CLASS-10

PHYSICAL SCIENCE

PERIOD PLANS

CHAPTER: 02 – CHEMICAL REACTIONS AND EQUATIONS

PERIOD PLAN-05 : Types of chemical reactions

Chemical displacement - Chemical double displacement

Content Analysis	Class Room Environment	Teaching Learning Material
Types of chemical reactions: Chemical reactions are 4 types. *Chemical combination *Chemical decomposition *Chemical displacement *Chemical double displacement	**Conversation :** About types of chemical reactions with general examples.	Chart
Chemical displacement : This is when one element trades place with another element in a compound. A + BC → AC + B **Examples:** $Zn + 2HCl \rightarrow ZnCl_2 + H_2$ $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$ $Zn + AgNO_3 \rightarrow Zn(NO_3)_2 + Ag$ Some more: $Zn + CuSO_4 \rightarrow ZnSO_4 + Zn$ $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$ $Mg + AgNO_3 \rightarrow Mg(NO_3)_2 + Ag$ $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$	**Activity-11:** Take a few zinc granules in a test tube. Add 5ml of dilute hydrochloric acid to zinc granules. What happened? Put a burning match stick near the mouth of the test tube. What do you observe? **Observation :** A gas released with bubools and it can puts off the match stick. The test tube become hot at bottom to touch. Zn displaces the Hydrogen. And $ZnCl_2$ is formed.	Test tube Zinc granule Dil.HCl Match box
	Activity-12: Take two iron nails. Take two test tubes. Take 2gm of $CuSO_4$ in test tubes and add 10ml of water. Put one iron nail in one test tube. Keep it for 15 min. Compare the nails and solutions. **Observation:** Iron nail has a copper coating on it. $CuSO_4$ solution changes from blue colour to pale green colour. Fe displaces Cu and $FeSO_4$ is formed.	$CuSO_4$ Iron nails-2 Test tubes-2 Water
	Activity-13: Take Silver nitrate 1gm into a beaker. Add 10ml of water. Put a Zinc granule in the beaker. What happens? **Observation:** Black Zinc nitrate is formed and white silver powder is separated. Zn displaces Ag and forms $Zn(NO_3)_2$	Beaker $AgNO_3$ Water Zinc granule
Chemical double displacement : If two reactants interchange their constituents chemically and form two products then it is called chemical double displacement reaction. AB + CD → AD + CB **Examples:** $Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$ $BaCl_2 + Na_2SO_4 \rightarrow BaSO_4 + 2NaCl$ $BaCl_2 + ZnSO_4 \rightarrow BaSO_4 + ZnCl_2$ **Some more:** $BaCl_2 + CuSO_4 \rightarrow BaSO_4 + CuCl_2$ $NaOH + HCl \rightarrow NaCl + H_2O$ $NaCl + AgNO_3 \rightarrow NaNO_3 + AgCl$ $HCl + AgNO_3 \rightarrow HNO_3 + AgCl$ $BaCl_2 + FeSO_4 \rightarrow BaSO_4 + FeCl_2$	**Activity-14:** Take 2gm of Lead nitrate in one beaker and 2gm of Potassium Iodide in another beaker. Add water into both. Observe the colour. Mix the two solutions. What happens? **Observation:** The first two solutions are colourless solutions. By adding Yellow coloured precipitate is formed. Lead nitrate and Potassium Iodide interchange their elements and forms Lead iodide (Yellow) and Potassium nitrate aqueous solution.	Water Two beakers Lead nitrate KI
	Activity-15: Take 2gm of $BaCl_2$ in one beaker and 2gm of Na_2SO_4 in another beaker. Add water into both. Observe the colour. Mix the two solutions. What happens? **Observation:** The first two solutions are colourless solutions. By adding white coloured precipitate is formed. $BaCl_2$and Na_2SO_4 interchange their elements and forms $BaSO_4$ (white) and NaCl aqueous solution.	Water Two beakers $BaCl_2$ Na_2SO_4
	Activity-16: Take 2gm of $BaCl_2$ in one beaker and 2gm of $ZnSO_4$ in another beaker. Add water into both. Observe the colour. Mix the two solutions. Observe **Observation:** White coloured precipitate is formed.	Water Two beakers $BaCl_2$ $ZnSO_4$

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