# St. Mary's School, Dwarka <br> Holiday Homework <br> Class: XII <br> Subject: Chemistry <br> Week 3 <br> Worksheet 3 

## Objective:

Ø Revision of concepts
Ø Application of the concepts to real life situations.
Ø Skills to carry out research work and develop scientific aptitude

## Instructions:

*Neatly write all the answers in your science notebook.
*Attempt the questions keeping in mind the weightage of each question.
*Assignment ‘Summer Holiday Homework' will be created on TEAMS. PDF of handwritten work should be uploaded on it.

Q1. Write the IUPAC name of $\mathrm{H}_{2} \mathrm{~N}-\mathrm{CH}_{2}-\mathrm{CH}_{2}-\mathrm{CH}=\mathrm{CH}_{2}$
Q2. Arrange the following in the decreasing order of basic strength in gas phase $\mathrm{C}_{2} \mathrm{H}_{5} \mathrm{NH}_{2},\left(\mathrm{C}_{2} \mathrm{H}_{5}\right)_{2} \mathrm{NH},\left(\mathrm{C}_{2} \mathrm{H}_{5}\right)_{3} \mathrm{~N}$ and $\mathrm{NH}_{3}$.
Q3. Write the IUPAC name of compounds
(i) $\mathrm{CH}_{3}-\mathrm{CHOH}-\mathrm{CO}-\mathrm{CH}_{3}$
(ii) $\mathrm{CH}_{3}-\mathrm{CH}\left(\mathrm{NH}_{2}\right)-\mathrm{CH}_{2}-\mathrm{CHO}$

Q4. Illustrate the following reactions giving suitable example in each case:
(i) Balz-Shiemann reaction
(ii) Sulphonation of aniline

Q5. Give chemical equations for the following conversions:
(i) Benzyl chloride to 2-phenylethanamine.
(ii) Aniline to benzyl alcohol

Q6. Give reasons for the following :
(i) Carboxylic acids do not give characteristic reactions of carbonyl group.
(ii) Treatment of $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CHO}$ with HCN gives a mixture of two isomers which cannot be separated even by fractional distillation.
(iii) Sodium bisulphate is used for purification of ketones and aldehydes.

Q7. State reasons for the following :
(i) pKb value for aniline is more than that for methylamine.
(ii) Ethyl amine is soluble in water whereas aniline is not soluble in water.
(iii) Primary amines have higher boiling points than tertiary amines.

Q8. Write the structures of $\mathrm{A}, \mathrm{B}$ and C in following
(i) $\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{CONH}_{2}--\mathrm{Br}_{2} / \mathrm{NaOH}---\rightarrow \mathrm{A}--\mathrm{NaNO}_{2} / \mathrm{HCl}\left(0\right.$ to $\left.5^{\circ} \mathrm{C}\right)-\rightarrow \mathrm{B}------\mathrm{KI}----\rightarrow \mathrm{C}$
(ii) $\mathrm{CH}_{3} \mathrm{Cl}---\mathrm{KCN}--\rightarrow \mathrm{A}---\mathrm{LiAlH}_{4}--\rightarrow \mathrm{B}------\mathrm{CHCl}_{3}+\mathrm{KOHalc} .-----\mathrm{C}$

Q9. Give one chemical test to distinguish between the compounds in the following pairs :
(i) Methylamine and dimethylamine
(ii) Aniline and benzylamine

Q10. (a) Write the chemical equation for the reaction involved in cannizzaro reaction.
(b) Draw the structure of semicarbazone of ethanal
(c) Why pka of $\mathrm{F}-\mathrm{CH}_{2} \mathrm{COOH}$ is lower than that of $\mathrm{Cl}-\mathrm{CH}_{2} \mathrm{COOH}$
(d) Write the product in the following reaction
$\mathrm{CH}_{3} \mathrm{CH}=\mathrm{CHCH}_{2} \mathrm{CN}----$ (1) DIBAL-H (2) $\mathrm{H}_{2} \mathrm{O}-----\rightarrow$
(e) How can you distinguish between propanal and propanone?

