



INDIAN SCHOOL NIZWA - WORKSHEET

CHEMISTRY

CH: 13 Amines

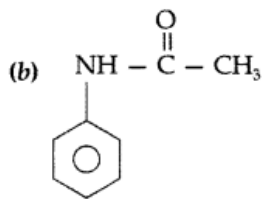
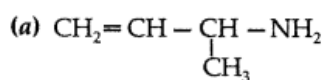
Name: _____

Date: _____

Class: XII Sec: ____

Answer the following

1. Give IUPAC names of the following compounds :



2. Arrange the following as mentioned.

- a) $\text{CH}_3\text{NH}_2, (\text{CH}_3)_2\text{NH}, (\text{CH}_3)_3\text{N}, \text{NH}_3$ in the decreasing order of basic strength.
b) $\text{C}_6\text{H}_5\text{NH}_2, \text{C}_6\text{H}_5\text{NHCH}_3, (\text{C}_2\text{H}_5)_2\text{NH}, \text{C}_2\text{H}_5\text{NH}_2, \text{NH}_3$ in the decreasing order of pK_b .
c) $\text{C}_2\text{H}_5\text{OH}, (\text{CH}_3)_2\text{NH}, \text{C}_2\text{H}_5\text{NH}_2$ in the increasing order of boiling point.
d) $\text{C}_6\text{H}_5\text{NH}_2, (\text{C}_2\text{H}_5)_2\text{NH}, \text{C}_2\text{H}_5\text{NH}_2$ in the increasing order of solubility in water.

3. Account for the following.

a. An alkylamine is more basic than ammonia.

Or

Methyl amine is a stronger base than ammonia.

Or

Aliphatic amines are stronger bases than aromatic amines.

Or

Aniline is a weaker base compared to ethanamine.

b. Amines react as nucleophiles.

c. Aqueous solutions of amines are basic in nature.

d. Amines are more basic than alcohols of comparable molecular masses.

Or

Amines are less acidic than alcohols of comparable molecular masses.

e. Reactivity of $-\text{NH}_2$ group gets reduced in acetanilide.

f. Primary amines have higher boiling points than tertiary amines

g. Aniline does not undergo Friedel Crafts reaction. Why?

- Page 1 of 2



a. $\text{CH}_3\text{CONH}_2 \xrightarrow{\text{LiAlH}_4} \text{A} \xrightarrow{\text{CH}_3\text{COCl}} \text{B}$

b. $\text{CH}_3\text{CH}_2\text{Cl} \xrightarrow{\text{NaCN}} \text{A} \xrightarrow{\text{Ni/H}_2\text{-redn}} \text{B}$

c. $\text{C}_2\text{H}_5\text{NO}_2 \xrightarrow{\text{Sn} + \text{HCl}} \text{A} \xrightarrow{\text{H}_2\text{O}} \text{B}$

d. $\text{C}_6\text{H}_5\text{NH}_2 \xrightarrow{\text{NaNO}_2/\text{HCl}} \text{A} \xrightarrow{\text{CuCl}} \text{B}$

e. $\text{A} \xrightarrow[\text{NaOH}]{\text{Br}_2} \text{B} \xrightarrow{\text{HNO}_2} \text{C} \xrightarrow[\text{I}_2]{\text{Red P}} \text{CH}_3\text{I}$

$$\begin{array}{c}
 D \\
 \uparrow \text{LiAlH}_4/\text{Ether} \\
 (\text{C}_7\text{H}_6\text{O}_2) \xrightarrow{\text{NH}_3/\text{Heat}} \text{C}_6\text{H}_5\text{CONH}_2 \\
 \begin{array}{l}
 \downarrow \text{Br}_2, +\text{NaOH} \rightarrow B \xrightarrow{(\text{CH}_3\text{CO})_2\text{O}} C \\
 \downarrow \text{Br}_2/(aq) \rightarrow E
 \end{array}
 \end{array}$$

- (i) $(\text{CH}_3)_2\text{NH}$ is more basic than $(\text{CH}_3)_3\text{N}$ in an aqueous solution.
- (ii). Diazonium salts of aromatic amines are more stable than those of aliphatic amines.
- (iii) Gabriel phthalimide synthesis can't be used for the preparation of aromatic primary amines.
- (iv) Acetylation of aniline reduces its activation effect.
- (v) Although, NH_2 is o/p-directing group, yet aniline on nitration gives a significant amount of m-nitroaniline.

8. Give a chemical test to distinguish

a) Ethylamine and aniline. b) Aniline & benzyl aniline c) Methylamine and Dimethylamine d) Aniline and N-methylaniline

9. Assertion Reason

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

(c) Assertion (A) is true, but Reason (R) is false.

(d) Assertion (A) is false, but Reason (R) is true.

i) Assertion (A) : Acetylation of aniline gives a monosubstituted product.

Reason (R) : Activating effect of NHCOCH_3 group is more than that of amino group.

ii) Assertion (A) : $(\text{C}_2\text{H}_5)_2\text{NH}$ is more basic than $(\text{C}_2\text{H}_5)_3\text{N}$ in aqueous solution.

Reason (R) : In $(\text{C}_2\text{H}_5)_2\text{NH}$, there is more steric hindrance and +I effect than $(\text{C}_2\text{H}_5)_3\text{N}$.

iii. Assertion (A) : Tertiary amines are more basic than corresponding secondary and primary amines in gaseous state.

Reason (R) : Tertiary amines have three alkyl groups which cause +I effect.