

St. Mary's School, Dwarka
Holidays Homework
Class: XII
Subject: Chemistry
Week 1
Worksheet 1

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.

Research Project:

Activity : Prepare a hand sanitizer at home.

- a. What are the ingredients required to manufacture a hand sanitizer according to guidelines of WHO?
- b. Write the steps involved in manufacturing of hand sanitizer at home?
- c. Is this hand sanitizer effective against all disease-causing germs?
- d. In your opinion, which is better option to keep yourself free from disease causing germs and bacteria: hand-wash or rubbing your hand with sanitizer?

Assignment – 1

Q.1 Activity :

I. Collect the household articles – soaps, detergents, dish-washing detergents and cake, toothpaste. Find the composition of all these ingredients. Which article consists of quaternary ammonium salts and why? 3

II. Take three transparent glass and fill glasses with water, vinegar and baking soda respectively (occupy only half of the glass). Add one dispirin tablets in each glass. Report your observation about solubility of dispirin in these glasses and possible reason behind it. 3

Q.2 Arrange the following compounds in increasing order of solubility in water :

$C_6H_5NH_2$, $(C_2H_5)_2NH$, $C_2H_5NH_2$ 1

Q.3 Why are diazonium salts of aromatic amines more stable than those of aliphatic amines? 1

Q.4 Give a chemical test to distinguish between ethylamine and aniline. 1

Q.5 Give the IUPAC name of $H_2N-CH_2-CH_2-CH=CH_2$ 1

Q.6 Illustrate the following reactions giving suitable example in each case:

- a. Hoffmann bromamide degradation reaction
- b. Gabriel phthalimide synthesis 2

- Q.7 Give reasons for the following:
- Aniline does not undergo Friedel-Crafts reaction
 - Acetylation of $-NH_2$ group is done in aniline before preparing its ortho and para compounds. 2
- Q.8 Write the structures of main products when aniline reacts with the following reagents: 2
- Br_2 in water
 - $(CH_3CO)_2O$ /pyridine
- Q.9 State reason for the following: 3
- pK_b value for aniline is more than that of methylamine.
 - Ethylamine is soluble in water whereas aniline is not soluble in water.
 - Primary amines have higher boiling points than tertiary amines.
- Q.10 Give the structures of A, B and C in the following reactions: 6
- $C_6H_5N_2Cl \xrightarrow{CuCN} A \xrightarrow{H_3O^+} B \xrightarrow{NH_3, \Delta} C$
 - $C_6H_5NO_2 \xrightarrow{Sn/HCl} A \xrightarrow{NaNO_2/HCl, 273K} B \xrightarrow{H_3O^+} C$