| | INDIAN SCHOOL AL WADI AL KABIR | |
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| Class X | Department of Science 2020-2021<br>Subject : Chemistry | Date of Submission:<br>07.05.2020 |
| Work sheet No.: 03<br>WITH ANSWERS | Chapter: Chemical reactions and Equations | Note: A4 File format |
| Name of the student: | Class & Section: | Roll No. |

## Objective type Questions (1 mark)

1. Strong heating of Ferrous sulphate crystals results in the formation of a brown coloured solid and two gases. This reaction can be categorised as
   (a) Decomposition and redox
   (b) Displacement and redox
   (c) Displacement and endothermic
   (d) Decomposition and exothermic **[AISSE 2020]**
2. In the decomposition of lead (II) nitrate to give lead (II) oxide, nitrogen dioxide and oxygen gas, the coefficient of nitrogen dioxide (in the balanced equation) is
   (a) 1
   (b) 2
   (c) 3
   (d) 4

## Three marks Questions

3. A shining metal 'M' on burning gives a dazzling white flame and changes to a white powder 'N'.
   (a) Identify 'M'and 'N'.
   (b) Represent the above reaction in the form of balanced chemical equation.
   (c)Does 'M' undergo oxidation or reduction in this reaction? Justify.
   **[AISSE 2020]**
4. In the electrolysis of water,
   (a) Name the gases liberated at the anode and the cathode.
   (b) Why is it that the volume of one gas collected is two times that of the other?
   (c) What would happen if dilute $H_2SO_4$ is not added to water?
   **[AISSE 2020]**
5. Identify the type of each of the following reactions stating the reason for your answers.
   (a) $Fe_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Fe$
   (b) $Pb(NO_3)_2 + 2KI \longrightarrow PbI_2 + 2KNO_3$
   (c) $ZnCO_3 \longrightarrow ZnO + CO_2$
   **[AISSE 2020]**
6. 2g of Silver chloride is taken in a china dish and china dish is placed in sunlight for some time. What will be your observation in this case? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of Chemical reaction. **[AISSE 2019]**



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7. Identify the type of reactions taking place in each of the following cases and write the balanced chemical equation for the following reactions.
   (a) Zinc reacts with Silver nitrate to produce Zinc nitrate and Silver.
   (b) Potassium iodide reacts with Lead nitrate to produce Lead iodide and Potassium nitrate.
8. On heating blue coloured powder of copper (II) nitrate in a boiling tube, black copper oxide, $O_2$ and a brown gas X is formed.
   (a) Identify the type of reaction and the gas X.
   (b) Write balanced chemical equation of the reaction.
   (c) Write the pH range of aqueous solution of the gas X.
9.
   . (a) Classify the following reactions into different types :
   (i) $AgNO_3(aq) + NaCl(aq) \longrightarrow AgCl(s) + NaNO_3(aq)$
   (ii) $CaO(s) + H_2O \longrightarrow Ca(OH)_2(aq)$
   (iii) $2KClO_3(s) \longrightarrow 2KCl(aq) + 3O_2(g)$
   (iv) $Zn_{(s)} + CuSO_{4(aq)} \longrightarrow ZnSO_{4(aq)} + Cu_{(s)}$
   (b) Translate the following statement into a balanced chemical equation:
   ''Barium chloride reacts with aluminium sulphate to give aluminium chloride and barium sulphate.''
10. When potassium iodide solution is added to a solution of lead (II) nitrate in a test tube, a precipitate is formed.
   (a) What is the colour of this precipitate? Name the compound precipitated.
   (b) Write the balanced chemical equation for this reaction.
   (c) List two types of reactions in which this reaction can be placed. **[AISSE 2019]**
11. 2 g of ferrous sulphate crystals are heated in a dry boiling tube.
   (a) List any two observations.
   (b) Name the type of chemical reaction taking place.
   (c) Write balanced chemical equation for the reaction and name the products formed. **[AISSE 2019]**
12. You might have noted that when copper powder is heated in a china dish, the reddish brown surface of copper powder becomes coated with a black substance.
   (a) Why has this black substance formed?
   (b) What is this black substance?
   (c) Write the chemical equation of the reaction that takes place.
   (d) How can the black coating on the surface be turned reddish brown? **[AISSE 2019]**

## Five marks Questions

13. (a) What is a double displacement reaction? Explain with an example.
   (b) A small amount of quick lime is added to water in a beaker.
   (i) Name and define the type of reaction that has taken place.
   (ii) Write balanced chemical equation for the above reaction and the chemical name of the product formed.
   (iii) List two main observations of this reaction **[AISSE 2019]**
14. (a) Design an activity to demonstrate the decomposition reaction of lead nitrate.
   (b) Draw labelled diagram of the experimental set-up. List two main observations.
   (c) Write balanced chemical equation for the reaction stating the physical state of the reactant and the products. **[AISSE 2019]**



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# ANSWERS

## Objective type Questions (1 mark)

1. (a) Decomposition and redox
2. (d) 4

## Three marks Questions

3. A shining metal 'M' on burning gives a dazzling white flame and changes to a white powder 'N'.
   (a) ''M''- Mg, ''N''- MgO
   (b) $2Mg + O_2 \longrightarrow 2MgO$
   (c) M undergoes oxidation as it gains oxygen
4. In the electrolysis of water,
   (a) The gas liberated at the anode - Oxygen;
   Gas liberated at the cathode - Hydrogen
   (b) According to the balanced equation, $2H_2O \longrightarrow 2H_2 + O_2$ the ratio of Hydrogen to Oxygen is 2:1
   (c )The water will not conduct electricity; therefore, electrolysis would not happen.
5. 
   (a) Displacement reaction as Al displaces Fe from its compound
   (b) Double displacement reactions as there is exchange of ions
   (c) Decomposition reaction as there is a single reactant that gets decomposed to two products
6. White coloured Silver chloride changes into grey coloured Silver.

$$2AgCl \longrightarrow 2Ag + Cl_2$$

Decomposition reaction

7. (a) Double displacement reaction
   $Zn + 2AgNO_3 \longrightarrow Zn(NO_3)_2 + 2Ag$
   (b) Double displacement reaction
   $2KI + Pb(NO_3)_2 \longrightarrow PbI_2 + 2KNO_3$
8. (a) Decomposition reaction and Nitrogen dioxide gas
   (b) $2Cu(NO_3)_{2(s)} \xrightarrow{heat} 2CuO_{(s)} + 4NO_{2(g)} + O_{2(g)}$
   (c) Below 7
9. (a)
   (i) Double displacement reactions
   (ii) Combination reaction
   (iii) Decomposition reaction
   (iv) Single displacement reaction



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(b) $3BaCl_2 + Al_2(SO_4)_3 \longrightarrow 2\,AlCl_3 + 3BaSO_4$

10. (a) Yellow coloured pp. Lead iodide
(b) $2KI + Pb(NO_3)_2 \longrightarrow PbI_2 + 2\,KNO_3$
(c) Double displacement reaction and precipitation reaction

11. (a) Green coloured crystals become yellowish brown coloured solid, suffocating smell of gases detected
(b)Decomposition reaction

(c) $2FeSO_4(s) \xrightarrow{heat} Fe_2O_{3(s)} + SO_{2(g)} + SO_{3(g)}$

12. (a) Copper got oxidised on heating with Oxygen and black colured Copper oxide is formed.
(b) Copper oxide

(c) $Cu + O_2 \xrightarrow{heat} 2\,CuO$

(d) On passing Hydrogen over heated CuO

$CuO + H_2 \xrightarrow{heat} H_2O + Cu$

**Five marks Questions**

13. (a) The reaction in which the exchange of ions takes place is called a double displacement reaction.
$2KI + Pb(NO_3)_2 \longrightarrow PbI_2 + 2\,KNO_3$
(b) A small amount of quick lime is added to water in a beaker.
(i) Combination reaction. The reaction in which two or more reacts combine together to form a single product is called the combination reaction.
(ii) $CaO + H_2O \xrightarrow{yields} Ca(OH)_2$
(iii) A white mass is produced; heat is observed.

14. (a) In a dry test-tube a small amount of Lead nitrate is transferred and heated strongly. The changes are observed carefully. The white coloured Lead nitrate changes into yellow solid Lead oxide, brown coloured Nitrogen dioxide is given out. If a glowing splinter is brought near the test tube,the flame gets rekindled.This shows the presence of Oxygen gas.



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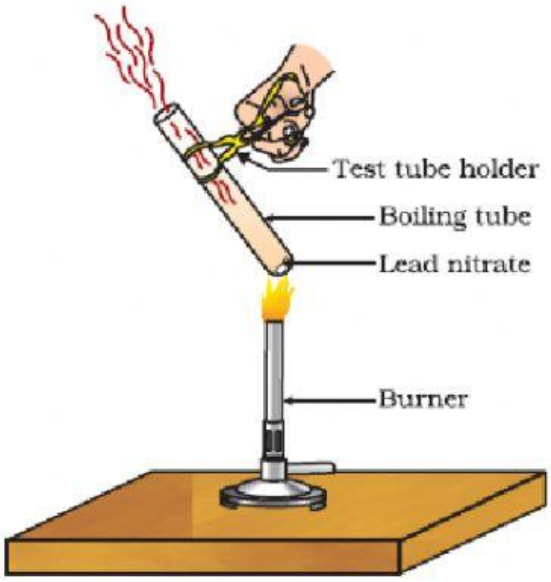


(b) Yellow coloured solid is obtained – Lead oxide
Brown coloured gas – Nitrogen dioxide is obtained.

(c) $2Pb(NO_3)_{(s)} \xrightarrow{\text{yields}} 2PbO_s + 4NO_{2_g} + O_{2_g}$

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