaNO_2/HCl$; H_2O/H_3PO_2

(4) Sn/HCl; Br_2; $NaNO_2/HCl$; H_2O/H_3PO_2

CAM135

NEET(UG) 2024

20. Given below are two statements :

Statement-I : Aniline does not undergo Friedel- Crafts alkylation reaction

Statement-II : Aniline cannot be prepared through Gabriel synthesis.

In the light of the above statements, choose the *correct* answer from the options given below :

(1) Both Statement-I and Statement-II are true.

(2) Both Statement-I and Statement-II are false.

(3) Statement-I is correct but Statement-II is false.

(4) Statement-I is incorrect but Statement-II is true.

CAM136

21. Identify the major product C formed in the following reaction sequence:

$CH_3 - CH_2 - CH_2 - I \xrightarrow{NaCN} A \xrightarrow[\text{Partial hydrolysis}]{OH^-} B \xrightarrow[Br_2]{NaOH} \underset{\text{(Major)}}{C}$

(1) propylamine

(2) butylamine

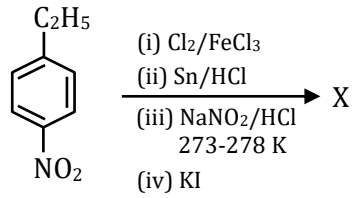
(3) butanamide

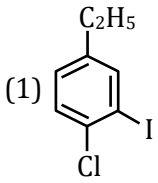
(4) α – bromobutanoic acid

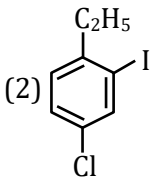
CAM137

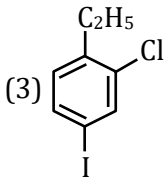
NEET(UG) 2024 (Re-examination)

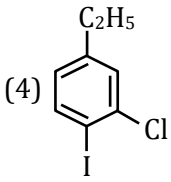
22. The major product X formed in the following reaction sequence is :



(1) 

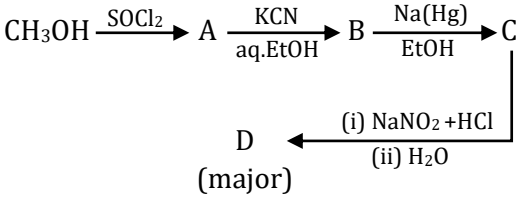
(2) 

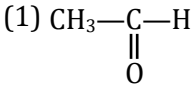
(3) 

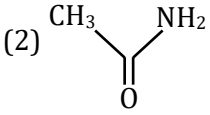
(4) 

CAM138

23. The major product D formed in the following reaction sequence is:



(1) 

(2) 

(3) CH_3CH_2OH

(4) CH_3CH_2Cl

CAM139

24. The compound that does not undergo Friedel-Crafts alkylation reaction but gives a positive carbylamine test is :

(1) aniline (2) pyridine

(3) N-methylaniline (4) triethylamine

CAM140

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**2**	**4**	**2**	**2**	**1**	**4**	**1**	**2**	**1**	**2**	**1**	**3**	**2**	**2**
Question	16	17	18	19	20	21	22	23	24						
Answer	**3**	**1**	**2**	**3**	**1**	**1**	**3**	**3**	**1**						

EXERCISE-III (Analytical Questions) Master Your Understanding

1. $A \xrightarrow{NH_3} B \xrightarrow{\Delta} C \xrightarrow{Br_2+KOH} CH_3CH_2NH_2$

A is :-

(1) CH_3COOH (2) $CH_3CH_2CH_2COOH$

(3) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-COOH$ (4) CH_3CH_2COOH

CAM077

2. $C_2H_5Br \xrightarrow{AgCN} A \xrightarrow{H_3O^+} HCOOH + B;$

$B \xrightarrow[KOH]{CHCl_3} A \xrightarrow{Reduction} C$

A, B, C respectively in the above sequence are

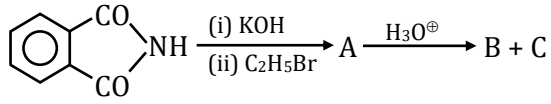
(1) Ethane amine, methane nitrile and diethyl amine

(2) Carbyl amino ethane, ethane amine and primary amine

(3) Ethyl isocyanide, ethyl amine and methyl isocyanate

(4) Carbylamino ethane, ethanamine and ethyl methyl amine

CAM080

3. 

B and C in the above sequence are

(1) Benzoic acid + aniline

(2) Phthalic acid + ethylamine

(3) Phthalic acid + aniline

(4) Benzoic acid + ethylamine

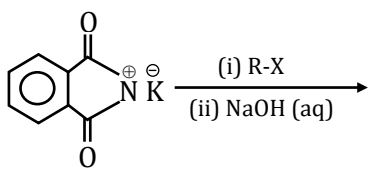
CAM081

4. Which of following will not gives only primary amine

(1) $C_2H_5X \xrightarrow{NH_3(Alc)}$

(2) $CH_3-CN \xrightarrow[C_2H_5OH]{Na(Hg)}$

(3) $CH_3-\overset{\displaystyle O}{\overset{\|}{C}}-NH_2 \xrightarrow[(ii)\ H_2O]{(i)\ LiAlH_4}$

(4) 

CAM092

5. Which one of the following tests can be used to identify primary amino group in a given organic compound

(1) Iodoform test

(2) Victor Meyer's test

(3) Carbylamine reaction

(4) Libermann's reaction

CAM086

6. What is decreasing order of H-bonding in water for alkyl substituted ammonium cation?

(1) $R\overset{\oplus}{N}H_3 > R_2\overset{\oplus}{N}H_2 > R_3\overset{\oplus}{N}H$

(2) $R_3\overset{\oplus}{N}H > R_2\overset{\oplus}{N}H_2 > R\overset{\oplus}{N}H_3$

(3) $R_2\overset{\oplus}{N}H_2 > R_3\overset{\oplus}{N}H > R\overset{\oplus}{N}H_3$

(4) $R_2\overset{\oplus}{N}H_2 > R\overset{\oplus}{N}H_3 > R_3\overset{\oplus}{N}H$

CAM095

7. $A \xrightarrow{H_2NOH} B \xrightarrow{reduction} C \xrightarrow{NOCl} CH_3CH_2Cl,$

A and C in the above sequence respectively are:-

(1) Methanal, Methylamine

(2) Acetone, ethanamine

(3) Ethanal, dimethylamine

(4) Acetaldehyde, ethylamine

CAM083

8. Basic nature of amine in aqueous medium can be explained by :-

(1) Inductive effect (2) Solvation effect

(3) Steric hinderance (4) All of these

CAM093

9. The correct set of the products obtained in the following reactions

$RCN \xrightarrow{reduction} (A),\ RCN \xrightarrow[(ii)H_2O]{(i)\ CH_3MgBr} (B),$

$RNC \xrightarrow{hydrolysis} (C),\ RNH_2 \xrightarrow{HNO_2} (D)$

The answer is

	A	B	C	D
(1)	2°Amine	Methyl ketone	1°Amine	Alcohol
(2)	1°Amine	Methyl ketone	1°Amine	Alcohol
(3)	2°Amine	Methyl ketone	2°Amine	Acid
(4)	1°Amine	Methyl ketone	2° Amine	Aldehyde

CAM078

10. Which of following reaction is not acylation ?

(1) $C_2H_5NH_2 + CH_3-\overset{\overset{O}{\|}}{C}-Cl \longrightarrow$

(2) $C_2H_5NH_2 + CH_3-\overset{\overset{O}{\|}}{C}-O-\overset{\overset{O}{\|}}{C}-CH_3 \longrightarrow$

(3) $C_2H_5NH_2 + CH_3\overset{\overset{O}{\|}}{C}-OCH_3 \longrightarrow$

(4) $C_2H_5NH_2 + CH_3-\overset{\overset{O}{\|}}{C}-OH \longrightarrow$

CAM096

11. Which of following will not give acylation reaction?

(1) $H_5C_2 - NH_2$ (2) $H_5C_2 - NH - C_2H_5$

(3) $C_2H_5-\underset{\underset{C_2H_5}{|}}{\overset{\overset{C_2H_5}{|}}{N}}$ (4) $H_5C_6 - NH_2$

CAM097

12. Which of following is not correct match?

(1) $H_5C_2NH_2 + CH_3-\overset{\overset{O}{\|}}{C}-Cl \longrightarrow$

$H_5C_2-NH-\overset{\overset{O}{\|}}{C}-CH_3+HCl$
(Acetylation)

(2) $H_5C_2NH_2 + H_5C_6-\overset{\overset{O}{\|}}{C}-Cl \longrightarrow$

$H_5C_2-NH-\overset{\overset{O}{\|}}{C}-C_6H_5+HCl$
(Benzoylation)

(3) $(H_5C_2)_2 NH + CHCl_3 + 3KOH \longrightarrow$
$H_5C_2-NC + 3KCl + 3H_2O$
(Carbyl amine reaction)

(4) $H_5C_2 - NH_2 + CH_3COOH \longrightarrow$
$H_5C_2N^{\oplus}H_3\ CH_3COO^-$
(Salt formation or Neutralisation)

CAM098

13. Which of following can be use to distinguish primary, secondary and tertiary amine?

(1) Carbyl amine reaction

(2) Reaction with Nitrous acid

(3) Reaction with Hinsberg's reagent followed by NaOH

(4) Both (2) and (3)

CAM099

14. Which of following is insoluble in alkali?

(1) $H_5C_6-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-\underset{\underset{C_2H_5}{|}}{N}-C_2H_5$

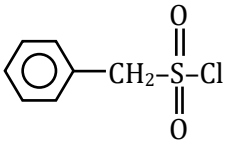
(2) $H_5C_6-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-\underset{\underset{H}{|}}{N}-CH_3$

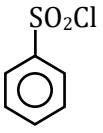
(3) $H_5C_6-\overset{\overset{O}{\|}}{\underset{\underset{O}{\|}}{S}}-\underset{\underset{H}{|}}{N}-C_2H_5$

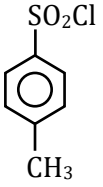
(4) All of these

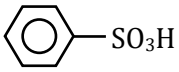
CAM100

15. These days benzene sulphonyl chloride replaced by which compound in Hinsberg test :-

(1) 

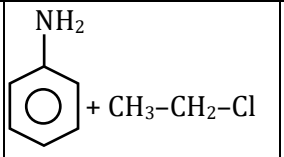
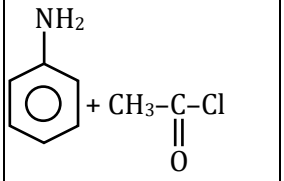
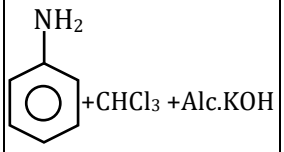
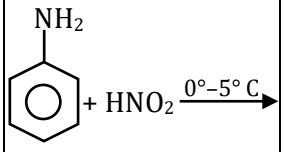
(2) 

(3) 

(4) 

CAM101

16. Match the column

Column-I (Reaction)		Column-II (Process)	
(a)		(p)	Acetylation
(b)		(q)	Alkylation
(c)		(r)	Diazotization
(d)		(s)	Carbylamine reaction
		(t)	Halogenation

Correct match is

(1) (a) → (q), (b) → (p), (c) → (s), (d) → (r)

(2) (a) → (t), (b) → (p), (c) → (s), (d) → (r)

(3) (a) → (q), (b) → (p), (c) → (t), (d) → (s)

(4) (a) → (t), (b) → (q), (c) → (s), (d) → (r)

CAM117

17. The end–product in the reaction sequence would be :

Ethyl amine $\xrightarrow{HNO_2}$ A $\xrightarrow{PCl_5}$ B $\xrightarrow{NH_3}$ C

(1) Ethyl cyanide (2) Ethyl amine

(3) Methyl amine (4) Acetamide

CAM082

18. In the reaction sequence A, B and C are :-

$A \xrightarrow[HCl]{Sn} B \xrightarrow[0°C]{NaNO_2/HCl} C \xrightarrow{H_2O/\Delta} C_6H_5OH$

(1) Benzene, nitrobenzene, aniline

(2) Nitrobenzene, aniline and azo–compound

(3) Nitrobenzene, benzene, aniline

(4) Benzene, amino compound, aniline

CAM085

19. $CH_3Cl \xrightarrow{KCN} \xrightarrow{+4H} A \xrightarrow{NaNO_2/HCl}$ Ethanol+?

Apart from ethanol as the main product, the other products would be

(1) $H_2C{=}CH_2$

(2) $CH_3CH_2{-}ONO$

(3) $CH_3CH_2{-}Cl$

(4) All the above

CAM087

20. Identify B, X and R respectively in the following sequence of reactions

$C_2H_5MgBr \xrightarrow{ClCN} A \xrightarrow{H_3O^+} \boxed{B}$,

$CH_3COCH_3 \xrightarrow[NaOH]{I_2} \boxed{X} \xrightarrow{Ag} CH{\equiv}CH$

$C_6H_5NH_2 \xrightarrow[0-5°C]{NaNO_2/HCl} P \xrightarrow{CuCN} Q \xrightarrow[EtOH]{Na} \boxed{R}$

(1) C_2H_5COOH, CHI_3, $C_6H_5CH_2NH_2$

(2) C_2H_5COOH, CH_3I, C_6H_5COOH

(3) $C_2H_5CH_2NH_2$, CH_3I, C_6H_5COOH

(4) C_2H_5COOH, C_2H_5I, $C_6H_5CONH_2$

CAM088

21. Total structural isomeric amines possible for molecular formula $C_4H_{11}N$

(1) 7 (2) 8

(3) 9 (4) 6

CAM090

22. Which of following is correct regarding basic nature:-

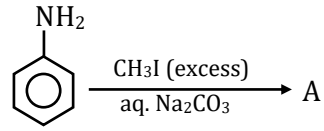
(1) $R-NH_2 > R_2NH > R_3N$ (Gaseous phase)

(2) $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3N$ (Aqueous solutions)

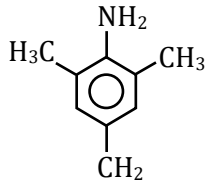
(3) $(C_2H_5)_2NH > (C_2H_5)_3N > C_2H_5{-}NH_2 > NH_3$ (Aqueous solutions)

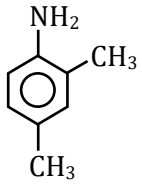
(4) $(C_2H_5)_2NH > PhNH_2 > Ph - NH - CH_3$ (Aqueous solution)

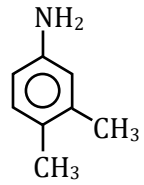
CAM094

23. 

What will be "A"

(1) 

(2) 

(3) 

(4) $Ph-\overset{\oplus}{N}(CH_3)_3\overset{\ominus}{I}$

CAM102

24. Total number of isomers of molecular formula C_3H_9N which will liberate N_2 gas on treatment with nitrous acid?

(1) 2 (2) 3 (3) 4 (4) 1

CAM103

25. Match the column

	Column-I (Compound)		Column-II (Pkb)
(i)	N,N-Dimethyl aniline	(a)	9.38
(ii)	Benzenamine	(b)	8.92
(iii)	N-Methyl methanamine	(c)	3.38
(iv)	Methanamine	(d)	3.27

Correct match is -

(1) (i) → b, (ii) → a, (iii) → c, (iv) → d

(2) (i) → c, (ii) → d, (iii) → a, (iv) → b

(3) (i) → b, (ii) → a, (iii) → d, (iv) → c

(4) (i) → d, (ii) → a, (iii) → c, (iv) → b

CAM113

26. Some statements are given about following order of basic strength in aqueous medium.

$(CH_3)_2NH > CH_3-NH_2 > (CH_3)_3N > NH_3$

(a) More substituted ammonium ion gets stablised due to +I effect of alkyl group.

(b) The greater the size of ammonium ion, more will be solvation, so more stable ion so more basicity.

(c) More the alkyl groups, more steric hindrance to H-bonding in ammonium ion.

(d) Basic strength in aqueous medium is explained by more than one type of effects.

Correct statements is/are

(1) a, b, c, d (2) a, b, d

(3) a, c, d (4) a and d only

CAM115

27. Which of following is water insoluble and stable at room temperature.

(1) $C_6H_5N_2^{\oplus}Cl^{\ominus}$ (2) $C_6H_5N_2^{\oplus}BF_4^{\ominus}$

(3) $C_6H_5N_2^{\oplus}HSO_4^{\ominus}$ (4) All

CAM104

28. Which of following reaction do not displace N_2 from benzenediazonium salt?

(1) $ArN_2^{\oplus}Cl^- \xrightarrow{Cu_2Cl_2/HCl}$

(2) $ArN_2^{\oplus}Cl^- \xrightarrow{Cu/HCl}$

(3) $ArN_2^{\oplus}Cl^- + KI \longrightarrow$

(4) $ArN_2^{\oplus}Cl^- + HBF_4 \xrightarrow{0-5°C}$

CAM105

29. Which of following group can not be introduced in the benzene ring by sandmeyer reaction?

(1) –Cl (2) –Br (3) –CN (4) –I

CAM106

30. Diazo coupling reaction can be use to distinguish

(1) Aniline and Benzyl amine

(2) Ethylamine and N-methyl aniline

(3) Aniline and Phenol

(4) All of these

CAM109

31. $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2-OH$ is obtained from following method

(1) $CH_3-CH_2-\underset{\underset{CH_3}{|}}{CH}-Cl + H_2O$

(2) $CH_3CHO, CH_3-CH_2MgBr, H_2O$

(3) $H-CHO, CH_3-\underset{\underset{CH_3}{|}}{CH}MgBr, H_2O$

(4) $CH_3-\underset{\underset{CH_3}{|}}{CH}-CH_2-NH_2 + HNO_2$

CAM112

32. Using Fe/HCl, which one of the following reaction is possible [Here $\phi = C_6H_5$]

(1) $\phi-NO_2 \rightarrow \phi-NH-NH-\phi$

(2) $\phi-NO_2 \rightarrow \phi-NH_2$

(3) $\phi-NO_2 \rightarrow \phi-NHOH$

(4) $\phi-NO_2 \rightarrow \phi-N=N-\phi$

CAM089

33. What is correct sequence of reagent to form 2,4,6-tibromofluorobenzene from Aniline?

(1) $NaNO_2/HCl$ (0-5°C), HBF_4/Δ, Br_2/H_2O

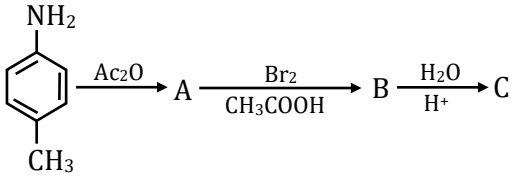
(2) Br_2/H_2O, $NaNO_2/HCl$ (0-5°C), HBF_4/Δ

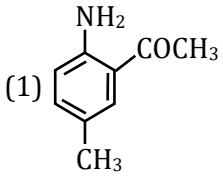
(3) $NaNO_2/HCl$ (25°C), HBF_4/Δ, Br_2/H_2O

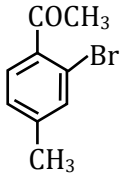
(4) Br_2/H_2O, $NaNO_2/HCl$ (0-5°C), HBF_4 (Room temperature)

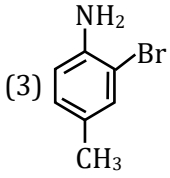
CAM110

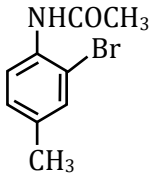
34. The final product C, obtained in this reaction would be



(1) 

(2) 

(3) 

(4) 

CAM079

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**4**	**2**	**1**	**3**	**1**	**4**	**4**	**2**	**4**	**3**	**3**	**4**	**1**	**3**
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	**1**	**2**	**2**	**4**	**1**	**2**	**3**	**4**	**1**	**3**	**3**	**2**	**4**	**4**	**4**
Question	31	32	33	34											
Answer	**3**	**2**	**2**	**3**											