Exercise-I

A. Very Short Answer Type Questions

Q.1 Why is that when a metal reacts with a non-metal, the reaction is always a redox reaction ?

Q.2 What are the two methods which can prevent the rancidity fatty foods ?

Q.3 Find the oxidising and reducing agent in the following reaction :

$PbS(s) + 4H_2O_2(aq) \longrightarrow PbSO_4(s) + 4H_2O(l)$

Q.4 It is said that "decomposition of calcium carbonate to calcium oxide and carbon dioxide on heating is an important decomposition reaction used in various industries". Explain how ?

Q.5 What happen when green coloured crystals of ferrous sulphate are heated ? Which term is used to represent such type of reaction ?

Q.6 Write a balanced chemical equation for the following reactions ? Use symbols to make equations more informative.

(i) Barium chloride reacts with zinc sulphate forming zinc chloride and precipitates of barium sulphate.

(ii) Aluminium metal displaces manganese in liquid form when heated with manganese dioxide.

Q.7 Consider the following reaction :

$SO_2(g) + 2H_2S(g) \longrightarrow 3S(s) + 2H_2O(l)$

(i) Name the substance oxidized

(ii) Name the oxidising agent.

(iii) Name the substance reduced.

(iv) Name the reducing agent.

Q.8 Gives suitable reason for the following -

(i) Can a displacement reaction be a redox reaction ?

(ii) Gold and platinum do not get affected even if there is presence of moist air or acidic gases. Why

(iii) Corrosion of aluminium is considered to be advantageous ?

Q.9 Classify each of the following reaction as : thermal decomposition, displacement, double displacement, electrical decomposition, combination or photo decomposition reaction.

(i) $CaCO_3(s) \longrightarrow CaO(s) + CO_2(g)$

(ii) $2AgBr(s) \longrightarrow 2Ag(s) + Br_2(g)$

(iii) $2H_2O(l) \longrightarrow 2H_2(g) + O_2(g)$

(iv) $Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq) + Cu(s)$

(v) $Na_2SO_4(aq) + BaCl_2(aq) \longrightarrow BaSO_4(s) + 2NaCl(aq)$

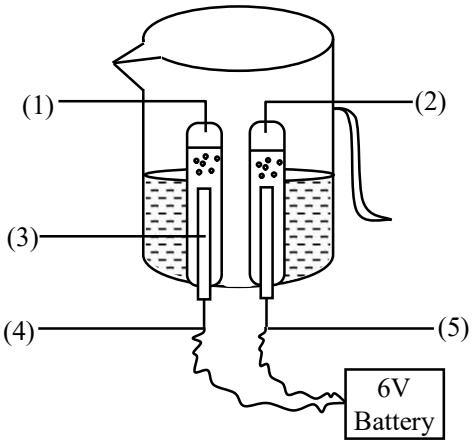
(vi) $CaO(s) + H_2O(l) \longrightarrow Ca(OH)_2(aq)$

Q.10 [A] What interpretations can be made from the following reaction :

(i) $CH_4(g) + 2O_2(g) \longrightarrow CO_2(g) + 2H_2O(g) + Energy$

(ii) $2AgBr(s) \xrightarrow{\text{Suntight}} 2Ag(s) + Br_2(g)$

[B] Observe the figure carefully and answer the following question :



(i) Label the parts 1 to 5

(ii) Why is the amount of gas collected in one of the test-tube is double of the amount collected in the other ?

(iii) How you will test the presence of gases in both the test tubes ?

Q.11 What is a chemical equation ?

Q.12 What is a skeletal equation ?

Q.13 Name the term used for the solution of a substance in water

Q.14 In electrolysis of water. Why is the volume of gas collected over one electrode double that of gas collected over the other electrode

Q.15 Give reason for keeping hydrogen peroxide in coloured bottles ?

Q.16 Balance the following chemical equation :
$NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + H_2O$

Q.17 On the basis of the following reactions, indicate which is most reactive and which is least reactive metal out of zinc, copper and iron.
$CuSO_4(aq) + Fe(s) \longrightarrow FeSO_4(aq) + Cu(s)$
$FeSO_4(aq) + Zn(g) \longrightarrow ZnSO_4(aq) + Fe(s)$

Q.18 Ina chemical equation, what do the notations (s), (l) and (g) stand for ?

Q.19 Balance the following chemical equation :
$FeCl_2 + H_2S \longrightarrow HCl + FeS$

Q.20 Write two condition for rusting of an iron article.

B. Short Answer Type Questions

Q.21 How do we come to know that a chemical reaction has taken place ?

Q.22 What is an oxidation reaction ? Identify in the following reaction :
(i) The substance oxidised,
(ii) The substance reduced :
$ZnO + C \longrightarrow Zn + CO$

Q.23 Why cannot we stir silver nitrate solution with copper spoon ?

Q.24 Among the following displacement reactions which one will take place and which one will not occur and why ?
(i) $MgSO_4(aq) + Zn(s) \longrightarrow ZnSO4(aq) + Mg(s)$
(ii) $CuSO4(aq) + Fe(s) \longrightarrow FeSO_4(aq) + Cu(s)$

Q.25 What is an oxidation reaction ? Give an example of oxidation reaction. Is oxidation an exothermic or an endothermic reaction.

Q.26 On the basis of the following chemical equations, find out which is the least reactive metal amongst iron, copper and zinc ?
(i) $FeSO_4(aq) + Zn(s) \longrightarrow ZnSO_4(aq) + Fe(s)$
(ii) $CuSO_4(aq) + Fe(s) \longrightarrow FeSO_4(aq) + Fe(s)$

Q.27 What happens when iron nails are put in copper sulphate solution ?
(i) Write the equation for the reaction that takes place
(ii) Name the type of reaction involved

Q.28 What type of chemical equation are the following equations :
(i) $A + BC \longrightarrow AC + B$
(ii) $A + B \longrightarrow AB$
(iii) $AB \longrightarrow A + B$
(iv) $AB + CD \longrightarrow AD + CB$

Q.29 Why does stale food give a bad taste and bad smell ?

Q.30 Why do silver, gold and platinum not corrode in moist air ?

Exercise-II

A. Long Answer Type Questions

Q.1 Consider the following chemical equations :

(i) $CuO(s) + H_2(g) \rightarrow Cu(s) + H_2O(g)$

(ii) $Fe_2O_3(s) + 3CO(g) \rightarrow 2Fe(l) + 3CO_2(g)$

Identify the following in these equations, giving reasons :

(a) The substance getting oxidised.

(b) The substance getting reduced

(c) The oxidising agent

(d) The reducing agent

Q.2 Translate the following statements into chemicals equations and then balance them.

(a) Hydrogen gas combines with nitrogen to form ammonia.

(b) Hydrogen sulphide gas burns in air to give water and sulphur dioxide.

(c) Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate.

(d) Potassium metal reacts with water to give potassium hydroxide and hydrogen gas.

(e) Aluminium chloride reacts with ammonium hydroxide to form a gelatinous white precipitate of aluminium hydroxide and a salt of ammonium chloride.

Q.3 Balance the following chemical equations :

(i) $S(s) + H_2SO_4(aq) \longrightarrow H_2O(l) + SO_2(g)$

(ii) $S(s) + HNO_3(aq) \longrightarrow H_2SO_4(aq) + NO_2(g) + H_2O(l)$

(iii) $Fe_2O_3(s) + CO(g) \longrightarrow Fe(l) + CO_2(g)$

(iv) $KMnO_4(aq) + HCl(aq) \longrightarrow KCl(aq) + MnCl_2(aq) + Cl_2(g) + H_2O(l)$

(v) $MnO_2(s) + HCl(aq) \longrightarrow MnCl_2(aq) + H_2O(l) + Cl_2(g)$

Q.4 Matching columns

Column-I	Column-II
1. Displacement reaction	(a) $CaCO_3(s) \xrightarrow{Heat} CaO(s) + CO_2(g)$
2. Double displacement reactions.	(b) $AgCl(s) \xrightarrow{Sunlight} 2Ag(s) + Cl_2(g)$
3. Thermal decomposition reaction.	(c) $Na_2SO_4(aq)+BaCl_2(aq) \longrightarrow BaSO_4(s)+2NaCl(aq)$
4. Photolytic decomposition reaction.	(d) $Pb(NO_3)_2(s) \xrightarrow{Heat} 2PbO(s)+4NO_2(g)+O_2(g)$
5. Addition reaction involving combination of two compound	(e) $Pb(NO_3)_2(aq) + 2KI(aq) \longrightarrow PbI_2(s)+2KNO_3(aq)$
6. Reaction involving combination between two elements	(f) $Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq)+ Cu(s)$
7. Reaction involving combination between element and compound	(g) $AgNO_3(aq) + NaCl(aq) \longrightarrow AgCl(s)+NaNO_3(aq)$
8. Reaction in which white precipitate is formed.	(h) $CaO(s)+H_2O(l) \longrightarrow Ca(OH)_2(aq)$
9. Reaction in which yellow precipitate is formed.	(i) $SO_2(g) + O_2(g) \longrightarrow SO_3(g)$
10. Reaction in which brown fumes are formed	(j) $C(s) + O_2(g) \longrightarrow CO_2(g)$

B. Fill in the Blanks

Q.5 In a reversible reaction both reactants and products are separated from each other by using …… sign.

Q.6 Combustion reactions are always …… in nature.

Q.7 Exothermic reactions are …… common than endothermic reaction.

Q.8 Decomposition reactions are …… of combination reactions.

Q.9 In a chemical equation, the symbol …… indicates to produce.

Q.10 $Fe + CuSO_4 \longrightarrow FeSO_4 +$ ……

Q.11 Chemically rust is ……

Q.12 The symbol aq in a chemical equation represents ……

Q.13 The chemical change involving iron and hydrochloric acid illustrates a…… reaction

Q.14 In the type of reaction called …… two compounds exchange their positive and negative radicals.

C. True /False Type Questions

Q.15 On heating the crystals of ferrous sulphate, the colour changes from green to grey.

Q.16 Calcium oxide is also called lime or quicklime.

Q.17 On heating the crystals of lead nitrate crystals, the emission of brown fumes occurs.

Q.18 The thermal decomposition reaction of calcium sulphate (gypsum) is used in black and white photography.

Q.19 The decomposition reaction of silver bromide into silver and bromine by light is used in the manufacturing of cement.

Q.20 The insoluble substance formed during a chemical reaction is known as a precipitate.

Q.21 During endothermic reactions, heat is transferred from the reacting substances to the surroundings.

Q.22 The reaction $Zn(s) + CuSO_4(aq) \longrightarrow ZnSO_4(aq) + Cu(s)$ is an example double displacement reaction.

Q.23 Keeping food in airtight containers helps to slow down oxidation.

Q.24 Due to corrosion iron gets a brown coating, copper gets a green coating and silver gets a black coating.