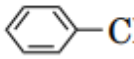
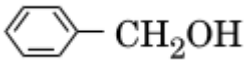
	INDIAN SCHOOL AL WADI AL KABIR	
Class: XII	**DEPARTMENT: SCIENCE (2021-22)** **SUBJECT: CHEMISTRY**	**Date of completion:** **IV week of May, 2021**
Worksheet No: 4 with answers	**TOPIC: AMINES**	**Note:** **A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

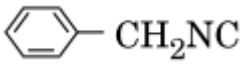
MULTIPLE CHOICE QUESTIONS

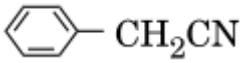
1. Out of the following, the strongest base in aqueous solution is

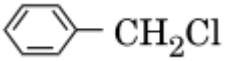
a) Methylamine
b) Dimethylamine
c) Trimethylamine
d) Aniline

2.  on heating with $CHCl_3$ and alcoholic KOH gives foul smell of

a) 

b) 

c) 

d) 

3. Which of the following compounds has the highest pK_b?

a) $C_6H_5NH_2$
b) NH_3
c) $C_2H_5NH_2$
d) $(C_2H_5)_2NH$

4. Which of the following compounds can not be prepared by Gabriel phthalimide synthesis?

a) Methanamine
b) Ethanamine
c) Propan-1-amine

d) Aniline

5. Name the organic product obtained when Propanamide is treated with Bromine and aqueous NaOH.

a) Ethanamine
b) Propane
c) Propan-1-amine
d) Aniline

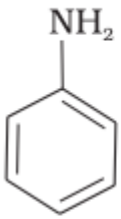
6. The most soluble amine in water in the following compounds is ……

a) Butan-1-amine
b) Butan-2-amine
c) 2-Methylpropan-2-amine
d) Pentan-2-amine

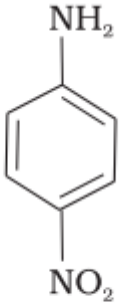
7. Hoffmann Bromamide Degradation reaction is answered by …….

a) $ArNH_2$
b) $ArCONH_2$
c) $ArNO_2$
d) $ArCH_2NH_2$

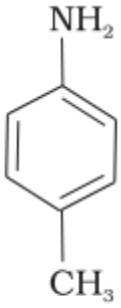
8. The correct increasing order of basic strength for the following compounds is ……



(I)



(II)



(III)

a) II < III < I
b) III < I < II
c) III < II < I
d) II < I < III

9. The compound that does not react with Hinsberg's reagent is …….

a) Methylamine
b) Dimethylamine
c) Trimethylamine
d) Ethylamine

10. Identify the products obtained when direct nitration of aniline is carried out.

a) Only p-Nitroaniline
b) Only o-Nitroaniline
c) A mixture of ortho and para nitroaniline
d) A mixture of ortho, meta and para nitroaniline

Read the given passage and answer the questions that follow:

Basicity of amines is related to their structure. Basic character of an amine depends upon the ease of formation of the cation by accepting a proton from the acid. The more stable the cation is relative to the amine, more basic is the amine.

11. Alkylamines are stronger bases than ammonia. Why?

12. Arrange the following compounds in the decreasing order of basic strength in aqueous medium.

$(CH_3)_2NH$, NH_3, CH_3NH_2, $(CH_3)_3N$

13. Which of the following compounds has higher pK_b; Methylamine or Aniline?

Assertion and Reason Type

14. Assertion: Direct nitration of aniline yields significant amount of meta derivative besides the ortho and para derivatives.
Reason: In the strongly acidic medium, aniline is protonated to form the anilinium ion.

a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
c) Assertion is correct, but reason is wrong statement.
d) Assertion is wrong, but reason is correct statement.

15. Assertion: Butan-1-amine is more soluble in water than Butan-1-ol.

Reason: Alcohols are more polar than amines and form stronger intermolecular hydrogen bonds than amines.

a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
c) Assertion is correct, but reason is wrong statement.
d) Assertion is wrong, but reason is correct statement.

16. Assertion: In aqueous phase, secondary amines are more basic than primary amines.

Reason: Alkyl group is electron donating.

a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
c) Assertion is correct, but reason is wrong statement.
d) Assertion is wrong, but reason is correct statement.

Question – Answer Type:

17. Arrange the following compounds in decreasing order of their boiling points: **1**

Butan-1-ol, Butan-1-amine, Butane

18. Arrange the following in decreasing order of basic character : **1**

$C_6H_5NH_2$, $(CH_3)_3N$, $C_2H_5NH_2$

19. Give a simple chemical test to distinguish between Aniline and N,N-dimethylaniline. **1**

20. Give the structures of A and B in the following sequence of reactions: **2**

(a) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{NaOBr} B$

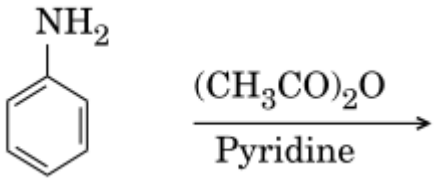
(b) $C_6H_5NO_2 \xrightarrow{Fe/HCl} A \xrightarrow[0^\circ - 5^\circ C]{NaNO_2 + HCl} B$

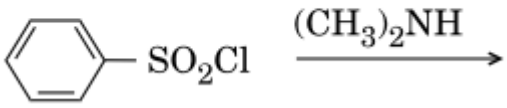
21. Account for the following: **2**

(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.

22. Write the structures of the main products of the following reactions: **2**

(i) 

(ii) 

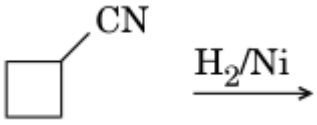
23. Write the reactions involved in the following: **3**

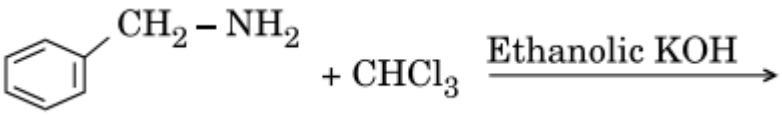
(i) Hofmann bromamide degradation reaction

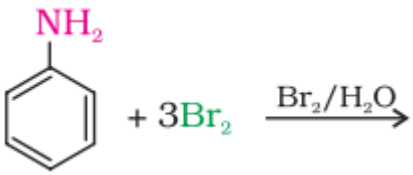
(ii) Carbylamine reaction

(iii) Gabriel phthalimide synthesis

24. Complete the following reactions: **3**

a) 

b) 

c) 

25. 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**

ANSWERS

1.	b
2.	b
3.	a
4.	d
5.	a
6.	a
7.	b
8.	d
9.	c
10.	d
11.	Due to the electron releasing nature of alkyl group (+R effect), it pushes electrons towards nitrogen and thus makes the unshared electron pair more available for sharing with the proton of the acid.
12.	$(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N > NH_3$
13.	Aniline.
14.	a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
15.	d) Assertion is wrong, but reason is correct statement.
16.	b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
17.	Butan-1-ol > Butan-1-amine > Butane
18.	$(CH_3)_3N > C_2H_5NH_2 > C_6H_5NH_2$
19.	Add chloroform in the presence of KOH and heat, Aniline gives a offensive smell while N,N dimethylaniline does not.
20.	(a) (A) $\rightarrow CH_3CONH_2$ (B) $\rightarrow CH_3NH_2$ (b) (A) $\rightarrow C_6H_5NH_2$ (B) $\rightarrow C_6H_5N_2Cl$
21.	(a) Aryl halides do not undergo nucleophilic substitution with the anion formed by phthalimide. (b) This is due the absence of acidic hydrogen attached to nitrogen (N-H) in the product of secondary amine.

22.

(i) $C_6H_5NHCOCH_3$

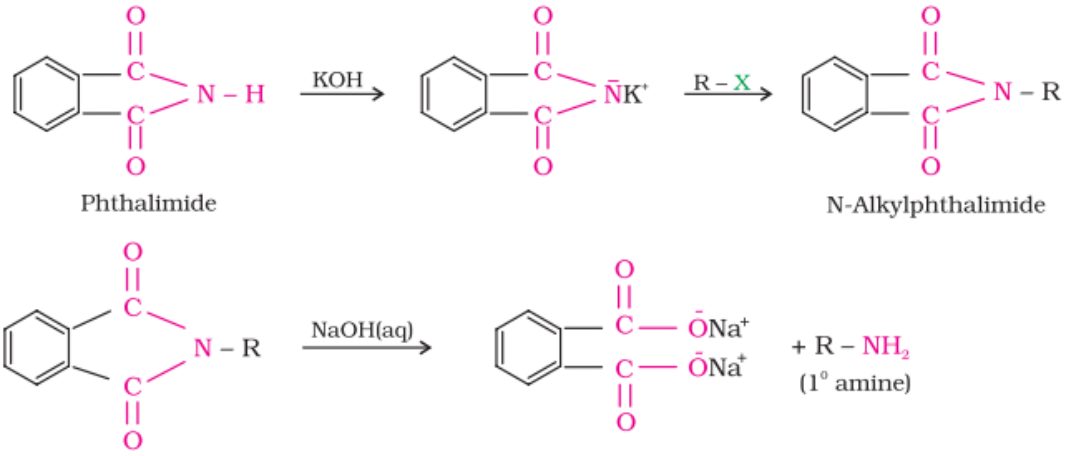
(ii) $C_6H_5SO_2N(CH_3)_2$

23.

(i) $R-\overset{\overset{O}{\|}}{C}-NH_2 + Br_2 + 4NaOH \longrightarrow R-NH_2 + Na_2CO_3 + 2NaBr + 2H_2O$

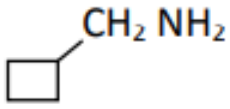
(ii) $R{-}NH_2 + CHCl_3 + 3KOH \xrightarrow{Heat} R{-}NC + 3KCl + 3H_2O$

(iii)



24.

a)



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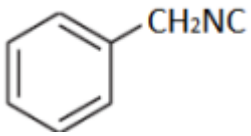
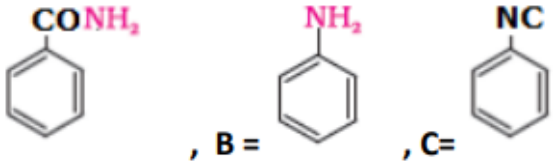


c)

+ 3HBr

25.



A = , **B =** , **C=**

A= Benzamide , B= Aniline , C= Phenylisocyanide / Benzeneisonitrile

prepared by : Mr. Anoop Stephen

checked by : HOD - SCIENCE