

## CHAPTER: 02 – CHEMICAL REACTIONS AND EQUATIONS

## Chemical combination - Chemical decomposition

Content Analysis	Class Room Environment	Teaching Learning Material
<p><b>Types of chemical reactions:</b> Chemical reactions are 4 types.</p> <ul style="list-style-type: none"> <li>*Chemical combination</li> <li>*Chemical decomposition</li> <li>*Chemical displacement</li> <li>*Chemical double displacement</li> </ul>	<p><b>Conversation :</b> About types of chemical reactions with general examples.</p>	Chart
<p><b>Chemical combination:</b> A reaction which a single product is formed from two or more reactants.  <math>A + B \rightarrow AB</math>            Two or more substances combines together to form one new substance.            Example:  <math>2Mg(s) + O_2(g) \rightarrow 2MgO(s)</math> Endothermic  <math>MgO(s) + H_2O(l) \rightarrow Mg(OH)_2(aq)</math> Exothermic  <math>CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)</math> Exothermic  <math>NH_3(aq) + HCl(aq) \rightarrow NH_4Cl(\uparrow)</math>  <math>C(s) + O_2(g) \rightarrow CO_2</math> Endothermic  <math>S(s) + O_2(g) \rightarrow SO_2(g)</math> Endothermic</p>	<p><b>Activity-4:</b> Take a piece of Magnesium ribbon. Hold it with a pair of tongs. Burn it with a spirit lamp. What happens?  <b>Observation:</b> Magnesium ribbon gives a luminous flame and produce a white coloured ash. This is Magnesium oxide.</p>	Spirit lamp Magnesium Tangs Beaker
<p><b>Some more:</b>  <math>Ca(OH)_2 + CO_2 \rightarrow CaCO_3</math></p>	<p><b>Activity-5:</b> Collect Magnesium oxide ash into a beaker. Add 10 ml of water and stir it. Test it with red litmus. What happens?  <b>Observation:</b> Magnesium oxide and water forms Magnesium hydroxide. As it converts red litmus into blue, we decide it is a base.</p>	Beaker MgO Water Red litmus
	<p><b>Activity-6:</b> Take calcium oxide into a beaker. Add 20 ml of water and stir it. Test it with red litmus. What happens?  <b>Observation:</b> An exothermic reaction. The beaker is hot to touch. Calcium oxide and water forms Calcium hydroxide. As it converts red litmus into blue, we decide it is a base.</p>	Beaker CaO Water Red litmus
	<p><b>Activity-7:</b> Take a few drops of <math>NH_3</math> into a beaker. Add few drops of HCl into it. What happens?  <b>Observation:</b> <math>NH_3</math> and HCl combines and forms <math>NH_4Cl</math> ( a white coloured gas)</p>	$NH_3$ HCl Beaker
<p><b>Chemical Decomposition:</b> One substance decomposes into two or more substances.            When a decomposition reaction is carried out by heating , it called thermal decomposition.  <math>AB \rightarrow A + B</math>  <b>Examples:</b>  <math>CaCO_3(s) \rightarrow CaO(s) + CO_2(\uparrow)</math> It converts slaked lime into white.  <math>Ca(OH)_2 + CO_2 \rightarrow CaCO_3</math> (Chemical combination)  <math>Pb(NO_3)_2(s) \rightarrow PbO(s) + NO_2( ) + O_2(\uparrow)</math>            White Yellow brown colourless  <math>2AgBr(s) \rightarrow 2Ag(s) + Br_2( )</math>            Light yellow gray  <math>2AgCl(s) \rightarrow 2Ag(s) + Cl_2(\uparrow)</math>  <math>2H_2O(l) \rightarrow 2H_2(g) + O_2(g)</math>            The reactions needs sunlight are called photo chemical reactions.</p>	<p><b>Activity-8:</b> Take Calcium carbonate in a test tube. Heat the test tube with spirit lamp. What do you observe? Put a burning match stick near the open edge of the test tube. Observe?  <b>Observation:</b> Burning match stick puts off . Because <math>CO_2</math> is evolved. Calcium carbonate decomposes and formed calcium oxide and carbon dioxide.</p>	$CaCO_3$ Test tube Spirit lamp Match stick
	<p><b>Activity-9:</b> Take Lead Nitrate in a test tube. Heat the test tube with spirit lamp. What do you observe? Put a fire stick near the open edge of the test tube. Observe?  <b>Observation:</b> Fire stick burns with glow. Brown colour gas evolved and stick on the side walls of test tube. Lead nitrate decomposes into Lead oxide , Nitrogen dioxide and oxygen.</p>	Lead Nitrate Test tube Spirit lamp Broom stick
	<p><b>Activity-10:</b> Take Silver bromide in a watch glass. Place the watch glass in sun light. Observe what happens?  <b>Observation:</b> Yellow colour silver bromide decomposes into silver and bromine. Silver is in gray.</p>	Silver bromide Watch glass

**NAGA MURTHY- 9441786635**  
**Contact at : [nagamurthysir@gmail.com](mailto:nagamurthysir@gmail.com)**  
**Visit at : [nagamurthy.weebly.com](http://nagamurthy.weebly.com)**