	INDIAN SCHOOL AL WADI AL KABIR	
Class: X	**Department: SCIENCE 2022 - 23**	**Date of completion: 01-05-22**
Worksheet No: 01 WITH ANSWERS	**CHAPTER: CHEMICAL REACTIONS AND EQUATIONS**	**Note: A4 FILE FORMAT**
Name of the student:	**Class & Sec:**	**Roll No:**

OBJECTIVE TYPE QUESTIONS

MULTIPLE CHOICE QUESTIONS

1. In a chemical reaction between sulphuric acid and barium chloride solution, the white precipitates formed are of:
   (a) Hydrochloric acid
   (b) Barium sulphate
   (c)Chlorine
   (d) Sulphur
2. 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:
   (a) Exothermic process
   (b) Endothermic process
   (c) Reversible process
   (d) Physical process
3. You are given the following chemical reaction:
   $CuO + H_2 \xrightarrow{Heat} Cu + H_2O$
   This reaction represents:
   (a) Combination reaction as well as double displacement reaction
   (b) Redox reaction as well as displacement reaction
   (c) Double displacement reaction as well as redox reaction
   (d) Decomposition reaction as well as displacement reaction
4. A chemical reaction does not involve:
   (a) Formation of new substances having entirely different properties than that of the reactants
   (b) Breaking of old chemical bonds and formation of new chemical bonds
   (c) Rearrangement of the atoms of reactants to form new products
   (d) Changing of the atoms of on element into those of another element to form new products.

5. The neutralisation reaction between an acid and a base is a type of:
   (a) Double displacement reaction
   (b) Displacement reaction
   (c) Addition reaction
   (d) Decomposition reaction

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:

(i)Both A and R are true and R is the correct explanation of the Assertion.

(ii)Both A and R are true but R is not the correct explanation of the Assertion.

(iii)A is true but R is false.

(iv)A is false but R is true.

6. Assertion:- Calcium carbonate when heated gives calcium oxide and water.
   Reason:- On heating calcium carbonate, decomposition reaction takes place.
7. 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.
8. Assertion:- Lead nitrate on thermal decomposition gives lead oxide, brown coloured nitrogen dioxide and oxygen gas.
   Reason:- Lead nitrate reacts with potassium iodide to form yellow ppt of lead iodide and the reaction is double displacement as well as precipitation reaction.
9. Assertion:- Exposure of silver chloride to sunlight for a long duration changes it to grey due to the formation of silver by decomposition of silver chloride.
   Reason:- In this process, sublimation of silver chloride takes place.

ONE MARK QUESTIONS

10. Why do potato chips manufacturers fill the packet of chips with nitrogen gas?
11. Identify in the following reaction:
    $ZnO + C \rightarrow Zn + CO$
    (a) The substance oxidised and
    (b) The substance reduced.
12. In electrolysis of water, why is the volume of gas collected over one electrode is double than that of gas collected over the other electrode?
13. What can be seen when a strip of copper metal is placed in a solution of silver nitrate?
14. Write balanced chemical equation for a reaction between sodium chloride and silver nitrate indicating the physical states of the reactants and the products

THREE MARK QUESTIONS

15. Give the characteristic tests for the following gases.

(a) CO_2 (b) O_2 (c)H_2

16. 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.
17. 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.
    (a) Write an observation about colour of residue or smell of gas involved.
    (b) Name the type of chemical reaction.
    (c) Write balanced chemical equation for the reaction involved.

FIVE MARK QUESTIONS

18. (a) State the various characteristics of chemical reactions.
    (b) State one characteristic each of the chemical reaction which takes place when:
        (i) Dilute hydrochloric acid is added to sodium carbonate.
        (ii) Dilute sulphuric acid is added to barium chloride solution.
        (iii)Quick lime is treated with water.
19. 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.
    (i) Name the substance X and Y.
    (ii) Name the type of chemical reactions that take place here.
    (iii) Write the chemical equations of the reactions.
20. Identify the type of reactions taking place in each of the following:
    (a) Barium chloride solution is mixed with copper sulphate solution and white ppt is formed.
    (b) On heating copper powder in china dish, the surface of copper turns black.
    (c) On heating green coloured ferrous 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 coloured copper sulphate solution become reddish brown in colour and the blue colour of the solution fades away.
    (e) Quick lime reacts vigorously with water releasing a large amount of heat.
21. (a) Why is respiration considered an exothermic reaction?
    (b) Define the term oxidation and reduction.
    (c) Identify the substance oxidised and reduced in the following reaction.
    $CuO + Zn \rightarrow Cu + ZnO$
    (d) Define combination reaction. Give one example of a combination reaction which is also exothermic.

PREVIUOS YEAR BOARD QUESTIONS

22. In the refining of silver, the recovery of silver from silver nitrate solution involved

displacement by copper metal. Write down the reaction involved.

23. 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.
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 food containing fat or oil is not used and left for a long time, their smell and taste changes. Name the process and state responsible for this change. List two methods to prevent or slow down the above change.
26. Identify the type of reactions in each of the following reactions:
    (i) $Zn+H_2SO_4 \rightarrow ZnSO_4+H_2$
    (ii) $CaO+H_2O \rightarrow Ca(OH)_2$
    (iii) $CaCO_3 \rightarrow CaO+ CO_2$

CASE STUDY BASED QUESTIONS

27. Chemical equation is a method of representing a chemical reaction with the help of symbols and formulae involved in it. In a chemical equation the substances which combine or react are called the reactants and new substances produced are called products. A chemical equation is a short hand method of representing a chemical reaction. A balanced chemical equation has equal number of atoms of different elements in the reactants and products side. An unbalanced chemical equation has unequal number of atoms of one or more elements in reactants and products. Formulae of elements and compounds are not changed to balance an equation.
    (i) Consider the following reaction:
    $pMg_3N_2 + qH_2O \rightarrow rMg(OH)_2 + sNH_3$

    When the equation is balanced, the coefficients p,q,r,s respectively are:
    (a) 1,3,3,2
    (b) 1,6,3,2
    (c) 1,2,3,2
    (d) 2,3,6,2

    (ii) Which of the following information is not conveyed by a balanced chemical Equation?
    (a) Physical states of the reactants and products.
    (b) Symbols and formulae of all the substances involved in a particular reaction.
    (c) Number of atoms/molecules of reactants and products formed.
    (d) Whether a particular reaction is actually feasible or not.

    (iii)The balancing of chemical equation is in accordance with:
    (a) Law of combining volumes
    (b) Law of constant proportions

(c) Law of conservation of mass
(d) Both (b) and (c)

(iv) Which of the following statements is /are correct?
(a) A chemical equation tells us about the substances involved in a reaction.
(b) A chemical equation informs us about the symbols and formulae of the substances involved in a reaction.
(c) A chemical equation tells us about the atoms or molecules of the reactants and products involved in a reaction.
(d) All the above.

28. In decomposition reactions, a single reactant breaks down to form two or more products. Decomposition reaction is opposite to reaction. Thermal decomposition reactions use energy in the form of heat for decomposition of reactants. Electrolytic decomposition reactions involve the use of electrical energy for the decomposition of reactant molecules. Photolysis or photochemical decomposition reactions involves the use of light energy for the purpose of decomposition.

(i) Which of the following reactions is a decomposition reaction?
(a) $NaOH + HCl \rightarrow NaCl + H_2O$
(b) $NH_4CNO \rightarrow H_2NCONH_2$
(c) $2KClO_3 \rightarrow 2KCl + 3O_2$
(d) $H_2 + I_2 \rightarrow 2HI$

(ii) $2Pb(NO_3)_2 \rightarrow 2PbO + nA + O_2$
What is nA in the given reaction?
(a) $4NO$
(b) $4NO_2$
(c) $2PbNO_2$
(d) NO_2

(iii) Silver chloride on exposure to sunlight for a long duration turns grey due to:
(I) The formation of silver by the decomposition of silver chloride.
(II) Sublimation of silver chloride
(III) Decomposition of chlorine gas from silver chloride
(IV) Oxidation of silver chloride.
(a) Only (I)
(b) Only (II) and (III)
(c) Only (I) and (II)
(d) Only (IV)

(iv) What type of chemical reaction takes place when electricity is passed through water?
(a) Thermal decomposition
(b) Electrolytic decomposition
(c) Photochemical decomposition
(d) Displacement reaction.

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ANSWERS

OBJECTIVE TYPE QUESTIONS

MULTIPLE CHOICE QUESTIONS

Qn.No.	Answers
1	(b) Barium sulphate
2	(a) Exothermic process
3	(b) Redox reaction as well as displacement reaction
4	(d) Changing of the atoms of on element into those of another element to form new products.
5	(a) Double displacement reaction

ASSERTION-REASONING QUESTIONS

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

ONE MARK QUESTIONS

10	To provide an inert atmosphere to prevent chips from getting oxidised.N_2 does not allow chips to get spoiled by oxidation.
11	(a) The substance oxidised -C (b) The substance reduced- ZnO
12	Water contains hydrogen and oxygen in the ratio 2:1. So the volume of hydrogen is double than that of oxygen.
13	The solution will become blue, shiny silver metal gets deposited. $Cu(s) + 2AgNO_3(aq) \longrightarrow Cu(NO_3)_2(aq) + 2Ag(s)$
14	$\underset{\text{(Silver Nitrate)}}{AgNO_3(aq)} + \underset{\text{(Sodium Chloride)}}{NaCl(aq)} \xrightarrow{\text{Heat}} \underset{\text{(Silver Chloride)}}{AgCl(s)} + \underset{\text{(Sodium NItrate)}}{NaNO_3(aq)}$

THREE MARK QUESTIONS

15	(a) Pass the gas through lime water. Lime water turns milky which confirms the presence of CO_2 $Ca(OH)_{2(aq)} + CO_{2(g)} \rightarrow CaCO_{3(s)} + H_2O_{(l)}$ (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.

	(c) Bring a burning matchstick near hydrogen gas. The gas will burn explosively with a pop sound. It confirms the presence of hydrogen.
16	(a) $Na_2CO_{3(s)} + HCl_{(aq)} \rightarrow NaCl_{(aq)} + NaHCO_{3(aq)}$ (b) $NaHCO_{3(s)} + HCl_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)} + CO_{2(g)}$ (c) $2CuSO_{4(aq)} + 4KI_{(aq)} \rightarrow 2K_2SO_{4(aq)} + Cu_2I_{2(s)} + I_2$
17	(a) Colour of residue:- Brown Smell- Smell of burning sulphur. (b) Thermal decomposition reaction. (c) $2FeSO_4 \xrightarrow{\text{heat}} Fe_2O_3 + SO_2 + SO_3$

FIVE MARK QUESTIONS

18	(a) change in state change in colour evolution of a gas change in temperature. Formation of precipitate. (b) (i) evolution of gas (ii) Formation of precipitate (iii)Change in temperature.
19	(a) X-Cu, Y- CuO (b) Redox reaction. (c) $2Cu + O_2 \rightarrow 2CuO$ $CuO + H_2 \rightarrow Cu + H_2O$
20	(a) Double displacement reaction (b) Oxidation reaction (c) Decomposition reaction (d) Displacement reaction (e) Combination reaction
21	(e) In respiration, energy is released, therefore it is considered an exothermic reaction. (f) Oxidation is addition of oxygen or removal of hydrogen and reduction is removal of oxygen or addition of hydrogen. (g) Zinc is getting oxidised and CuO is getting reduced. (h) The reaction in which two or more reactants combine together to form single product. Burning of coal is combination as well as exothermic reaction. $C + O_2 \rightarrow CO_2$+ heat

PREVIUOS YEAR BOARD QUESTIONS

22	$Cu_{(s)} + 2AgNO_{3(aq)} \rightarrow Cu(NO_3)_{2(aq)} + 2Ag_{(s)}$
23	(a) In first step, oxidation is taking place. In second step, redox reaction takes place. (b) Metal in the powder form is copper $2Cu + O_2 \rightarrow 2CuO$ $CuO + H_2 \rightarrow Cu + H_2O$
24	(a) Lead nitrate $2Pb(NO_3)2 \rightarrow 2PbO + 4NO_2 + O_2$
25	Rancidity Methods to prevent rancidity 1. Adding antioxidants 2. Filling nitrogen gas in packets containing oily food items.
26	(i) Displacement reaction (ii) Combination reaction (iii) Decomposition reaction.

CASE STUDY BASED QUESTIONS

27	(i) (b)1,6,3,2 (ii) (d)Whether a particular reaction is actually feasible or not. (iii)(c)Law of conservation of mass (iv) (d) All the above.
28	(i) (c)$2KClO_3 \rightarrow 2KCl + 3O_2$ (ii) (b)$4NO_2$ (iii) (a)Only (I) (iv) (b)Electrolytic decomposition

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