WORKSHEET 2

CHAPTER 1 – THE LANGUAGE OF CHEMISTRY

A. Tick (✓) the correct option.

1. The formula of a compound aluminium sulphate is
   a. $AlSO_4$. b. $Al_2(SO_4)_3$. c. $Al_3(SO_4)_2$. d. $Al(SO_4)_3$.
2. The valency of sulphur in iron (II) sulphide is
   a. +3. b. −3. c. +2. d. −2.
3. A chemical equation represents
   a. the physical state of reactants.
   b. the rate of a reaction.
   c. the reversibility of the reaction.
   d. the chemical formulae of the substances participating in a reaction.
4. The molecular mass of washing soda is
   a. 106 u. b. 286 u. c. 238 u. d. 274 u.
   [Atomic masses – sodium = 23 u, carbon = 12 u, oxygen = 16 u and hydrogen = 1 u]
5. The mass percentage of carbon in glucose is
   a. 6.67%. b. 53.33%. c. 40.0%. d. 33.33%.
   [Atomic masses – carbon = 12 u, hydrogen = 1 u and oxygen = 16 u]

B. Fill in the blanks from the choices given within the brackets.

1. The radical carrying positive charge is called _____ (acidic/basic) radical.
2. The valency of noble gas is _____ (zero/one)
3. The valence electrons denote the _____ (valency/chemical reactions) of an element.
4. Every compound is represented by its _____ (symbol/chemical formula)
5. The average mass of an atom of an element in atomic mass unit is called _____ (atomic mass/relative atomic mass)

C. Balance the following chemical equations.

a. $ZnO + HNO_3 \rightarrow Zn(NO_3)_2 + H_2O$
b. $Al_2O_3 + H_2SO_4 \rightarrow Al_2(SO_4)_3 + H_2O$
c. $Pb_3O_4 \rightarrow PbO + O_2$
d. $NaNO_3 + H_2SO_4 \rightarrow Na_2SO_4 + HNO_3$
e. $NH_3 + O_2 \rightarrow N_2 + H_2O$

Name: ..... Teacher's signature: .....
Class: ..... IX ..... Date: .....

D. Match the following.

1.	Carbonic acid	HNO_2
2.	Sulphurous acid	H_3PO_4
3.	Nitrous acid	$HClO_2$
4.	Phosphoric acid	H_2CO_3
5.	Hypochlorous acid	H_2SO_3

E. Answer the following questions.

1. XCl_2 is the chloride of metal X. Write down the formulae for sulphate and hydroxide of X.
2. What do the following symbols denote?
   a. 2H b. H_2 c. H^+
3. a. What do you understand by the trivial names of the compounds?
   b. Give chemical name and trivial name of any four compounds.
4. Find the percentage composition of sucrose whose formula is $C_{12}H_{22}O_{11}$.
5. What do you understand by the term symbol of an element? Write its significance also.

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

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

B. Fill in the blanks from the choices given within the brackets.

1. basic 2. zero 3. valency 4. chemical formula
5. atomic mass

C. Balance the following chemical equations.

a. $ZnO + 2HNO_3 \rightarrow Zn(NO_3)_2 + H_2O$

b. $Al_2O_3 + 3H_2SO_4 \rightarrow Al_2(SO_4)_3 + 3H_2O$

c. $2Pb_3O_4 \rightarrow 6PbO + O_2$

d. $2NaNO_3 + H_2SO_4 \rightarrow Na_2SO_4 + 2HNO_3$

e. $4NH_3 + 3O_2 \rightarrow 2N_2 + 6H_2O$

D. Match the following.

1. Carbonic acid	H_2CO_3
2. Sulphurous acid	H_2SO_3
3. Nitrous acid	HNO_2
4. Phosphoric acid	H_3PO_4
5. Hypochlorous acid	$HClO_2$

E. Answer the following.

1. In a compound XCl_2, the valency of Chlorine is −1. Therefore, the valency of X is +2.

   ∴ Formula of sulphate of X is XSO_4 and that of hydroxide of X is $X(OH)_2$.

2. a. 2H represents two atoms of Hydrogen.

   b. H_2 represents one molecule of Hydrogen.

   c. H^+ represents radical of Hydrogen-atom.

3. a. The common names of compounds are called trivial names.

   b.

Trival name	**Chemical name**
Rock salt	Sodium chloride (NaCl)
Marble	Calcium carbonate ($CaCO_3$)
Washing soda	Sodium carbonate decahydrate ($Na_2CO_3 \cdot 10H_2O$)
Caustic soda	Sodium hydroxide (NaOH)

4. Molecular mass of sucrose ($C_{12}H_{22}O_{11}$) = 12 × 12 u + 22 × 1 u + 16 × 11 u

= 342 u

$$\text{Mass percentage of carbon (C) in sucrose} = \frac{144\ \text{u}}{342\ \text{u}} \times 100$$

= 42.2%

$$\text{Mass percentage of hydrogen (H) in sucrose} = \frac{22\ \text{u}}{342\ \text{u}} \times 100$$

= 6.4%

$$\text{Mass percentage of oxygen (O) in sucrose} = \frac{176\ \text{u}}{342\ \text{u}} \times 100$$

= 51.4%

5. The symbol of an element is the first letter or the first letter and another letter of the name of the element either the Latin or Greek name or the modern name. The first letter is always capitalized and the second letter is a lower case letter.

Significance of the symbol of an element:

i. Symbol represents name of the element.

ii. It represents one atom of the element.

iii. It represents a definite mass of the element.