WORKSHEET 2

CHAPTER 2 – ACIDS, BASES AND SALTS

A. Tick (✓) the correct option.

1. Which of the following is not an olfactory indicator?
   a. Onion b. Vanilla c. Clove d. Red cabbage juice
2. Which of the following gases is evolved when a metal carbonate reacts with an acid?
   a. Carbon dioxide b. Oxygen c. Nitrogen d. Hydrogen sulphide
3. When excess of carbon dioxide is passed through lime water, the white precipitate formed initially dissolves due to the formation of
   a. $Ca(HCO)_3$ b. $CaCO_3$ c. $CaCl_2$ d. $Ca(OH)_2$
4. The number of water molecules present in one formula unit of washing soda is
   a. 0 b. 10 c. 2 d. 7
5. What is the chemical formula of milk of magnesia?
   a. $Ca(OH)_2$ b. $NaHCO_3$ c. $Mg(OH)_2$ d. $Al(OH)_3$

B. Fill in the blanks.

1. Litmus, a purple dye, is extracted from _____
2. Phenolphthalein tells us whether a substance is acidic or basic in nature by change in _____
3. Metallic oxides are _____ in nature.
4. Mixing an acid or a base with water results in _____ in the concentration of ions per unit volume.
5. The process of dissolving an acid in water is highly _____

C. State whether the following statements are true or false.

1. Methyl orange is a synthetic indicator.
2. Carbonic acid is a weak acid.
3. Dry HCl gas changes the colour of blue litmus to red.
4. Slaked lime is used for treating acidity of soil.
5. The *p*H of blood is 8.1.

D. Match the following.

1. Tartaric acid	Used in preparation of baking soda
2. $Cu(OH)_2$	Salt of strong acid and strong base
3. NH_3	Base but not alkali
4. Potassium chloride	10 water molecules per formula unit
5. Glauber's salt	Used in baking powder

Name: ..... Teacher's signature: .....

Class: X Date: .....

E. Answer the following questions.

Very Short Answer Questions

1. What is the colour of phenolphthalein in

   a. acidic solutions b. basic solutions?

2. What happens when water is added to plaster of Paris?

Short Answer Questions

1. How should a concentrated acid be diluted? Give reason to support your answer.
2. The *p*H of a given solution is 9.1. Will it change red litmus paper to blue or blue litmus paper to red? Explain.

Long Answer Questions

1. What is acidity? How is it treated?
2. a. What is the chemical name of the compound washing soda?
   b. Starting from NaCl, how will you prepare washing soda? Give the relevant equations.
   c. Give any two uses of washing soda.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

1. d 2. a 3. a 4. b 5. c

B. Fill in the blanks.

1. lichen 2. colour 3. basic 4. decrease 5. exothermic

C. State whether the following statements are true or false.

1. T 2. T 3. F 4. T 5. F

D. Match the following.

1. Tartaric acid	Used in baking powder
2. $Cu(OH)_2$	Base but not alkali
3. NH_3	Used in preparation of baking soda
4. Potassium chloride	Salt of strong acid and strong base
5. Glauber's salt	10 water molecules per formula unit

E. Answer the following questions.

Very Short Answer Questions

1. a. In acidic solutions, phenolphthalein is colourless.
   b. In basic solutions, phenolphthalein exhibits pink colour.
2. When water is added to plaster of Paris, it changes to gypsum once again, giving a hard solid mass.

$$CaSO_4 \cdot \frac{1}{2} H_2O + 1\frac{1}{2} H_2O \rightarrow CaSO_4 \cdot 2H_2O$$

Short Answer Questions

1. While diluting a concentrated acid, the acid must be added slowly to water with constant stirring. If water is added to concentrated acid, a large amount of heat will be generated, which may cause the mixture to splash out and cause burns. The glass container may also break due to excessive local heating.
2. We know that acids change the colour of red litmus paper to blue while bases change the colour of blue litmus to red. Since the *p*H of the given solution is 9.1, therefore, it is basic in nature. Hence, it will change the colour of red litmus paper to blue.

Long Answer Questions

1. The *p*H of gastric juice is 1.0 – 2.0 due to the secretion of hydrochloric acid in our stomach. During indigestion, the stomach produces too much acid, which causes pain and irritation. This condition is known as acidity. To get rid of this pain, antacids are used. They contain mild bases such as $Mg(OH)_2$, $Al(OH)_3$, etc., which neutralise the excess acid, thereby providing relief.

2. a. Washing soda is chemically sodium carbonate decahydrate. Its chemical formula is $Na_2CO_3 \cdot 10H_2O$.

b. Using NaCl, first sodium bicarbonate is prepared. This is then heated to obtain sodium carbonate. Sodium carbonate on recrystallisation forms washing soda.

$$NaCl + H_2O + CO_2 + NH_3 \rightarrow NH_4Cl + NaHCO_3$$

$$2NaHCO_3 \rightarrow Na_2CO_3 + H_2O + CO_2$$

$$Na_2CO_3 + 10H_2O \rightarrow Na_2CO_3 \cdot 10H_2O$$

c. Uses of washing soda are:

(i) It is used in the manufacture of soap, glass and in paper industries.

(ii) It is used for removing the permanent hardness of water.