

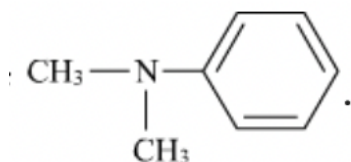
AMINES – PAST PAPER QUESTIONS 2014-22

YEAR 2022

1. An aromatic compound 'A' ($C_7H_6O_2$) on reaction with aqueous ammonia and heating forms compound 'B'. 'B' on heating with Br_2 and alcoholic potash forms a compound 'C' of molecular formula C_6H_7N . Write the reactions involved and identify 'A', 'B', 'C'.
2. Account for the following:
 - (i) pK_b of aniline is more than that of methylamine.
 - (ii) Aniline does not undergo Friedel-Crafts reaction.
 - (iii) Primary amines have higher boiling points than tertiary amines.
3. (i) Arrange the following compounds in the increasing order of their basic strength in aqueous solution: CH_3NH_2 , $(CH_3)_3N$, $(CH_3)_2NH$
 - (ii) What is Hinsberg's reagent?
 - (iii) What is the role of pyridine in the acylation reaction of amines?
4. A compound 'A' on reduction with iron scrap and hydrochloric acid gives compound 'B' with molecular formula C_6H_7N . Compound 'B' on reaction with $CHCl_3$ and alcoholic KOH produces an obnoxious smell of carbonylamine due to the formation of 'C'. Identify 'A', 'B' and 'C' and write the chemical reactions involved
5. A compound 'A' on reduction with iron scrap and hydrochloric acid gives compound 'B' with molecular formula C_6H_7N . Compound 'B' on reaction with $CHCl_3$ and alcoholic KOH produces an obnoxious smell of carbonylamine due to the formation of 'C'. Identify 'A', 'B' and 'C' and write the chemical reactions involved

YEAR 2020

1. Write the IUPAC name of



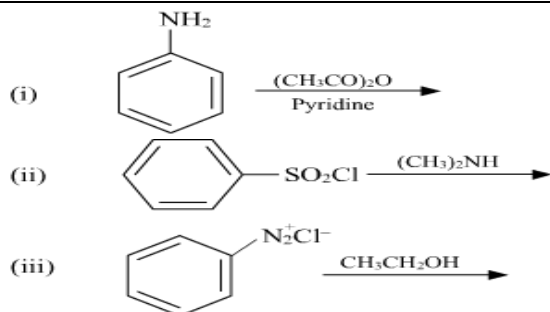
2. Give reasons:
 - (i) Aniline does not undergo Friedel-Crafts reaction.
 - (ii) Aromatic primary amines cannot be prepared by Gabriel's phthalimide synthesis.
 - (iii) Aliphatic amines are stronger bases than ammonia.
3. CH_3CONH_2 on reaction with NaOH and Br_2 in alcoholic medium gives
 - (a) $CH_3CH_2NH_2$
 - (b) CH_3CH_2Br
 - (c) CH_3NH_2
 - (d) CH_3COONa

YEAR 2019

1. Arrange the following in increasing order of boiling points:
 $(CH_3)_3N$, C_2H_5OH , $C_2H_5NH_2$
2. 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.
3. Arrange the following in decreasing order of solubility in water: $(CH_3)_3N$, $(CH_3)_2NH$, CH_3NH_2
4. Write equations of the following reactions:
 - (i) Acetylation of aniline
 - (ii) Coupling reaction
 - (iii) Carbyl amine reaction
5. Write the structures of main products when benzene diazonium chloride reacts with the following reagents:
 - (i) $CuCN$
 - (ii) CH_3CH_2OH
 - (iii) KI

YEAR 2018

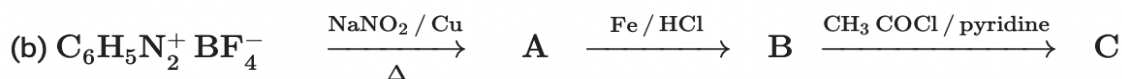
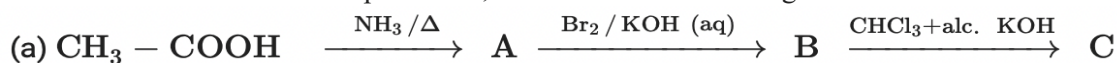
1. (a) Write the reactions involved in the following:
 - (i) Hofmann bromamide degradation reaction
 - (ii) Diazotisation
 - (iii) Gabriel phthalimide synthesis(b) Give reason:
 - (i) $(CH_3)_2NH$ is more basic than $(CH_3)_3N$ in an aqueous solution.
 - (ii) Aromatic diazonium salts are more stable than aliphatic diazonium salts.
2. Write the structures of the main products of the following reactions:



3. (a) Given a simple chemical test to distinguish between Aniline and N, N-dimethylaniline.
 (b) Arrange the following in the increasing order of their pK_b values: C₆H₅NH₂, C₂H₅NH₂, C₆H₅NHCH₃.

YEAR 2017

- Write IUPAC name of the following compound: (CH₃CH₂)₂NCH₃
- Write the structure of 2,4-dinitrochlorobenzene
- Write IUPAC name of the following compound: CH₃NHCH(CH₃)₂
- Write IUPAC name of the following compound: (CH₃)₂N – CH₂CH₃
- Write the structures of compounds A, B and C in the following reactions:

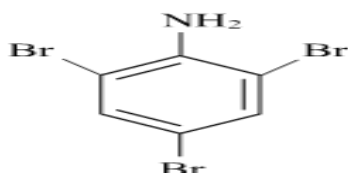


6. Give reasons for the following:

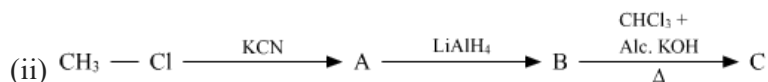
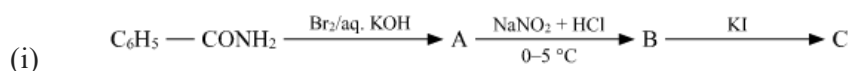
- Acetylation of aniline reduces its activation effect.
- CH₃NH₂ is more basic than C₆H₅NH₂.
- Although –NH₂ is o/p directing group, yet aniline on nitration gives a significant amount of m-nitroaniline.

YEAR 2016

- Write the IUPAC name of the given compound:



- Write the structures of A, B and C in the following:



- Write the chemical equations involved in the following reactions:

- Hoffmann-bromamide degradation reaction
- Carbylamine reaction

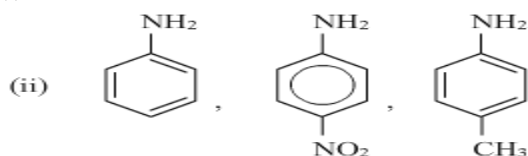
- Give reasons for the following:

- Aniline does not undergo Friedel-Crafts reaction.
- (CH₃)₂NH is more basic than (CH₃)₃N in an aqueous solution.
- Primary amines have higher boiling point than tertiary amines.

YEAR 2015

- Arrange the following in increasing order of their basic strength :

- C₆H₅ – NH₂, C₆H₅ – CH₂ – NH₂, C₆H₅ – NH – CH₃



2. How do you convert the following:

(i) $C_6H_5CONH_2$ to $C_6H_5NH_2$

(ii) Aniline to phenol

(iii) Ethanenitrile to ethanamine

3. Write the chemical equations involved when aniline is treated with the following reagents:

(i) Br_2 water

(ii) $CHCl_3 + KOH$

(iii) HCl

4. Illustrate the following reactions giving suitable example in each case :

(i) Ammonolysis

(ii) Coupling reaction

(iii) Acetylation of amines

5. Describe Hinsberg method for the identification of primary, secondary and tertiary amines. Also write the chemical equations of the reactions involved.

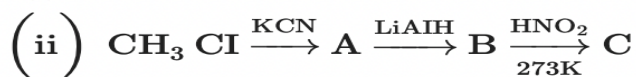
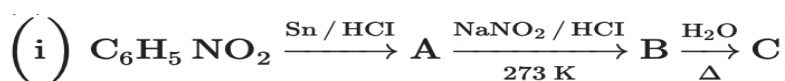
(a) Write the structures of main products when benzene diazonium chloride

($C_6H_5N_2^+Cl^-$) reacts with the following reagents :

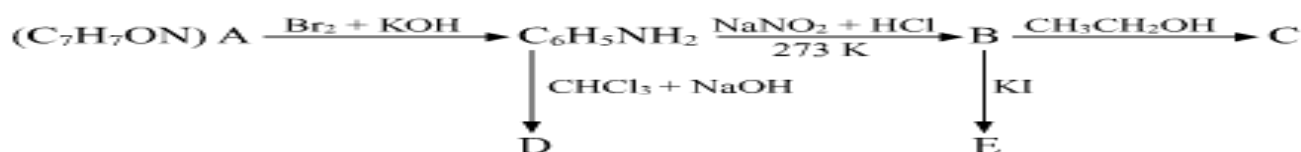
(i) HBF_4/Δ

(ii) Cu/HBr

(b) Write the structures of A, B and C in the following reactions



6. 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 :



8. (A) Write the structures 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 $(CH_3)_3N$

YEAR 2014

1. Account for the following:

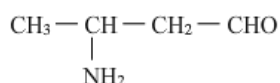
(i) Primary amines ($R-NH_2$) have higher boiling point than tertiary amines (R_3N).

(ii) Aniline does not undergo Friedel-Crafts reactions.

(iii) $(CH_3)_2NH$ is more basic than $(CH_3)_3N$ in an aqueous solution.

Give the structures of A, B and C in the following reactions:

2. Write the IUPAC name of the compound



3. Arrange the following in increasing order of basic strength: $C_6H_5NH_2$, $C_6H_5NHCH_3$, $C_6H_5CH_2NH_2$

4. Arrange the following compounds in increasing order of solubility in water : $C_6H_5NH_2$,

$(C_2H_5)_2NH$, $C_2H_5NH_2$