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CHAPTER TEST (NEET UG-2025)

Amines

Subject: Chemistry **NEET - C - CT - 16**

Time Allowed: 60 min **Maximum Marks – 180**

Instructions for the candidate:

The paper consists of 50**(fifty)** Questions, which are divided in to Two sections

(a) Section A shall consist of 35**(Thirty-five)** Questions. In which all questions are compulsory

(b) Section B shall consist of 15 **(fifteen)** Questions. In which any 10**(Ten)** of them should be answered.

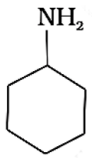
Chemistry Section – A (Q. No. 1 to 35)

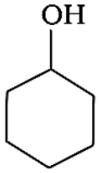
1. When Benzene diazonium chloride reacts with phenol, it forms a dye. This reaction is called
   (1) Coupling reaction
   (2) Diazotisation reaction
   (3) Acetylation reaction
   (4) Condensation reaction

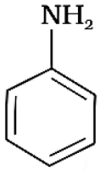
2. Which of the following methods of preparation of amines will give same number of carbon atoms in the chain of amines as in the reactant?
   (1) Treatment of amide with bromine in an aqueous solution of sodium hydroxide
   (2) Heating alkyl halide with potassium salt of phthalimide followed by hydrolysis
   (3) Reaction of nitrite with $LiAlH_4$
   (4) Reaction of amide with $LiAlH_4$ followed by treatment with water

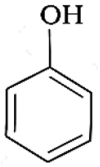
3. Amines are soluble in:
   (1) only slightly soluble in water
   (2) water
   (3) organic solvents
   (4) only slightly soluble in organic solvents

4. Which of the following compounds is the weakest Brönsted base?

   (1) 

   (2) 

   (3) 

   (4) 

5. Which of the following reagents would not be a good choice for reducing an aryl nitro compound to an amine?
   (1) Fe and HCl (2) $LiAlH_4$ in ether
   (3) Sn and HCl (4) H_2 (excess)/Pt

6. Best method for preparing primary amines from alkyl halides without changing the number of carbon atoms in the chain is
   (1) Hoffmann Bromamide reaction
   (2) Reaction with NH_3
   (3) Gabriel phthalimide synthesis
   (4) Sandmeyer reaction

7. Gabriel synthesis is used for the preparation of:
(1) Quaternary salt (2) Primary amines
(3) Tertiary amine (4) Secondary amine

8. Which of the following is a secondary amine:
(1) N, N - dimethylaniline
(2) 3 – pentanamine
(3) N - ethyl propan - 1 - amine
(4) cyclohexylamine

9. Which of the following reacts with $NaNO_2$ + HCI to give alcohol?
(1) $C_6H_5CH_2$ $NHCH_3$ (2) CH_3 NH_2
(3) C_6H_5 NH_2 (4) $(CH_3)_2$

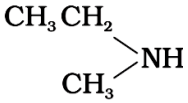
10. The best reagent for converting 2–phenyl propanamide into 2 – phenyl propanamine is _____.
(1) excess H_2
(2) iodine in the presence of red phosphorus
(3) Br_2 in aqueous NaOH
(4) $LiAlH_4$ in ether

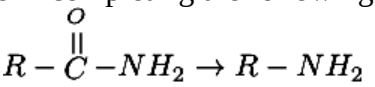
11. Arrange the following in order of increasing basicity: aniline, p – nitroaniline, p – toluidine, and p – methoxyaniline.
(1) p – nitroaniline < aniline< p – methoxyaniline < p – toluidine
(2) p – methoxyaniline p – nitroaniline < aniline < p – toluidine
(3) p – nitroaniline < aniline < p – toluidine < p – methoxyaniline
(4) aniline < p – methoxyaniline < p – nitroaniline < p – toluidine

12. Which of the following would not be a good choice for reducing nitrobenzene to aniline?
(1) Sn and HCl (2) H_2/Hi
(3) LiA/H_4 (4) Fe and HCl

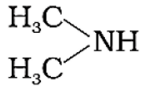
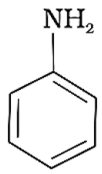
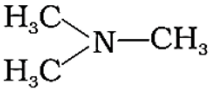
13. Which gives a primary amine upon reduction?
(1) CH_3 CH_2 NC
(2) $C_6H_5N = NC_6H_5$
(3) CH_3 CH_2 - O - N = O
(4) CH_3 CH_2 NO_2

14. Amide which gives propanamine by Hoffmann bromamide is:
(1) Pentanamide (2) Hexanamide
(3) Butanamine (4) Propanamine

15. Which of the following should be most volatile?
(1) 
(2) $(CH_3)_3N$
(3) CH_3 CH_2 CH_3
(4) CH_3 CH_2 CH_2 NH_2

16. Which one of the following reagents is most suitable in completing the following synthesis?

(1) $LiAlH_4$ (2) Br_2 + NaOH
(3) Sn (4) H_2 + Ni

17. Benzylamine may be alkylated as shown in the following equation:
C_6H_5 CH_2 NH_2 + R - X $\rightarrow$ C_6H_5 CH_2 NHR
Which of the following alkyl halides is best suited for this reaction through S_N1 mechanism?
(1) C_6H_5 Br (2) C_2H_5 Br
(3) C_6H_5 CH_2 Br (4) CH_3 Br

18. The most reactive amine towards dilute hydrochloric acid is _____.
(1)  (2) CH_3 - NH_2
(3)  (4) 

19. In order to prepare a 1° amine from an alkyl halide with simultaneous addition of one CH_2 group in the carbon chain, the reagent used as source of nitrogen is _____.
(1) Sodium amide, $NaNH_2$
(2) Sodium azide, NaN_3
(3) Potassium phthalimide, $C_6H_4(CO)_2$ N^-K^+
(4) Ethanolic NaCN

20. Which of the following has highest boiling point?
(1) HCOOH (2) CH_3 CH_3
(3) CH_3 NH_2 (4) CH_3 OH

21. Match the items of column I with appropriate entries of column II:

Column I	Column II
(a) Methyl amine	(i) 3º amine
(b) Aniline	(ii) Aryl amines
(c) Dibenzyl amine	(iii) Aralkyl amines
(d) Trimethyl amine	(iv) 1º amine

(1) (a) - (iii), (b) - (i), (c) - (iv), (d) - (ii)
(2) (a) - (ii), (b) - (iii), (c) - (i), (d) - (iv)
(3) (a) - (i), (b) - (iv), (c) - (ii), (d) - (iii)
(4) (a) - (iv), (b) - (ii), (c) - (iii), (d) - (i)

22. Match the items given in column I with that in column II:

Column I	Column II
(a) $C_6H_5NH_2 + NaNO_2 + HCl \longrightarrow$	(i) C_2H_5OH
(b) $C_6H_5NH_2 + COCl_2 \longrightarrow$	(ii) C_2H_6
(c) $C_2H_5NH_2 + NaNO_2 + HCl \longrightarrow$	(iii) $C_6H_5N + 2Cl$
(d) $(CH_3)_2NH + C_2H_5MgBr \longrightarrow$	(iv) $C_6H_5N = C = O$

(1) (a) - (ii), (b) - (iii), (c) - (iv), (d) - (i)
(2) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)
(3) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)
(4) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

23. Match the reaction given in column I with that product given in column II:

Column I	Column II
(a) $C_2H_5NH_2 + (CH_3CO)_2O \xrightarrow{\text{Base}}$	(i) C_6H_5NC
(b) $C_6H_5NH_2 + CH_3COCI \xrightarrow[\text{Heat}]{\text{Base}}$	(ii) $C_2H_5NHCOCH_3$
(c) $C_6H_5NH_2 + CH_3CHO \longrightarrow$	(iii) $C_6H_5NHCOCH_3$
(d) $C_6H_5NH_2 + CHCI_3 + KOH \xrightarrow{\text{Heat}}$	(iv) $C_6H_5N = CH_6H_5$

(1) (a) - (i), (b) - (ii), (c) - (iii), (d) - (iv)
(2) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)
(3) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)
(4) (a) - (ii), (b) - (iii), (c) - (iv), (d) - (i)

24. Match the reaction given in column I with that product given in column II:

Column I	Column II
(a) $CH_3CH_2CH_2Br \xrightarrow[(ii)\ H_2/Pd]{(i)\ NaN_3}$	(i) $CH_3CH_2NH_2$
(b) $C_6H_5CN \xrightarrow{LIAlH_4}$	(ii) $CH_3CH_2\ NHCH_3$
(c) $CH_3CHO \xrightarrow[(ii)\ H_2/Ni]{(i)\ CH_3NH_2}$	(iii) $C_6H_5CH_2NH_2$
(d) $CH_3CONH_2 \xrightarrow{LIAlH_4}$	(iv) $CH_3CH_2CH_2NH_2$

(1) (a) - (iii), (b) - (ii), (c) - (i), (d) - (iv)
(2) (a) - (iv), (b) - (iii), (c) - (ii), (d) - (i)
(3) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)
(4) (a) - (i), (b) - (iv), (c) - (iii), (d) - (ii)

25. Direct nitration of aniline yields a significant amount of meta derivative. To obtain more p – nitro derivative, one or more of the below can be done_____.
(1) All of these
(2) by increasing temperature
(3) controlling the nitration reaction
(4) reacting with acetic anhydride

26. The reaction
$Ar\overset{+}{N}_2\ Cl^- \xrightarrow{Cu/HCl} Cu/HCl\ ArCl + N_2 + CuCl$
is named as _____.
(1) Sandmeyer reaction
(2) Carbylamine reaction
(3) Claisen reaction
(4) Gatterman reaction

27. The nitrogen atom of trimethylamine is _____ hybridized which is reflected in the CNC bond angle of _____.
(1) sp^3,120° (2) sp^2, 120°
(3) sp^3, 108° (4) sp^2, 108°

28. The main product formed by treating an alkyl or benzyl halide with excess ammonia_____.
(1) Secondary (2) Tertiary
(3) Mixed (4) Primary amine

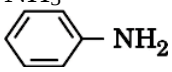
29. Arrange the following in decreasing order of their basic strength:
$C_6H_5NH_2$, $C_2H_5NH_2$, $(C_2H_5)_2NH_2$, NH_3.
(1) $(C_2H_5)_2NH_2 > C_2H_5NH_2 > NH_3 > C_6H_5NH_2$
(2) $C_6H_5NH_2 > C_2H_5NH_2 > (C_2H_5)_2NH_2 > NH_3$
(3) $NH_3 > C_6H_5NH_2 > C_2H_5NH_2 > (C_2H_5)_2NH_2$
(4) $C_2H_5NH_2 > (C_2H_5)_2NH_2 > NH_3 > C_6H_5NH_2$

30. When a 1° amine reacts with an alkyl sulfonyl chloride, the major organic product is
(1) a sulfoxide (2) a sulphoxide
(3) a sulphonamide (4) a nitrile

31. Amongst the following, the strongest base in aqueous medium is _____.
(1) $(CH_3)_2NH$ (2) $NCCH_2NH_2$
(3) CH_3NH_2 (4) $C_6H_5NHCH_3$

32. Reaction of nitrous acid with aliphatic primary amine in cold acidic solution gives:
(1) A diazonium salt (2) A nitrite
(3) A dye (4) An alcohol

33. Sec – Butylamine is the common name of which compound?
(1) N – ethyl ethanamine
(2) 2 – butanamine
(3) N – methyl – 1 – propanamine
(4) 1 – butanamine

34. Which of the following is least basic?
(1) $(CH_3)_3N$ (2) NH_3
(3) $(CH_3)_2NH$ (4) 

35. The reaction of Benzene diazonium chloride with aniline yields
(1) o – aminoazobenzene
(2) p – aminoazobenzene
(3) mixture of ortho and para – aminoazobenzene
(4) m – aminoazobenzene

Chemistry Section – B (Q. No. 36 to 50)

36. Hinsberg's reagent is:
(1) Benzene sulphonic acid
(2) Benzene sulphonamide
(3) Phenyl isocyanide
(4) Benzene sulphonyl chloride

37. Aniline does not undergo Friedel – Crafts reaction because:
(1) Anilium ion deactivates any further reaction
(2) Aluminium chloridereacts with Aniline
(3) All of these
(4) $AlCl_3$act as a catalyst

38. The Gabriel synthesis of amine undergoes which kind of reaction?
(1) Nucleophilic substitution reaction (SN_2)
(2) Elimination reaction
(3) Electrophilic substitution reaction
(4) SN_1

39. Amongst the given set of reactants, the most appropriate for preparing 2º amine is _____.
(1) 1º R - NH_2 + RCHO followed by H_2/Pt
(2) 1º R - Br (2 mol) + potassium phthalimide followed by H_3O^+/heat
(3) 2º R - Br + NaCN followed by H_2/Pt
(4) 2º R - Br + NH_3

40. The gas evolved when methylamine reacts with nitrous acid is _____.
(1) H_2 (2) N_2
(3) C_2H_6 (4) NH_3

41. Three compounds are given below:
$\underset{I}{(C_2H_5)_3N}, \underset{II}{C_2H_5NH_2}, \underset{III}{(C_2H_5)_2NH}$
Identify the correct decreasing order of their basic strength in gas phase:
(1) I > III > II (2) III > I > II
(3) III > II > I (4) II > III > I

42. Aniline upon heating with conc. HNO_3 and conc. H_2SO_4 mixture gives:
(1) The mixture of o, p, and m nitroaniline:
(2) No reaction
(3) o - and p - nitroaniline
(4) o - nitroaniline

43. The correct decreasing order of basic strength of the following species is _____.
H_2O, NH_3, OH^-, NH_2^-
(1) $H_2O > NH_3 > OH^- > NH_2^-$
(2) $OH^- > NH_2^- > H_2O > NH_3$
(3) $NH_2^- > OH^- > NH_3 > H_2O$
(4) $NH_3 > H_2O > NH_2^- > OH^-$

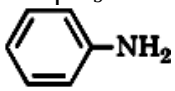
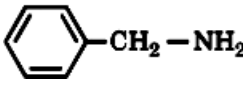
44. In the reaction
$C_6H_5NH_2 + CHCl_3 + 3\ KOH \rightarrow A + 3B + 3C$
the product A is
(1) C_6H_5CN (2) C_6H_5NC
(3) C_6H_5Cl (4) $C_6H_5\ NHCH_3$

45. Which one of the following when reacts with NaOH, the product is sodium benzoate?
(1) Benzene hydroxide
(2) Benzoic acid
(3) Benzaldehyde
(4) Benzene

46. Out of the following, the strongest base in aqueous solution is
(1) Trimethylamine (2) Dimethylamine
(3) Methylamine (4) Aniline

47. Which of the following compound will not undergo azo coupling reaction with benzene diazonium chloride.
(1) Aniline (2) Nitrobenzene
(3) Anisole (4) Phenol

48. If the starting amide has got 4 carbon atoms and the amine that is formed has got only 3 carbon atoms, then the reaction is called_____.
(1) Gabriel synthesis
(2) Carbylamines reaction
(3) Hoffmann bromamide reaction
(4) Clemmensen reduction

49. Among the following, which has the highest value of pK_b?
(1)  (2) 
(3)  (4) 

50. Benzene diazonium chloride on hydrolysis gives:
(1) Chlorobenzene (2) Aniline
(3) Benzene (4) Phenol

SPACE FOR ROUGH WORK