



INDIAN SCHOOL AL WADI AL KABIR



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| <b>Class: X</b>                                | <b>Department: SCIENCE 2021 – 22</b><br><b>SUBJECT : CHEMISTRY</b> | <b>Date of completion:</b><br><b>15-5-21</b> |
| <b>Worksheet No: 01</b><br><b>WITH ANSWERS</b> | <b>CHAPTER: CHEMICAL</b><br><b>REACTIONS AND EQUATIONS</b>         | <b>Note:</b><br><b>A4 FILE FORMAT</b>        |
| <b>Name of the student:</b>                    | <b>Class &amp; Sec:</b>  | <b>Roll No:</b>                              |

**OBJECTIVE TYPE QUESTIONS**

**MULTIPLE CHOICE QUESTIONS**

- The chemical reaction between quicklime and water is characterised by:
  - Evolution of hydrogen gas.
  - Formation of slaked lime precipitate.
  - Change in temperature of mixture.
  - Change in colour of the product.
- In a chemical reaction between sulphuric acid and barium chloride solution, the white precipitates formed are of:
  - Hydrochloric acid
  - Barium sulphate
  - Chlorine
  - Sulphur
- The respiration process during which glucose undergoes slow combustion by combining with oxygen in the cells of our body to produce energy, is a kind of:
  - Exothermic process
  - Endothermic process
  - Reversible process
  - Physical process
- You are given the following chemical reaction:
$$\text{CuO} + \text{H}_2 \xrightarrow{\text{Heat}} \text{Cu} + \text{H}_2\text{O}$$
This reaction represents:
  - Combination reaction as well as double displacement reaction
  - Redox reaction as well as displacement reaction
  - Double displacement reaction as well as redox reaction
  - Decomposition reaction as well as displacement reaction

5. The chemical reaction involved in the corrosion of iron metal is that of:
- Oxidation as well as displacement
  - Reduction as well as combination.
  - Oxidation as well as combination.
  - Reduction as well as displacement.

### **ASSERTION-REASONING QUESTIONS**

For the following questions, two statements are given-one labelled Assertion (A) and the other labelled Reason(R). Select the correct answer to these questions from the options

(i) , (ii), (iii) and (iv)as given below:

- Both A and R are true and R is the correct explanation of the Assertion.
- Both A and R are true but R is not the correct explanation of the Assertion.
- A is true but R is false.
- A is false but R is true.

6. Assertion:-Corrosion of iron is commonly known as rusting.  
Reason:-Corrosion of iron occurs in presence of water and air.
7. Assertion:-The balancing of chemical equation is based on law of conservation of mass.  
Reason:-Total mass of reactants is equal to total mass of products.
8. Assertion:- Calcium carbonate when heated gives calcium oxide and water.  
Reason:- On heating calcium carbonate, decomposition reaction takes place.
9. Assertion: After white washing the walls, a shiny white finish on walls is obtained after two to three days.  
Reason: Calcium Oxide reacts with Carbon dioxide to form Calcium Hydrogen Carbonate which gives shiny white finish.

### **ONE MARK QUESTIONS**

10. Identify in the following reaction:  
$$\text{ZnO} + \text{C} \rightarrow \text{Zn} + \text{CO}$$
  - The substance oxidised and
  - The substance reduced.
11. What change in colour is observed when white silver chloride is left exposed to sunlight?  
State the type of chemical reaction in this change.
12. Why do potato chips manufacturers fill the packet of chips with nitrogen gas?
13. Write one equation each for the decomposition reactions where energy is supplied in the form of (a) heat (b) light and (c) electricity.
14. What is a redox reaction?

### **THREE MARK QUESTIONS**

15. A student takes 2g of Ferrous sulphate crystal in a dry test tube and heats the test tube. Answer the following questions on the basis of the observations made by the student.
- Write an observation about colour of residue or smell of gas evolved.
  - Name the type of chemical reaction.
  - Write balanced chemical equation for the reaction involved.
16. When food containing fat or oil is not used and left for a long time, their smell and taste changes. Name the process. List two methods to prevent or slow down the above change.
17. State the type of chemical reactions with chemical equations that take place in the following:
- Magnesium ribbon is burnt in air.
  - Electric current is passed through water.
  - Ammonia and hydrogen chloride gases are mixed.

### **FIVE MARK QUESTIONS**

18. A brown substance X on heating in air forms a substance Y. When hydrogen gas is passed over heated Y, it again changes back into X.
- Name the substance X and Y.
  - Name the type of chemical reactions that take place here.
  - Write the chemical equations of the reactions.
19. (a) State the various characteristics of chemical reactions.  
(b) State one characteristic each of the chemical reaction which takes place when:
- Dilute hydrochloric acid is added to sodium carbonate.
  - Dilute sulphuric acid is added to barium chloride solution.
  - Quick lime is treated with water.
20. What happens when an aqueous solution of sodium sulphate reacts with an aqueous solution of barium chloride?
- Write balanced chemical equation for the reaction which takes place.
  - State the physical conditions of reactants in which the reaction will not take place.
  - Name the type of chemical reaction.
21. What is meant by:-
- Precipitation reaction
  - Exothermic reaction
  - Oxidation reaction
  - Endothermic reaction
  - Combination reaction

### **PREVIUOS YEAR BOARD QUESTIONS**

22. A Zinc plate was put into a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets fader and fader with the passage of time. After a few days when the zinc plate was taken out of the solution, a number of holes were observed on it.
- State the reason for changes observed on the zinc plate.

- (b) Write the chemical equation for the reaction involved.
23. (a) Which of the following reactions is/ are an *endothermic* reaction(s) where *decomposition* also happens?
- Respiration
  - Heating of lead nitrate
  - Decomposition of organic matter
  - Electrolysis of acidified water
- (b) Silver chloride when kept in the open turns grey. Illustrate this with a balanced chemical equation.
24. A white salt on heating decomposes to give brown fumes and a residue is left behind.
- (a) Name the salt.
- (b) Write the equation for the decomposition reaction.
25. When the powder of a common metal is heated in an open china dish, its colour turns black. However when hydrogen is passed over the hot black substance so formed, it regains its original colour. Based on the above information answer the following questions.
- (a) What type of chemical reaction takes place in each of the two given steps?
- (b) Name the metal initially taken in the powder form. Write balanced chemical equations for both reactions.
26. In the refining of silver, the recovery of silver from silver nitrate solution involved displacement by copper metal. Write down the reaction involved.

### **EXEMPLAR QUESTIONS**

27. Give the characteristic tests for the following gases.
- (a)  $\text{CO}_2$       (b)  $\text{O}_2$       (c)  $\text{H}_2$
28. Write the balanced chemical equations for the following reactions:-
- (a) Sodium carbonate on reaction with hydrochloric acid in equal molar concentrations gives sodium chloride and sodium hydrogen carbonate.
- (b) Sodium hydrogen carbonate on reaction with hydrochloric acid gives sodium chloride, water and liberates carbon dioxide.
- (c) Copper sulphate on treatment with potassium iodide precipitates cuprous iodide, liberates iodine gas and also forms potassium sulphate.

## ANSWERS

### OBJECTIVE TYPE QUESTIONS

#### MULTIPLE CHOICE QUESTIONS

| Qn.No. | Answers   |
|--------|---|
| 1      | (c) Change in temperature of mixture.               |
| 2      | (b) Barium sulphate                                 |
| 3      | (a) Exothermic process                              |
| 4      | (b) Redox reaction as well as displacement reaction |
| 5      | (c) Oxidation as well as combination.               |

#### ASSERTION-REASONING QUESTIONS

|   |   |
|---|---|
| 6 | (ii) Both A and R are true but R is not the correct explanation of the Assertion. |
| 7 | (i) Both A and R are true and R is the correct explanation of the Assertion.      |
| 8 | (iv) A is false but R is true.  |
| 9 | (c) Assertion is True & Reason is False   |

#### ONE MARK QUESTIONS

|    |   |
|----|---|
| 10 | (a) The substance oxidised - C<br>(b) The substance reduced - ZnO   |
| 11 | White colour changes to grey. It is a photochemical decomposition reaction.   |
| 12 | To provide an inert atmosphere to prevent chips from getting oxidised. N <sub>2</sub> does not allow chips to get spoiled by oxidation.   |
| 13 | (a) $\text{Heat} - \text{CaCO}_3 \xrightarrow{\text{heat}} \text{CaO} + \text{CO}_2$<br>(b) $\text{Light} - 2\text{AgCl} \xrightarrow{\text{light}} 2\text{Ag} + \text{Cl}_2$<br>(c) $\text{Electricity} - 2\text{H}_2\text{O} \xrightarrow{\text{electricity}} 2\text{H}_2 + \text{O}_2$ |
| 14 | A reaction in which oxidation and reduction reactions take place simultaneously.  |

#### THREE MARK QUESTIONS

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|----|--|
| 15 | (a) Colour of residue:- Brown<br>Smell- Smell of burning sulphur.<br>(b) Thermal decomposition reaction.<br>heat |
|----|--|

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|----|---|
|    | (c) $2FeSO_4 \rightarrow Fe_2O_3 + SO_2 + SO_3$   |
| 16 | Rancidity<br>Methods to prevent rancidity:-<br>1. Adding antioxidants to the food items.<br>2. Keep the food items in refrigerator.   |
| 17 | (a) $2Mg + O_2 \rightarrow 2MgO$ - Combination reaction(redox reaction)<br>(b) $2H_2O \rightarrow 2H_2 + O_2$ - Electrical decomposition reaction.<br>(c) $NH_3 + HCl \rightarrow NH_4Cl$ - Combination reaction. |

### FIVE MARK QUESTIONS

|    |  |
|----|--|
| 18 | (a) X-Cu, Y- CuO<br>(b) Redox reaction.<br>(c) $2Cu + O_2 \rightarrow 2CuO$<br>$CuO + H_2 \rightarrow Cu + H_2O$   |
| 19 | (a) change in state<br>change in colour<br>evolution of a gas<br>change in temperature.<br>Formation of precipitate.<br>(b) (i) evolution of gas<br>(ii) Formation of precipitate<br>(iii)Change in temperature.   |
| 20 | (a) $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$<br>(b) <i>Solid State</i><br>(c) Double displacement reaction.  |
| 21 | (a) A reaction in which there is formation of a precipitate.<br>(b) A reaction in which heat energy is released along with the formation of products.<br>(c) A reaction in which oxygen is added to a substance.(or hydrogen is removed from a substance)<br>(d) A reaction in which energy is absorbed.<br>(e) A reaction in which two or more reactants react together to form a single product. |

### PREVIUOS YEAR BOARD QUESTIONS

|    |   |
|----|---|
| 22 | (a) It is because zinc has displaced copper from copper sulphate. Zinc metal has been used to form zinc sulphate, therefore, holes were observed.<br>(b) $Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$<br>Blue colourless |
| 23 | (a) Heating of lead nitrate; and electrolysis of acidified water  |

|    |   |
|----|---|
|    | (b)<br>Sunlight<br>$2\text{AgCl(s)} \rightarrow 2\text{Ag(s)} + \text{Cl}_2\text{(g)}$  |
| 24 | (a) Lead nitrate<br>(b) $2\text{Pb(NO}_3)_2 \rightarrow 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$  |
| 25 | (a) In first step, oxidation is taking place.<br>In second step, redox reaction takes place.<br>(b) Metal in the powder form is copper<br>$2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$<br>$\text{CuO} + \text{H}_2 \rightarrow \text{Cu} + \text{H}_2\text{O}$ |
| 26 | $\text{Cu(s)} + 2\text{AgNO}_3\text{(aq)} \rightarrow \text{Cu(NO}_3)_2\text{(aq)} + 2\text{Ag(s)}$   |

### EXEMPLAR QUESTIONS

|    |  |
|----|--|
| 27 | (a) Pass the gas through lime water. Lime water turns milky which confirms the presence of $\text{CO}_2$<br>$\text{Ca(OH)}_2\text{(aq)} + \text{CO}_2\text{(g)} \rightarrow \text{CaCO}_3\text{(s)} + \text{H}_2\text{O(l)}$<br>(b) Bring a burning candle near oxygen gas. The intensity of candle flame is increased, it shows the presence of oxygen gas which is a supporter of combustion.<br>(c) Bring a burning matchstick near hydrogen gas. The gas will burn explosively with a pop sound. It confirms the presence of hydrogen. |
| 28 | (a) $\text{Na}_2\text{CO}_3\text{(s)} + \text{HCl(aq)} \rightarrow \text{NaCl(aq)} + \text{NaHCO}_3\text{(aq)}$<br>(b) $\text{NaHCO}_3\text{(s)} + \text{HCl(aq)} \rightarrow \text{NaCl(aq)} + \text{H}_2\text{O(l)} + \text{CO}_2\text{(g)}$<br>(c) $2\text{CuSO}_4\text{(aq)} + 4\text{KI(aq)} \rightarrow 2\text{K}_2\text{SO}_4\text{(aq)} + \text{Cu}_2\text{I}_2\text{(s)} + \text{I}_2$  |

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