

INTERNATIONAL INDIAN SCHOOL, RIYADH

STD: X

SUBJECT- CHEMISTRY

CHAPTER 1: CHEMICAL REACTIONS

WORKSHEET #1

I) Very Short Type Questions (1 mark)

1. What is the relationship between decomposition and combustion reactions? Write an equation for each type.
2. Does a reducing agent in a redox reaction gets oxidized or reduced?
3. When a strip of copper is placed in an aqueous solution of silver nitrate, copper (II) nitrate and silver are formed. Name the type of reaction.
4. Name the type of reaction: $A + BC \rightarrow AC + B$
5. Name the type of reaction:
 $AB + CD \rightarrow AD + BC$
6. Name two oxidizing agents which are used at home.
7. In whitewashing of walls, soluble slaked lime $[Ca(OH)_2]$ is used. But the product on the walls is insoluble in water. Can you suggest the chemical change which occurs on the walls? Name the type of reaction.
8. Can a displacement reaction be also a redox reaction?
9. How are combination and decomposition reactions related?
10. What type of reaction is this, $CaCO_3(s) \xrightarrow{\Delta} CaO(s) + CO_2(g)$?
11. What is meant by reaction conditions?
12. What are the limitations of a chemical equation? How can these limitations be removed?
13. What are the uses of activity series?

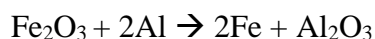
14. Which oxidizing agent will you use to oxidise aqueous hydrochloric acid?

15. Define oxidizing agent and reducing agent.

16. Name an antioxidant which is commonly used in our daily life.

II) Short Answer Type I Questions – (2 marks)

1. In thermite welding, the following reaction occurs:



Identify the reducing agent and oxidizing agent in the reaction.

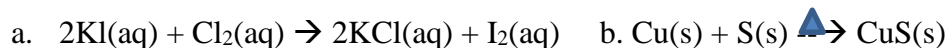
2. Arrange the following elements in the decreasing order of their chemical reactivity:

a. H, Zn, K, Ca, Cu b. Na, Fe, Ba, Cu, Ag

3. Give reasons for the following:

Blue colour of copper(II) sulphate solution is destroyed when iron fillings are added to it.

4. Given below are two reactions. Which is the combination reaction and which is the displacement reaction?



5. Why is it that corrosion is a spontaneous irreversible process? Can you give an example of another irreversible process?

6. How will you prevent the corrosion of brass utensils?

7. Why is it that flushing of food packets and food containers with nitrogen gas before sealing and packaging the foods prevents the oxidation of foods?

8. Name two methods which are used for prevention of rusting.

9. How will you prevent rancidity of oils and fats?

10. Name two synthetic antioxidants which are used in our food.

11. What are the conditions necessary for rusting?

III) Short Answer Type II Questions (3 marks)

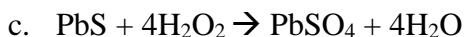
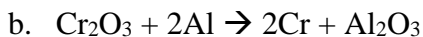
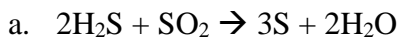
1. Magnesium burns in oxygen to give magnesium oxide. Explain this reaction on the basis of concept of oxidation and reduction.
2. Classify the following as combination, decomposition, displacement and double displacement reactions:
 - a. $\text{KNO}_3(\text{s}) \rightarrow 2\text{KNO}_2(\text{s}) + \text{O}_2(\text{g})$
 - b. $\text{Ni}(\text{NO}_3)_2 + 2\text{NaOH}(\text{aq}) \rightarrow \text{Ni}(\text{OH})_2(\text{aq}) + 2\text{NaNO}_3(\text{aq})$
 - c. $2\text{CuO}(\text{s}) \rightarrow 2\text{Cu}(\text{s}) + \text{O}_2(\text{g})$
 - d. $\text{Cl}_2(\text{g}) + 2\text{NaBr}(\text{aq}) \rightarrow 2\text{NaCl}(\text{aq}) + \text{Br}_2(\text{aq})$
3. Balance the following chemical equations:
 - a. $\text{HNO}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}$
 - b. $\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
 - c. $\text{NaCl} + \text{AgNO}_3 \rightarrow \text{AgCl} + \text{NaNO}_3$
 - d. $\text{BaCl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{BaSO}_4 + \text{HCl}$
4. Translate the following statements into chemical equations and 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 precipitate of barium sulphate.
 - d. Sodium metal reacts with water to give sodium hydroxide and hydrogen gas.

5. Write the balanced chemical equation for the following reaction and identify the type of reaction:
- Potassium bromide(aq) + Barium iodite(aq) \rightarrow Potassium iodide(aq) + Barium bromide(aq)
 - Zinc carbonate(s) \rightarrow Zinc oxide(s) + Carbon dioxide(g)
 - Hydrogen(g) + Chlorine(g) \rightarrow Hydrogen chloride(g)
 - Magnesium(s) + Hydrochloric acid(aq) \rightarrow Magnesium chloride(aq) + Hydrogen(g)
6. A housewife wanted her home to be whitewashed. She bought 10 kg of quicklime and added it to 30 L of water. On adding lime to water she noticed that the water appeared to be boiling even when it was not being heated. Give reason for her observation. Write the chemical equation and name of the product formed.
7. Define the terms: a. precipitate b. oxidation c. reduction
8. Explain the differences between displacement and double displacement reactions.
9. What do you mean by exothermic and endothermic reactions? Give examples.
10. In the reaction of a solution of lead(II) nitrate with a solution of potassium iodide,
- What is the color of the precipitate formed and can you name the precipitate?
 - Write the balanced chemical equation for this reaction.
11. Chloride of a metal (X) (which is used to make coins) when exposed to sunlight, turns grey from white. Name the type of reaction and identify X.
12. A crystalline pale green compound A when heated, gives the characteristic odour of burning sulphur and another residue B is obtained which is brown in colour. Write balanced equation for the reaction and identify A and B.

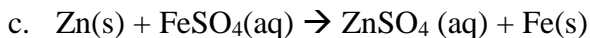
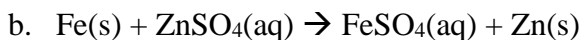
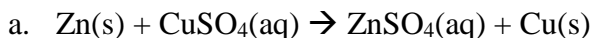
13. Sodium bromide is added to an aqueous solution of a metal nitrate A. A yellow precipitate B is obtained which is used in photography. Compound B is photosensitive and decomposes to its constituents on exposure to sunlight, accompanied by the evolution of a reddish-brown gas. Write down the balanced equation and identify A and B.
14. Acidified solution of a compound A undergoes decomposition on passing electric current through it to produce two gasses B and C. Volume of A is double the volume of B. While B supports combustion and is essential for life, A is highly combustible. Write the balanced equation and identify A, B and C.
15. Metal A is found in the earth's crust and on exposure to moist air, it forms a reddish-brown flaky substance. When a container made up of metal A is used to store a blue coloured solution of B, the blue colour changes to pale green and reddish-brown metal C is formed. Identify A,B,C and write a balanced equation for the reaction. Also, name the type of reaction.
16. Granules of a silvery white metal A react with dilute hydrochloric acid to produce a highly combustible gas B. write down the balanced chemical equation and compare the reactivity of A and B.
17. Metal A burns with dazzling white light in the presence of oxygen gas, and produces white ash B, which turns red litmus solution blue. Identify A and B and write the balanced equation.
18. Nitrate of a metal X (metal is the component of an alloy used for soldering), on thermal decomposition gives three compounds; out of which one is a brown gas B. Write the balanced equation and identify X and B.

IV) Long Answer Type Questions (5 marks)

1. Name the reducing agent, oxidizing agent, substance oxidized and substance reduced in the following redox reactions:



2. What is meant by activity series of metals? State which of the following reactions will take place giving suitable reasons for each.



3. Identify the type of chemical reaction taking place in each of the following?

a. Barium chloride solution is mixed with copper(II) sulphate solution and a white precipitate is observed,

b. On heating copper powder in air in a china dish, the surface of copper powder turns black.

c. On heating green coloured iron (II) sulphate crystals, reddish-brown solid is left and smell of a gas having odour of burning sulphur is experienced.

d. Iron nails when left dipped in blue copper (II) sulphate solution become brownish in colour and the blue colour of copper (II) sulphate fades away.

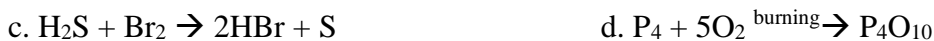
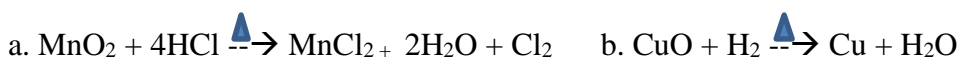
e. Quicklime reacts vigorously with water releasing a large amount of heat

4. Iron nails are taken in three test tubes – A having water, B having boiled water and a layer of oil and C having anhydrous CaCl_2 . Nails in which test tube will undergo corrosion? Give reason.
5. Three test tubes A,B,C are taken with CuSO_4 , FeSO_4 and AgNO_3 solutions respectively, what are the observations if:
- Fe metal is added to CuSO_4 solution in the test tube ‘A’?
 - Cu turnings are added to FeSO_4 solution in the test tube ‘B’?
 - Zn is added to AgNO_3 solution in the rest tube ‘C’?

Give reasons to justify your answer.

6. In the following redox reactions, identify:

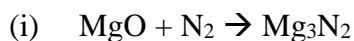
(i) oxidizing agent (ii) reducing agent (iii) substance oxidized (iv) substance reduced.



7. Tabulate differences between

- A combustion reaction and a decomposition reaction
- A double decomposition reaction and a displacement reaction
- Oxidation and reduction
- Oxidising agent and reducing agent

8. Balance the following unbalanced reactions.



- (ii) $\text{C}_4\text{H}_{10} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$
- (iii) $\text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbO} + \text{NO}_2 + \text{O}_2$
- (iv) $\text{KMnO}_4 \rightarrow \text{K}_2\text{MnO}_4 + \text{MnO}_2 + \text{O}_2$
- (v) $\text{AgNO}_3 + \text{Al} \rightarrow \text{Al}(\text{NO}_3)_3 + \text{Ag}$
- (vi) $\text{KOH} + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
- (vii) $\text{Fe}_2\text{O}_3 + \text{CO} \rightarrow \text{Fe} + 3\text{CO}_2$
- (viii) $\text{Pb}(\text{CH}_3\text{COO})_2 + \text{K}_2\text{CrO}_4 \rightarrow \text{PbCrO}_4 + \text{CH}_3\text{COOK}$
- (ix) $\text{Cr}_2\text{O}_3 + \text{Al} \rightarrow \text{Cr} + \text{Al}_2\text{O}_3$
- (x) $\text{PbS} + \text{H}_2\text{O}_2 \rightarrow \text{PbSO}_4 + 4\text{H}_2\text{O}$

Contributed by Mrs. Shaheen Hyder