EXERCISE-I (Conceptual Questions) **Build Up Your Understanding**

AMINE

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

(1) RNCO (2) R – $\overset{\&}{N}H_2$ (3) RCO$\overset{\&}{N}$HBr (4) RNC

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

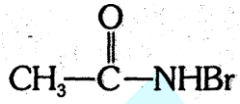
3. Ethanamine can be obtained if the following compound is heated with [KOH + Br_2]

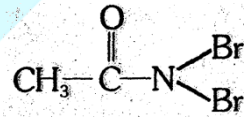
(1) Ethanamide (2) Methanamide (3) Propionamide (4) All the above

4. $CH_3CONH_2 \xrightarrow[I]{P_2O_5} A \xrightarrow[II]{Na/EtOH} B$ Reaction II is called

(1) Clemensen
(2) Stephen
(3) Mendius
(4) Bauveault-blank reduction

5. CH_3CONH_2, Br_2 & KOH give CH_3NH_2 as the product. The intermediates of the reaction are :-

(a)  (b) $CH_3–N = C = O$

(c) CH_3NHBr (d) 

The correct answer is :-

(1) a, b (2) a, c (3) b, d (4) c, d

6. In which case alkylamine is not formed :-

(1) $R–X + NH_3 \longrightarrow$ (2) $R–CH = NOH + [H] \xrightarrow[alc.]{Na}$

(3) $R–CN + H_2O \xrightarrow{H^+}$ (4) $RCONH_2 + 4[H] \xrightarrow{LiAlH_4}$

7. 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

8. $C_2H_5NO_2$ cannot be prepared by the reduction of

(1) $C_2H_5NO_2$ (2) $CH_3CH = NOH$ (3) C_2H_5NC (4) CH_3CN

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

(1) 1° amide (2) 2° amide (3) Imides (4) Aliphatic amide

10. Gabriel phthalimide reaction is used in the synthesis of
(1) Primary aromatic amines (2) Secondary amines
(3) Primary aliphatic amines (4) Tertiary amines

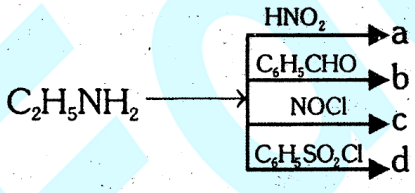
11. The reaction : [$C_2H_5Br + NH_3$] is in fact an example of
(1) Ammonolysis only
(2) Nucleophilic substitution only
(3) Ammonolysis as well as nucleophilic substitution
(4) None

12. Melting points are normally the highest for
(1) Tertiary amides (2) Secondary amides (3) Primary amides (4) Amines

13. Solubility of ethylamine in water is due to
(1) Low molecular weight
(2) Ethyl group is present in ethyl alcohol
(3) Formation of H-bonding with water
(4) Being a derivative of ammonia

14. Which of the following compound liberates CO_2 when treated with $NaHCO_3$
(l) $CH_3COCH_2NH_2$ (2) CH_3NH_2
(3) $(CH_3)_4 \overset{\oplus}{N}O\overset{\ominus}{H}$ (4) $CH_3\overset{\oplus}{N}H_3\overset{\ominus}{Cl}$

15. The product obtained by the alkaline hydrolysis of $C_2H_5–N = C = O$ when treated with t–butyl magnesium bromide, the compound obtained will be
(1) t-butylamine (2) n-butylamine (3) Isobutane (4) n-butane

16. 

Which product is a schiff's base :-
(1) a (2) b (3) c (4) d

17. Acidic nature of amino group is shown by the reaction :-
(1) $R–NH_2 + NOCl \rightarrow RCl + N_2 + H_2O$
(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) $R.NH_2 + HCl \rightarrow R\overset{\oplus}{N}H_3\overset{\ominus}{Cl}$

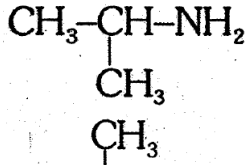
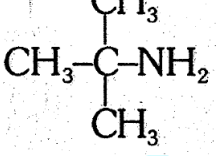
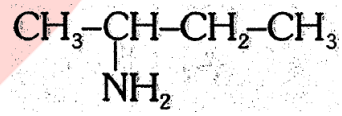
18. The reagent used in the conversion of $C_2H_5NH_2$ to C_2H_5Cl would be
(1) SO_2Cl_2 (2) $SOCl_2$ (3) NOCl (4) All

19. Hydrogen attached to nitrogen is releases in the reaction
(1) $RCONH_2 + NaNH_2$ (2) $RNH_2 + Na$
(3) Both the above (4) None of the above

20. If primary amines are treated with ketones the product is
(1) Urea (2) Guanidine (3) Amide (4) Schiff's base

21. Reactants of reaction – I are
CH_3CONH_2, KOH, Br_2
Reactants of reaction-II are
CH_3NH_2, $CHCl_3$, KOH
The intermediate species of reaction-I and reaction-II are respectively.
(1) Carbonium ion, carbene (2) Nitrene, carbene
(3) Carbene, nitrene (4) Carbocation, carbanion

22. N, N-dimethyl acetamide is obtained in the reaction
(1) Acetyl chloride, and methanamine (2) Acetyl chloride and ethanamine
(3) Acetyl chloride and dimethylamine (4) Acetyl chloride and diethylamine

23. This compound does not respond to carbylamine reaction :-
(1) 
(2) $C_2H_5–NH–C_2H_5$
(3) 
(4) 

24. Blue litmus can be turned to red by the compound
(1) ROH (2) RNH_2 (3) $R\overset{\oplus}{N}H_3\overset{\ominus}{O}H$ (4) $R\overset{\oplus}{N}H_3\overset{\ominus}{Cl}$

25. Match list I with list II and select the correct answer using the codes given below :-

	List I [Reagent]		**List II [Used as test reagent fir]**
(A)	Ammonical $AgNO_3$	a.	Primary amine
(B)	HlO_4	b.	Aldehyde
(C)	Cold dil. Alkaline $KMnO_4$	c.	Vicinal–OH groups
(D)	Chloroform + NaOH	d.	Double bond

Codes :

	A	B	C	D
(1)	b	c	a	d
(2)	d	b	a	c
(3)	b	c	d	a
(4)	d	c	b	a

26. Which one of the following aromatic amino compound gives alcohol with HNO_2 :-
(1) N,N–Dimethylaniline (2) Benzylamine
(3) N–methylaniline (4) Aniline

27. Electrolytic reduction of nitrobenzene in weakly acidic medium gives
(1) Aniline (2) p-Hydroxyaniline
(3) N-phenylhydroxylamide (4) Nitrosobenzene

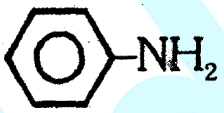
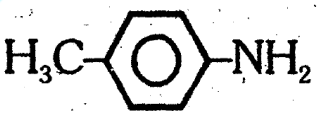
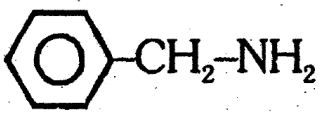
28. $C_6H_5NH_2 \xrightarrow{Br_2/CCl_4}$? The product is :-
(1) Only o-bromoaniline (2) 2, 4, 6-triboromoaniline
(3) o-and p-bromoaniline (4) Only p-bromoaniline

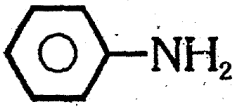
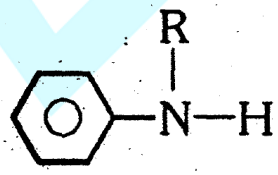
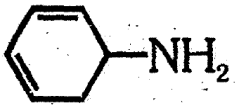
29. Before proceeding for the nitration of aminobenzene, the NH_2 group is first protected by:-
(1) Alkylation (2) Acetylation (3) Formylation (4) Chloromethylation

30. Aniline is purified by :-
(1) Azeotropic distillation
(2) Steam distillation
(3) distillation in presence of magnesium
(4) Fractional distillation

31. Reaction $C_6H_5NH_2 + HAuCl_4 \longrightarrow [C_6H_5\overset{\oplus}{N}H_3]Au\overset{\oplus}{C}l_4$ shows ... behaviour of aniline :-
(A) Acidic (B) Neutral (C) Basis (D) Amphoteric

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

33. Which compound does not show diazo reaction :-
(1)  (2) 
(3)  (4) 

34. Which of the following amines give N-nitroso derivative with $NaNO_2$ and HCl :-
(1) $C_2H_5NH_2$ (2) 
(3)  (4) 

35. Which of the following involves nitrene as an intermediate ?
(1) Carbylamine reaction (2) Hofmann bromamide reaction
(3) Reimer tiemann reaction (4) Friedal crafts reaction

36. Which of the following does not reduce tollen's reagent :-
(1) CH_3CHO (2) HCOOH (3) C_6H_5NHOH (4) $C_6H_5NH_2$

37. 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

38. Aniline on direct nitration produce :-
(1) o-Nitroaniline (2) m-Nitroaniline (3) p-Nitroaniline (4) All

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

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

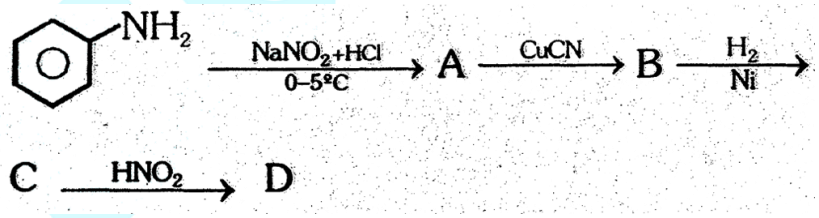
(1) $C_6H_5–N = N–Cl$ (2) $[C_6H_5\overset{\oplus}{N}_2]\overset{\ominus}{C}l$ (3) $[C_6H_5–\overset{\oplus}{N}\equiv N]\overset{\ominus}{C}l$ (4) $[C_6H_5–N\equiv \overset{\oplus}{N}]\overset{\ominus}{C}l$

41. Choroform and ethanolic KOH is used as a reagent in the following reaction :-
(a) Hoffmann carbylamine reaction (b) Hoffmann degradation reaction
(c) Reimer – tiemann reaction (d) Hoffmann mustard oil 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

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

43. Aromatic nitriles (ArCN) are not prepared by reaction
(1) ArX + KCN (2) ArN^+_2 + CuCN (3) $ArCONH_2 + P_2O_5$ (4) $ArCONH_2 + SOCl_2$

44. Aniline in a set of reactions yielded end product B
The structure of the product D would be



(1) $C_6H_5CH_2OH$ (2) $C_6H_5CH_2NH_2$ (3) C_6H_5NHOH (4) $C_6H_5NHCH_2CH_3$

45. In the reaction sequence identify the functional group present in A, B, C :-
$A \xrightarrow{Sn/HCl} B \xrightarrow[0°C]{HNO_2} C \xrightarrow{C_2H_5OH} C_6H_6$
(1) NO_2, NH_2, N=N (2) NO_2, NH_2, OH (3) –OH, $–NH_2$, –NO (4) $–NH_2$, $–NO_2$, –N=N–

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

47. Which of the following compound gives an explosive on decarboxylation :-

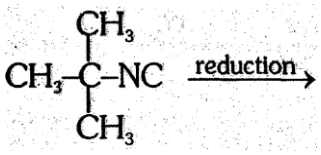
(1) 2,4, 6-Trinitrobenzoicacid (2) 2,. 4-Dinitrobenzoicacid

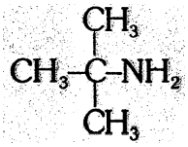
(3) o-Aminobenzoicacid (4) o-Hydroxybenzoicacid

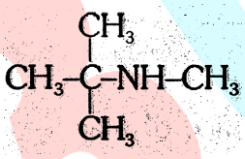
48. The gas leaked from a strong tank of the union carbide plant in bhopal gas tragedy was :-

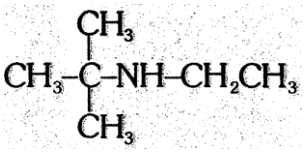
(1) Methylisocyanate (2) Methylamine

(3) Ammonia (4) Phosgane

49. 

(1) 

(2) 

(3) 

(4) None

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

(1) $RCONH_2$ (2) $RCOO^-NH^+_4$ (3) RCH_2NH_2 (4) $R(CH_2)_3NH_2$

51. $C_6H_5NO_2 \xrightarrow{SnCl/HCl} A \xrightarrow[0°C]{NaNO_2/HCl} B$, In the above sequence benzene from B, is suitably obtained by using :-

(1) Ethanol (2) H_3PO_2 (3) Both the above (4) Methanol

52. Which reagent is used to get iodo benzene from benzene diazonium acid sulphate [$C_6H_5N_2HCO_4$]:

(1) CuBr, Δ (2) Cu Powder + HI (3) KI, Δ (4) None

53. Which of the following is used as a solvent in the friedel-crafts reaction :-

(1) Toluene (2) Nitrobenzene (3) Benzene (4)Aniline

54. Match list I with II and choose the correct answer from the codes gives below :-

	List-I		**List-(II)**
(A)	Aniline	a.	Used· in making azo dyes
(B)	Nitrobenzene	b.	Sulpha drug
(C)	Sulphanilamide	c.	Solvent in the friedel crafts reaction

(D) Trinitrotoluene d. Used as explosive

Code is:-

	A	**B**	**C**	**D**
(1)	a	c	b	d
(2)	a	b	c	d
(3)	c	d	a	b
(4)	d	c	b	a

55. 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

EXERCISE-I (Conceptual Questions) ANSWER KEY

Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	4	2	3	3	1	3	1	3	3	3	3	3	3	4	3
Que.	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	2	2	3	3	4	2	3	2	4	3	2	1	2	2	2
Que.	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**41**	**42**	**43**	**44**	**45**
Ans.	3	3	4	3	2	4	3	4	3	1	4	3	1	1	1
Que.	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**53**	**54**	**55**					
Ans.	2	1	1	2	3	3	3	2	1	1					