WORKSHEET 2

CHAPTER 1 – CHEMICAL REACTIONS

A. Tick (✓) the correct option.

1. What is the white powder formed when magnesium ribbon is burnt in air?
   a. Magnesium carbonate
   b. Magnesium sulphate
   c. Magnesium oxide
   d. Magnesium carbide
2. Balancing of chemical equations is based on which of the following laws?
   a. Law of conservation of energy
   b. Law of conservation of mass
   c. Law of multiple proportions
   d. Law of constant proportions
3. A combination reaction is the opposite of which of the following reactions?
   a. Decomposition reaction
   b. Displacement reaction
   c. Double displacement reaction
   d. Redox reaction
4. Consider the following reaction:

   $$Na_2SO_4 + BaCl_2 \rightarrow 2NaCl + BaSO_4$$

   Which of the following statements about the given reaction is correct?
   a. Sodium is being oxidised and barium is being reduced.
   b. It is an example of combination reaction.
   c. Both of the products formed are soluble in water.
   d. The reaction is an example of double displacement reaction.
5. A substance is said to be oxidised when
   a. it gains oxygen.
   b. it loses hydrogen.
   c. it gains an electronegative atom.
   d. All of these.

B. Write complete balanced chemical equations.

1. $CaO + H_2O \rightarrow$
2. $N_2 + H_2 \rightarrow$
3. $2FeSO_4 \xrightarrow{\text{Heat}}$
4. $BaCl_2 + H_2SO_4 \rightarrow$
5. $MnO_2 + HCl \rightarrow$

C. Fill in the blanks.

1. The chemical formula of quick lime is _____
2. A decomposition reaction carried out by heating is known as _____
3. An iron nail, when placed in copper sulphate solution, becomes _____ in colour after some time.
4. The insoluble product formed in a precipitation reaction is known as _____
5. When silver undergoes corrosion, a _____ coating is formed on its surface.

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

1. When barium hydroxide reacts with ammonium chloride, a large amount of heat is produced in the reaction.
2. The general equation for a displacement reaction is AB + C → AC + B.
3. Mixing solutions of lead nitrate and potassium iodide produces a precipitate of lead iodide.
4. When zinc oxide reacts with carbon, zinc is oxidised and carbon is reduced.
5. Galvanisation is a method of preventing corrosion of copper articles.

E. Match the following.

1. $Ca(OH)_2$	Calcium carbonate
2. $CaCO_3$	Slaked lime
3. Displacement reaction	A + B → AB
4. Double displacement reaction	More reactive element displaces the less reactive element from its salt solution
5. Combination reaction	Exchange of ions between reactants

F. Answer the following questions.

Very Short Answer Questions

1. What happens when silver chloride is left exposed to sunlight for some time?
2. Define galvanisation.

Short Answer Questions

1. What happens when a zinc rod is placed in copper sulphate solution? Explain the observations.
2. What is rancidity? Explain why chips manufacturers flush bag of chips with nitrogen gas.

Long Answer Questions

1. In an experiment to study the neutralisation reaction, 4.0 g of sodium hydroxide reacted with 3.65 g of hydrochloric acid to form 5.85 g of sodium chloride and 1.8 g of water. Does this obey the law of conservation of mass? Explain.
2. What is a decomposition reaction? What are the different types of decomposition reactions? Give an example of each.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

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

B. Write complete balanced chemical equations.

1. $CaO + H_2O \rightarrow Ca(OH)_2$
2. $N_2 + 3H_2 \rightarrow 2NH_3$
3. $2FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$
4. $BaCl_2 + H_2SO_4 \rightarrow BaSO_4 + 2HCl$
5. $MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

C. Fill in the blanks.

1. CaO
2. thermal decomposition
3. brownish
4. precipitate
5. black

D. State whether the given statements are true or false.

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

E. Match the following.

1. $Ca(OH)_2$	Slaked lime
2. $CaCO_3$	Calcium carbonate
3. Displacement reaction	More reactive element displaces the less reactive element from its salt solution
4. Double displacement reaction	Exchange of ions between reactants
5. Combination reaction	A + B → AB

F. Answer the following questions.

Very Short Answer Questions

1. When silver chloride is left exposed to sunlight for some time, it turns grey due to the decomposition of silver chloride into silver and chlorine gas.

$$2AgCl \xrightarrow{\text{sunlight}} 2Ag + Cl_2$$

2. The process of coating iron with a thin layer of zinc to protect it from rusting is known as galvanisation.

Short Answer Questions

1. When a zinc rod is paced in copper sulphate solution, the colour of copper sulphate solution slowly fades away and a reddish-brown substance is deposited on zinc rod. This is because zinc, being more reactive than copper, displaces it from copper sulphate solution. The equation for the reaction is as follows:

$$Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$$

2. The oxidative deterioration of oils and fats leading to stinking odour or tasting like rank stale fat is known as rancidity. Chips manufacturers flush bag of chips with nitrogen gas to prevent the chips from getting oxidised.

Long Answer Questions

1. According to the law of conservation of mass, mass can neither be created nor be destroyed in a chemical reaction. In other words,

Total mass of elements present in reactants = Total mass of elements present in products

The equation for the given reaction is as follows:

$$NaOH + HCl \rightarrow NaCl + H_2O$$

As per the data given in question, 4.0 g of sodium hydroxide reacted with 3.65 g of hydrochloric acid to form 5.85 g of sodium chloride and 1.8 g of water.

So, total mass of reactants = Mass of NaOH + Mass of HCl = (4.0 + 3.65) g = 7.65 g

Total mass of products = Mass of NaCl + Mass of H_2O = (5.85 + 1.8) g = 7.65 g

Thus, total mass of reactants = total mass of products.

Hence, the given equation obeys the law of conservation of mass.

2. A reaction in which a single reactant decomposes to give two or more simpler products is known as decomposition reaction. A decomposition reaction can be brought about by the action of heat (thermal decomposition), electricity (electrolysis) and light (photolysis). The examples of different types of decompositions are as follows:

a. $CaCO_3 \rightarrow CaO + CO_2$ (Thermal decomposition)

b. $H_2O \rightarrow H_2 + O_2$ (electrolysis)

c. $2AgCl \rightarrow 2Ag + Cl_2$(photolysis)