Prepared by: Sumeet Sahu
+91-8103405051
Visit: www.uniquestudyonline.com
YOUTUBE:UNIQUESTUDYPOINT

UNIQUE STUDY POINT
TEST: CLASS X
CHEMICAL REACTIONS AND EQUATIONS

1	When metal X is treated with a dilute acid Y, then a gas Z is evolved which burns readily by making a little explosion. (a) Name any two metals which can behave like metal X. (b) Name any two acids which can behave like acid Y. (c) Name the gas Z. (d) Is the gas Z lighter than or heavier than air? (e) Is the reaction between metal X and dilute acid Y, exothermic or endothermic? (f) By taking a specific example of metal X and dilute acid Y, write a balanced chemical equation for the reaction which takes place. Also indicate physical states of all the reactants and products. **ANSWER:** (a) Zinc (Zn) and magnesium (Mg) metals can behave like metal X. (b) Sulphuric acid (H_2SO_4) and hydrochloric acid (HCl) can behave like acid Y. (c) Gas Z is hydrogen gas (H_2). (d) Gas Z (i.e., hydrogen) is lighter than air because it is the lightest element in the periodic table. (e) The reaction between metal X and dilute acid Y is exothermic because it produces huge amount of heat. (f) If X is zinc and Y is sulphuric acid, then the equation can be written as follows: $Zn\,(s) + H_2SO_4\,(aq) \rightarrow\rightarrow ZnSO_4\,(aq) + H_2\,(g)$	6
2	A solid substance P which is very hard is used in the construction of many buildings, especially flooring. When substance P is heated strongly, it decomposes to form another solid Q and a gas R is given out. Solid Q reacts with water with the release of a lot of heat to form a substance S. When gas R is passed into a clear solution of substance S, then a white precipitate of substance T is formed. The substance T has the same chemical composition as starting substance P. (a) What is substance P? Write its common name as well as chemical formula. (b) What is substance Q? (c) What is gas R? (d) What is substance S? What is its clear solution known as? (e) What is substance T? in nature. **ANSWER:** (a) Substance P is calcium carbonate. Its common name is limestone and its chemical formula is $CaCO_3$.	6

	(b) Substance Q is calcium oxide (CaO). (c) Gas R is carbon dioxide gas (CO_2). (d) Substance S is calcium hydroxide [$Ca(OH)_2$]. Its clear solution is known as lime water. (e) Substance T is calcium carbonate ($CaCO_3$).	
3	When the solution of substance X is added to a solution of potassium iodide, then a yellow solid separates out from the solution. (a) What do you think substance X is likely to be? (b) Name the substance which the yellow solid consists of. (c) Which characteristic of chemical reaction is illustrated by this example? (d) Write a balanced chemical equation for the reaction which takes place. Mention the physical states of all the reactants and products involved in the chemical equation. **ANSWER:** (a) Substance X is likely to be lead nitrate, because on reacting with potassium iodide it forms a yellow precipitate. (b) The yellow solid or precipitate consists of lead iodide, which is one of the products in this reaction. (c) This chemical reaction is characterised by the formation of precipitate. (d) $2KI\ (s) + Pb(NO_3)_2\ (aq) \rightarrow\rightarrow PbI_2\ (s) + 2KNO_3\ (aq)$	4
4	A silvery-white metal X taken in the form of ribbon, when ignited, burns in air with a dazzling white flame to form a white powder Y. When water is added to powder Y, it dissolves partially to form another substance Z. (a) What could metal X be? (b) What is powder Y? (c) With which substance metal X combines to form powder Y? (d) What is substance Z? Name one domestic use of substance Z. (e) Write a balanced chemical equation of the reaction which takes place when metal X burns in air to form powder Y. **ANSWER:** (a) Metal X could be magnesium metal. (b) Powder Y is magnesium oxide (MgO). (c) Magnesium metal (X) combines with oxygen gas to form powdery magnesium oxide (Y). (d) Substance Z is magnesium hydroxide [$Mg(OH)_2$]. Suspension of magnesium hydroxide (Z) is used as an antacid. (e) $2Mg\ (s) + O_2\ (g) \rightarrow\rightarrow 2MgO\ (s)$	5

5	The metal M reacts vigorously with water to form a solution S and a gas G. The solution S turns red litmus to blue whereas gas G, which is lighter than air, burns with a pop sound. Metal M has a low melting point and it is used as a coolant in nuclear reactors. (a) What is metal M? (b) What is solution S? Is it acidic or alkaline? (c) What is gas G? (d) Write a balanced chemical equation for the reaction which takes place when metal M reacts with water. (e) Is this reaction exothermic or endothermic? **ANSWER:** (a) Metal M is sodium (Na), which is used as a coolant in nuclear reactors. (b) Solution S is sodium hydroxide solution (NaOH). It is alkaline, it turns red litmus to blue. (c) Gas G is hydrogen gas, which is lighter than air. (d) $2Na\ (s) + 2H_2O\ (l) \rightarrow\rightarrow 2NaOH\ (aq) + H_2\ (g) + HEAT$ (e) This reaction is exothermic because it releases excessive heat.	5