परमाणु ऊर्जा शिक्षण संस्था, मुंबई

Atomic Energy Education Society

Session: 2023 – 24

CLASS- X SUBJECT : **SCIENCE**

WORKSHEET No. – **1**

Name of the Chapter: **CHEMICAL REACTIONS AND EQUATIONS**

1	Explain the following terms with one example each. 1. Corrosion 2. Rancidity.	**[2]**
2	1. Classify the following reactions into different types. a. $AgNO_3$ (aq) + NaCl(aq) → AgCl(s) + $NaNO_3$ (aq) b. CaO(s) + H_2O(l) → $Ca(OH)_2$ (aq) 2. Which of the above reaction(s) is/are precipitation reaction(s)? Why is it so called?	**[2]**
3	Write the balanced chemical equations for the following reactions. 1. Calcium hydroxide + Carbon dioxide→ Calcium carbonate + Water 2. Zinc + Silver nitrate→ Zinc nitrate + Silver	**[2]**
4	Identify the reducing agent in the following reactions: 1. $4NH_3 + 5O_2 \rightarrow 4NO + 6H_2O$ 2. $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$	**[2]**
5	When an aluminium strip is kept immersed in freshly prepared ferrous sulphate solution taken in a test tube, what is the change observed ?	**[2]**
6	A white powder **X** is used by doctors for supporting fractured bones. 1. Write the name and Chemical formula of X. 2. Write chemical equation for the reaction when this powder **X** is mixed with water.	**[2]**
7	On adding a drop of barium chloride solution to an aqueous solution of sodium sulphite, white precipitate is obtained.	**[2]**

	1. Write a balanced chemical equation of the reaction involved. 2. On adding dilute hydrochloric acid to the reaction mixture, white precipitate disappears. Why?	
8	Write the balanced chemical equations for the following reactions: 1. Sodium carbonate on reaction with hydrochloric acid in equal molar concentrations gives sodium chloride and sodium hydrogencarbonate. 2. Sodium hydrogencarbonate on reaction with hydrochloric acid gives sodium chloride, water and liberates carbon dioxide.	**[2]**
9	What happens when zinc plate is dipped in a solution of copper sulphate ($CuSO_4$) ?	**[2]**
10	What is the difference between combination and decomposition reactions? Write an equation of each type.	**[2]**
11	Which metal is displaced when zinc metal is put in the solution of copper sulphate? a) Zinc b) Copper c) Sulphate d) All of these	**[1]**
12	Which of the following are exothermic processes? 1. Reaction of water with quick lime 2. Dilution of an acid 3. Evaporation of water 4. Sublimation of camphor (crystals) a) (i) and (ii) b) (iii) and (iv) c) (ii) and (iii) d) (i) and (iv)	**[1]**
13	$CaO + H_2O \rightarrow Ca(OH)_2$ .The type of reaction is: a) Combination reaction b) Displacement reaction c) Decomposition reaction d) Precipitation reaction	**[1]**

14	Pick out a decomposition reaction: a) $Fe_2 O_3 + 3CO \rightarrow 2Fe + 3CO_2$ b) $C_2 H_4 + H_2 \rightarrow C_2 H_6$ c) $Cu + AgNO_3 \rightarrow Cu(NO_3)_2 + 2Ag$ d) $NH_4 Cl \rightarrow NH_3 + HCl$	**[1]**
15	Which of the following gases can be used for storage of fresh sample of an oil for a long time? a) Carbon dioxide or helium b) Nitrogen or oxygen c) Carbon dioxide or oxygen d) Helium or nitrogen	**[1]**
16	Which among the following is(are) double displacement reaction(s)? 1. $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$ 2. $Na_2 SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$ 3. $C + O_2 \rightarrow CO_2$ 4. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2 O$ a) (iii) and (iv) b) (ii) only c) (i) and (ii) d) (i) and (iv)	**[1]**
17	The colour of the solid product formed on heating ferrous sulphate is a) Reddish - brown b) Green c) Black d) Colourless	**[1]**
18	$Fe_2O_3 + 2Al \rightarrow Al_2O_3 + 2Fe$ The above reaction is an example of a a) displacement reaction b) double displacement reaction c) combination reaction d) decomposition reaction	**[1]**

19	Chemically rust is: a) Metal oxide b) Ferric oxide c) Ferrous oxide d) Hydrated ferric oxide	**[1]**
20	The green coating on copper appears on exposure to air. It is: a) Copper carbonate b) Copper sulphate c) Copper nitrate d) Copper sulphide	**[1]**
21	**Assertion (A):** Following is a balanced chemical equation for the action of steam on iron: $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$ **Reason (R):** The law of conservation of mass holds good for a chemical equation. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
22	**Assertion (A):** Silver articles become black after sometime when exposed to sunlight. **Reason (R):** It is because silver reacts with carbonates present in the air. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
23	**Assertion (A):** $Fe_2O_3 + 2\,Al \rightarrow Al_2O_3 + 2\,Fe$ The above chemical equation is an example of a displacement reaction. **Reason (R):** Aluminium is more reactive than iron, displaces Fe from its oxide. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.	**[1]**

	c) A is true but R is false. d) A is false but R is true.	
24	**Assertion (A):** Carbon dioxide turns lime water milky. **Reason (R):** Carbon dioxide sullies the water. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
25	**Assertion (A):** Copper spoon is used to stir silver nitrate solution. **Reason (R):** Copper is less reactive than silver. a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A. c) A is true but R is false. d) A is false but R is true.	**[1]**
36	1. What happens when a solution of potassium iodide is added to a solution of lead nitrate taken in a test tube? 2. What type of reaction is this? 3. Write a balanced chemical equation to represent the above reaction.	**[3]**
38	A student adds water to a substance X taken in beaker. He feels the beaker turning hot and a hissing sound is produced.Whydoes this happen? Write a chemical equation for the reaction. State the type of this reaction.	**[3]**
40	When solutions of silver nitrate and sodium chloride are mixed, white precipitate forms. The ionic equation for the reaction is$Ag^{+}(ag) + Cl^{-} \rightarrow AgCl(s)$ 1. a. What is the name of the white precipitate? b. Is it a soluble or insoluble compound? 2. Is the precipitation of silver chloride a redox reaction?	**[3]**
42	Write the balanced chemical equation for the following reaction: 1. Phosphorus burns in presence of chlorine to form phosphorus penta chloride. 2. Burning of natural gas.	**[3]**

	3. The process of respiration	
44	A magnesium ribbon is burnt in oxygen to give a white compound X accompanied by emission of light. If the burning ribbon is now placed in an atmosphere of nitrogen, it continues to burn and forms a compound Y.(i) Write the chemical formulae of X and Y. (ii) Write the balanced chemical equation when X is dissolved in water.	**[3]**
46	Write balanced equation for the following reactions and identify the type of reaction. 1. Potassium bromide (aq) + Barium iodide (aq) → Potassium iodide (aq) + Barium bromide (aq) 2. Magnesium (s) + Hydrochloric acid (aq) → Magnesium Chloride (aq) + Hydrogen (g) 3. Zinc carbonate (s) → Zinc oxide (s) + Carbon dioxide (g) 4. Hydrogen (g) + Chlorine (g) → Hydrogen chloride (g)	**[5]**
47	When metal P is treated with a dilute acid Q, then a gas G is evolved which burns readily by making a little explosion. 1. Name any two metals which can behave like metal P. 2. Name any two acids which can behave like acid Q. 3. Name the gas G. 4. Is the gas G lighter than or heavier than air? 5. Is the reaction between metal P and dilute acid Q exothermic or endothermic?	**[5]**
51	Write the formula and then balance the following equations. a) Butane (C_4 H $_{10}$) + Oxygen → Carbon dioxide + Water b) Magnesium + Silver nitrate → Magnesium nitrate + Silver c) Lime water + Carbon dioxide → Calcium carbonate + Water d) Sodium + Water → Sodium hydroxide + Hydrogen e) Calcium carbonate + Water + Carbon dioxide → Calcium bicarbonate	**[5]**
53	1. What happens when an aqueous solution of sodium sulphate reacts with an aqueous solution of barium chloride? 2. Write the balanced chemical equation for the reaction which takes place.	**[5]**

	3. State the physical conditions of reactants in which the reaction will not take place. 4. Name the type of chemical reaction which occurs. 5. Give one example of another reaction which is of the same type as the above reaction.	
55	1. Explain the term **corrosion** with an example. Write a chemical equation to show the process of corrosion of iron. 2. What special name is given to the corrosion of iron? 3. What type of chemical reaction is involved in the corrosion of iron? 4. Name any three objects (or structures) which are gradually damaged by the corrosion of iron and steel.	**[5]**