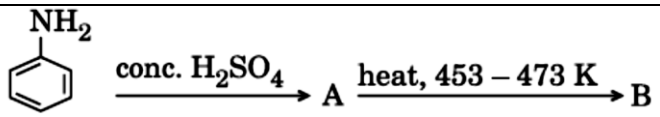
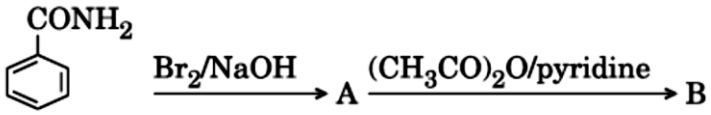
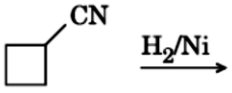
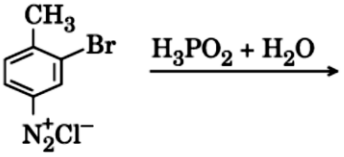
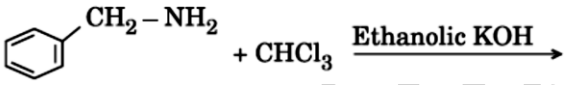
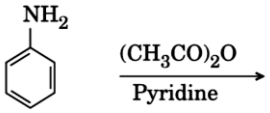
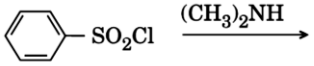
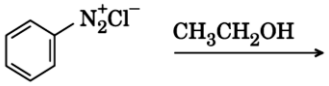
QUESTION BANK
UNIT 13 AMINES
CLASS-12 (CBSE)

S. No.	Questions	Year
	Note: The PINK coloured questions are from the **reduced portion** of syllabus as per CBSE guidelines.	
1.	Give the structures of A and B in the following sequence of reactions : (a) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{NaOBr} B$ (b) $C_6H_5NO_2 \xrightarrow{Fe/HCl} A \xrightarrow[0^\circ - 5^\circ C]{NaNO_2 + HCl} B$ (c) $C_6H_5\overset{+}{N}_2Cl^- \xrightarrow[\Delta]{CuCN} A \xrightarrow{H_2O/H^+} B$ **OR** (a) How will you distinguish between the following pairs of compounds : (i) Aniline and Ethanamine (ii) Aniline and N-methylaniline (b) Arrange the following compounds in decreasing order of their boiling points : Butanol, Butanamine, Butane	2020
2.	Account for the following : (a) Aniline is a weaker base compared to ethanamine. (b) Aniline does not undergo Friedel-Crafts reaction. (c) Only aliphatic primary amines can be prepared by Gabriel Phthalimide synthesis.	2020
3.	Give reasons : (i) Although $-NH_2$ group is *o/p* directing in electrophilic substitution reactions, yet aniline, on nitration gives good yield of *m*-nitroaniline. (ii) $(CH_3)_2$ NH is more basic than $(CH_3)_3$ N in an aqueous solution. (iii) Ammonolysis of alkyl halides is not a good method to prepare pure primary amines. (b) Distinguish between the following : (i) $CH_3CH_2NH_2$ and $(CH_3CH_2)_2$ NH (ii) Aniline and CH_3NH_2 **OR** (a) Write the structures of A and B in the following reactions : (i) $C_6H_5\overset{+}{N}_2Cl^- \xrightarrow{CuCN} A \xrightarrow{H_2O/H^+} B$ (ii) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{NaOBr} B$ (b) Write the chemical reaction of methyl amine with benzoyl chloride and write the IUPAC name of the product obtained. (c) Arrange the following in the increasing order of their pK_b values : $C_6H_5NH_2$, NH_3, $C_2H_5NH_2$, $(C_2H_5)_2$ NH	2020
4.	Write an isomer of C_3H_9N which gives foul smell of isocyanide when treated with chloroform and ethanolic NaOH.	2020
5.	Arrange the following compounds as directed : (i) In increasing order of solubility in water : $(CH_3)_2NH$, CH_3NH_2, $C_6H_5NH_2$	2020

	(ii) In decreasing order of basic strength in aqueous solution : $(CH_3)_3N$, $(CH_3)_2NH$, CH_3NH_2 (iii) In increasing order of boiling point : $(C_2H_5)_2NH$, $(C_2H_5)_3N$, $C_2H_5NH_2$	
6.	Out of CH_3NH_2 and CH_3OH, which has higher boiling point ?	2020
7.	Write an isomer of C_3H_9N which does not react with Hinsberg reagent.	2020
8.	Give reasons : (i) Aniline does not undergo Friedal-Crafts reaction. (ii) Aromatic primary amines cannot be prepared by Gabriel's phthalimide synthesis. (iii) Aliphatic amines are stronger bases than ammonia.	2020
9.	Arrange the following in increasing order of boiling points : $(CH_3)_3N$, C_2H_5OH, $C_2H_5NH_2$	2019
10.	Arrange the following in increasing order of base strength in gas phase : $(C_2H_5)_3N$, $C_2H_5NH_2$, $(C_2H_5)_2NH$	2019
11.	Arrange the following in decreasing order of solubility in water : $(CH_3)_3N$, $(CH_3)_2NH$, CH_3NH_2	2019
12.	Arrange the following in decreasing order of basic character : $C_6H_5NH_2$, $(CH_3)_3N$, $C_2H_5NH_2$	2019
13.	Arrange the following in increasing order of pK_b values : $C_6H_5CH_2NH_2$, $C_6H_5NHCH_3$, $C_6H_5NH_2$	2019
14.	Arrange the following in decreasing order of solubility in water : $(C_2H_5)_2NH$, $C_2H_5NH_2$, $C_6H_5NH_2$	2019
15.	An aromatic compound 'A' on heating with Br_2 and KOH forms a compound 'B' of molecular formula C_6H_7N which on reacting with $CHCl_3$ and alcoholic KOH produces a foul smelling compound 'C'. Write the structures and IUPAC names of compounds A, B and C.	2019
16.	Write the structures of main products when benzene diazonium chloride reacts with the following reagents : (i) CuCN (ii) CH_3CH_2OH (iii) KI	2019
17.	Write equations of the following reactions : (i) Acetylation of aniline (ii) Coupling reaction (iii) Carbyl amine reaction	2019
18.	Account for the following : (a) Gabriel phthalimide synthesis is not preferred for preparing aromatic primary amines. (b) On reaction with benzene sulphonyl chloride, primary amine yields product soluble in alkali whereas secondary amine yields product insoluble in alkali.	2019
19.	Write the reaction involved in the Hoffmann bromamide degradation reaction. **OR** Propanamine and N,N-dimethylmethanamine contain the same number of carbon atoms, even though Propanamine has higher boiling point than N,N-dimethylmethanamine. Why?	2019
20.	(a) Give one chemical test to distinguish between the compounds of the following pairs : (i) CH_3NH_2 and $(CH_3)_2NH$ (ii) Aniline and Ethanamine (b) Why aniline does not undergo Friedel-Crafts reaction ?	2019
21.	Write structures of compounds A and B in each of the following reactions :	2019

QUESTION BANK
UNIT 13 AMINES
CLASS-12 (CBSE)

	(a)  (b) 	
22.	Account for the following, supporting your answer with diagrams or equations wherever possible : (a) Diazomium salts of aromatic amines are more stable than those of aliphatic amines. (b) Methylamine in water reacts with ferric chloride to precipitate hydrated ferric oxide. OR Arrange the following in decreasing order of pk_b giving reason : (a) Aniline, p-nitroaniline and p-toluidine (b) $C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$ in gaseous state	2019
23.	Complete the following reactions : (a)  (b)  (c)  **OR** How do you convert the following : (a) N-phenylethanamide to p-bromoaniline (b) Benzene diazonium chloride to nitrobenzene (c) Benzoic acid to aniline	2019
24.	What are the products of exhaustive ammonolysis of an alkyl halide ?	2019
25.	Account for the following, supporting your answer with diagrams or equations wherever possible : (a) Diazomium salts of aromatic amines are more stable than those of aliphatic amines. (b) Methylamine in water reacts with ferric chloride to precipitate hydrated ferric oxide. OR Arrange the following in decreasing order of pk_b giving reason : (a) Aniline, p-nitroaniline and p-toluidine (b) $C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$ in gaseous state	2019
26.	(a) Write the reactions involved in the following : (i) Hofmann bromamide degradation reaction (ii) Diazotisation (iii) Gabriel phthalimide synthesis (b) Give reasons : (i) $(CH_3)_2NH$ is more basic than $(CH_3)_3N$ in an aqueous solution. (ii) Aromatic diazonium salts are more stable than aliphatic diazonium salts.	2018

27.	(a) Write the structures of the main products of the following reactions : (i)  (ii)  (iii)  (b) Give a simple chemical test to distinguish between Aniline and N,N-dimethylaniline. (c) Arrange the following in the increasing order of their pK_b values : $C_6H_5NH_2$, $C_2H_5NH_2$, $C_6H_5NHCH_3$	2018
28.	Write the structures of compounds A, B and C in the following reactions : (a) $CH_3-COOH \xrightarrow{NH_3/\Delta} A \xrightarrow{Br_2/KOH\ (aq)} B \xrightarrow{CHCl_3 + alc.\ KOH} C$ (b) $C_6H_5N_2^+BF_4^- \xrightarrow[\Delta]{NaNO_2/Cu} A \xrightarrow{Fe/HCl} B \xrightarrow{CH_3COCl/pyridine} C$	2017(OD)
29.	Give reasons for the following : (a) Acetylation of aniline reduces its activation effect. (b) CH_3NH_2 is more basic than $C_6H_5NH_2$. (c) Although $-NH_2$ is o/p directing group, yet aniline on nitration gives a significant amount of m-nitroaniline.	2017(OD) 2017(D)
30.	Write the structures of A, B, C, D and E in the following reactions : $C_6H_5NO_2 \xrightarrow{Sn/HCl} A \xrightarrow[pyridine]{(CH_3CO)_2O} B \xrightarrow[288\ K]{HNO_3 + H_2SO_4} C \xrightarrow{OH^- \text{ or } H^+} D$ $A \xrightarrow{H_2SO_4} E$	2017(F)
31.	(a) Write the structures of the main products when benzene diazonium chloride reacts with the following reagents : (i) CuCN (ii) CH_3CH_2OH (iii) Cu / HCl (b) Arrange the following in the increasing order of their basic strength : CH_3NH_2, $(CH_3)_2NH$, $C_6H_5NH_2$, $C_6H_5CH_2NH_2$ (c) Write one chemical test to distinguish between Aniline and Ethyl amine.	2017(F)
32.	Write the chemical equations involved in the following reactions: (i) Hoffmann-bromoamide degradation reaction (ii) Carbylamines reaction	2016 (OD) 2012(OD)
33.	Give reasons for the following: (i) Aniline does not undergo Friedal-Crafts reactions. (ii) $(CH_3)_2NH$ is more basic than $(CH_3)_3N$ in an aqueous solution. (iii) Primary amines have higher boiling point than tertiary amines.	2016 (OD) 2014(OD)

QUESTION BANK
UNIT 13 AMINES
CLASS-12 (CBSE)

34.	Write the structures of A, B and C in the following: (i) $C_6H_5-CONH_2 \xrightarrow{Br_2/aq.\ KOH} A \xrightarrow[0\text{-}5\ °C]{NaNO_2+HCl} B \xrightarrow{KI} C$ (ii) $CH_3-Cl \xrightarrow{KCN} A \xrightarrow{LiAlH_4} B \xrightarrow[\Delta]{CHCl_3+alc.\ KOH} C$	2016(D)
35.	An aromatic compound 'A' of molecular formula $C_7H_6O_2$ undergoes a series of reaction: $(C_7H_6O_2)$ A $\xrightarrow{NH_3/Heat}$ $C_6H_5CONH_2$ $\xrightarrow{Br_2/NaOH}$ B $\xrightarrow{(CH_3CO)_2O}$ C B → D, B → E As shown below. Write the structures of A, B, C, D and E in the following reactions.	2015(OD)
36.	(a) Write the structures of main products when benzene diazonium chloride reacts with the following reagents: (i) $H_3PO_2 + H_2O$ (ii) CuCN/KCN (iii) H_2O (b) Arrange the following in the increasing order of their basic character in an aqueous solution: $C_2H_5NH_2$, $(C_2H_5)_2NH$, $(C_2H_5)_3N$ (c) Give a simple chemical test to distinguish between the following pair of compounds: $C_6H_5-NH_2$ and $C_6H_5-NH-CH_3$	2015(OD)
37.	(a) Write the structure of main products when aniline reacts with the following reagents: (i) Br_2 water, (ii) HCl, (iii) $(CH_3CO)_2O$/pyridine. (b) Arrange the following in the increasing order of their boiling point: $C_2H_5NH_2$, C_2H_5OH, $(CH_3)_3N$ (c) Give a simple chemical test to distinguish between the following pair of compounds: $(CH_3)_2NH$ and $(CH_3)_3N$	
38.	An aromatic compound 'A' of molecular formula C_7H_7ON undergoes a series of reactions as shown below. Write the structures of A, B, C, D and E in the following reactions: (C_7H_7ON) A $\xrightarrow{Br_2+KOH}$ $C_6H_5NH_2$ $\xrightarrow[273\ K]{NaNO_2+HCl}$ B $\xrightarrow{CH_3CH_2OH}$ C $C_6H_5NH_2 \xrightarrow{CHCl_3+NaOH}$ D B $\xrightarrow{KI}$ E	2015(D)
39.	The conversion of primary aromatic amines into Diazonium salts is known as_____.	2014(OD)
40.	Give the structure of A, B and C in the Following reactions: (i) $C_6H_5NO_2 \xrightarrow{Sn+HCl} A \xrightarrow[273\ K]{NaNO_2+HCl} B \xrightarrow{H_2O} C$ (ii) $CH_3CN \xrightarrow{H_2O/H^+} A \xrightarrow[\Delta]{NH_3} B \xrightarrow{Br_2+KOH} C$	2014(OD)
41.	Arrange the following compounds in increasing order of solubility in water: $C_6H_5NH_2$, $(C_2H_5)_2NH$, $C_2H_5NH_2$	2014(D) 2011(D)

42.	Give the structure of A, B and C in the following reactions: (i) $CH_3Br \xrightarrow{KCN} A \xrightarrow{LiAlH_4} B \xrightarrow[273\ K]{HNO_2} C$ (ii) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{Br_2+KOH} B \xrightarrow{CHCl_3+NaOH} C$	2014(D)
43.	How will you convert the followings: (i) Nitrobenzene into aniline, (ii) Ethanoic acid into methanamine (iii) Aniline into N-phenylethanamide (write the chemical equations involved).	2014(D)
44.	Complete the following reactions: (i) $\boldsymbol{CH_3\ CH_2\ NH_2}$ + $\boldsymbol{CHCl_3}$+alc. KOH⟶ (ii) $C_6H_5N_2^+Cl^- \xrightarrow[\text{(Room temp.)}]{H_2O}$	2013(OD)
45.	Arrange the following in increasing order of their basic strength in aqueous solution: $\boldsymbol{CH_3NH_2}$, $\boldsymbol{(CH_3)_3N}$, $\boldsymbol{(CH_3)_2NH}$	2013(D) 2012(D)
46.	Give the structures of A, B and C in the following reactions: (i) $C_6H_5N_2^+Cl^- \xrightarrow{CuCN} A \xrightarrow{H_3O^+} B \xrightarrow[\Delta]{NH_3} C$ (ii) $C_6H_5NO_2 \xrightarrow{Sn + HCl} A \xrightarrow{NaNO_2 + HCl} B \xrightarrow{H_2O/H^+} C$	2013(D)
47.	Complete the following reaction equations: (i) $\mathbf{C_6H_5N_2Cl + H_3PO_2 + H_2O \longrightarrow}$ (ii) $\mathbf{C_6H_5NH_2} + Br_2(\mathbf{aq.}) \longrightarrow$	2012(OD)
48.	Write chemical equations for the following conversion: (i) Nitrobenzene to benzoic acid. (ii) Benzyl chloride to 2-phenylethanamine. (iii) Aniline to benzyl alcohol.	2012(D)