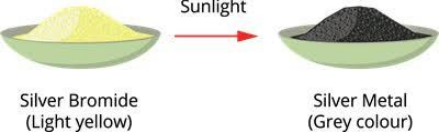
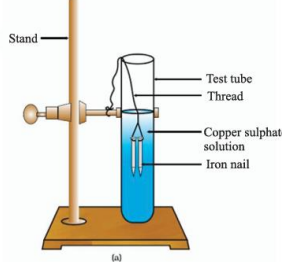
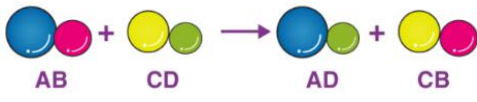
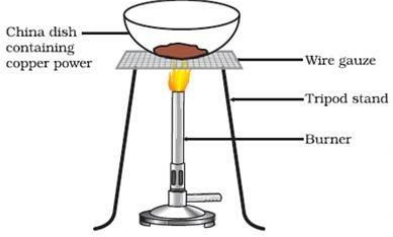


<p>combine to form a single product.</p> <p>e.g.</p> <ul style="list-style-type: none"> (i) Burning of coal $\text{C(s)} + \text{O}_2\text{(g)} \rightarrow \text{CO}_2\text{(g)}$ (ii) Formation of water $2\text{H}_2\text{(g)} + \text{O}_2\text{(g)} \rightarrow 2\text{H}_2\text{O(l)}$ (iii) $\text{CaO(s)} + \text{H}_2\text{O(l)} \rightarrow \text{Ca(OH)}_2\text{(aq)}$ Quick lime Slaked lime 	<p>Combination reaction</p> <p>$\text{A} + \text{B} \rightarrow \text{AB}$</p> <p>Hydrogen + Oxygen = Water</p> $2\text{H}_2 + \text{O}_2 = 2\text{H}_2\text{O}$
<ul style="list-style-type: none"> Thermal decomposition : When decomposition is carried out by heating. <p>e.g.,</p> <ul style="list-style-type: none"> (i) $2\text{FeSO}_4\text{(s)} \xrightarrow{\text{Heat}} \text{Fe}_2\text{O}_3\text{(s)} + \text{SO}_2\text{(g)} + \text{SO}_3\text{(g)}$ (Ferrous sulphate) (Ferric oxide) Green colour Red-brown colour (ii) $\text{CaCO}_3\text{(s)} \xrightarrow{\text{Heat}} \text{CaO(s)} + \text{CO}_2\text{(g)}$ (Lime stone) (Quick lime) (iii) $2\text{Pb(NO}_3)_2\text{(s)} \xrightarrow{\text{Heat}} 2\text{PbO(s)} + 4\text{NO}_2\text{(g)} + \text{O}_2\text{(g)}$ (lead nitrate) (lead oxide) (Nitrogen dioxide) 	<p>Decomposition reaction</p> <p>$\text{AB} \rightarrow \text{A} + \text{B}$</p> <p>Heating of lead nitrate and emission of nitrogen dioxide</p> <p>SO₂ and SO₃ gases</p> <p>Test tube holder</p> <p>Boiling tube</p> <p>FeSO₄</p> <p>Decomposition reaction</p>
<ul style="list-style-type: none"> Electrolytic Decomposition : When decomposition is carried out by passing electricity. <p>e.g., $2\text{H}_2\text{O(l)} \xrightarrow[\text{current}]{\text{Electric}} 2\text{H}_2\text{(g)} + \text{O}_2\text{(g)}$</p> <p>Photolytic Decomposition : When decomposition is carried out in presence of sunlight.</p>	<p>Plastic mug</p> <p>Oxygen</p> <p>Hydrogen</p> <p>Water</p> <p>Water</p> <p>Graphite rod</p> <p>Rubber stopper</p> <p>Anode</p> <p>Cathode</p> <p>Switch</p> <p>6 V Battery</p>

<p>e.g., $2\text{AgCl (s)} \xrightarrow{\text{Sunlight}} 2\text{Ag (s)} + \text{Cl}_2 \text{ (g)}$</p> <p>$2\text{AgBr (s)} \xrightarrow{\text{Sunlight}} 2\text{Ag (s)} + \text{Br}_2 \text{ (g)}$</p> <p>Silver chloride turns grey on exposure to sunlight</p> <p>* Above reaction is used in black & white photography.</p>	 <p style="text-align: center;">Silver Bromide (Light yellow) Silver Metal (Grey colour)</p>
<p>DISPLACEMENT REACTION : The chemical reaction in which more reactive element displaces less reactive element from its salt solution.</p> <p>(a) $\text{Fe (s)} + \text{CuSO}_4 \text{ (aq)} \rightarrow \text{FeSO}_4 \text{ (aq)} + \text{Cu (s)}$</p> <p>The iron nail becomes brownish in colour by deposition of Cu and blue colour of CuSO_4 changes to dirty green colour due to formation of FeSO_4.</p> <p>(b) $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$</p> <p>Zn is more reactive than copper.</p> <p>DOUBLE DISPLACEMENT REACTION : A reaction in which new compounds are formed by mutual exchange of ions between two compounds.</p> <p>(i) $\text{Na}_2\text{SO}_4 \text{ (aq)} + \text{BaCl}_2 \text{ (aq)} \rightarrow \text{BaSO}_4 \text{ (s)} + 2\text{NaCl (aq)}$</p> <p style="text-align: center;">(Sodium sulphate) (Barium chloride) (Barium sulphate) (Sodium chloride)</p> <p>white precipitate of BaSO_4 is formed, so it is also called precipitation reaction.</p> <p>(ii) $2\text{KI} + \text{Pb(NO}_3)_2 \rightarrow \text{PbI}_2 + 2\text{KNO}_3$</p> <p style="text-align: center;">Potassium iodide Lead nitrate Lead iodide (Yellow ppt) Potassium nitrate</p> <p>(iii) $2\text{KBr} + \text{BaI}_2 \rightarrow 2\text{KI} + \text{BaBr}_2$</p> <p style="text-align: center;">Potassium bromide Barium iodide Potassium iodide Barium bromide</p>	 <p style="text-align: center;">(a)</p>  <p style="text-align: center;">Double Displacement Reactions</p> <p style="text-align: right;">© Byjus.com</p>
<p>OXIDATION AND REDUCTION :</p> <p>Oxidation : (i) The addition of oxygen to reactant.</p> <p>(ii) The removal of hydrogen from a reactant.</p> <p style="text-align: center;">$\text{C} + \text{O}_2 \rightarrow \text{CO}_2$</p> <p>$2\text{Cu} + \text{O}_2 \xrightarrow{\text{Heat}} 2\text{CuO}$</p> <p>$\text{CuO} + \text{H}_2 \xrightarrow{\text{Heat}} \text{Cu} + \text{H}_2\text{O}$</p> <p>Reduction : (i) The addition of hydrogen to reactant.</p> <p>(ii) The removal of oxygen from a reactant.</p> <div style="text-align: center;"> <p>oxidation</p> <p>$\text{CuO} + \text{H}_2 \xrightarrow{\text{Heat}} \text{Cu} + \text{H}_2\text{O}$</p> <p>Reduction</p> </div> <p>In this reaction CuO is reduced to Cu and H_2 is oxidized to H_2O. So, oxidation and reduction taking place together is redox reaction.</p>	 <p style="text-align: center;">OXIDIZING AND REDUCING AGENTS</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>Reducing agent</p> <p>A Loses electrons</p> <p>$\text{A} \rightarrow \text{A}^+ + \text{e}^-$</p> <p>Oxidized</p> </div> <div style="text-align: center;"> <p>Oxidizing agent</p> <p>B Gain electrons</p> <p>$\text{B} + \text{e}^- \rightarrow \text{B}^-$</p> <p>Reduced</p> </div> </div>
<p>Rancidity: Oxidation of oils or fats in a flood, resulting into a bad smell and taste.</p> <p>Preventions: ✓ Adding anti-oxidants. ✓ Replacing air by Nitrogen ✓ Refrigeration of food stuff</p> <p>✓ Storing the food in air-tight containers (Vacuum Packing)</p>	
<p>SOME IMPORTANT REACTION</p> <p>$2\text{FeSO}_4 \text{ (Green crystal)} \xrightarrow{\text{HEAT}} \text{Fe}_2\text{O}_3 \text{ (s)} + \text{SO}_2 \text{ (g)} + \text{SO}_3 \text{ (g)}$</p> <p style="text-align: center;">Ferric Sulphate -Green Ferric Oxide -Red-Brown (Rotten Egg Smell)</p> <p>$\text{CaCO}_3 \text{ (s)} \xrightarrow{\text{HEAT}} \text{CaO (s)} + \text{CO}_2 \text{ (g)}$</p> <p style="text-align: center;">(Limestone) (Quicklime) + (Carbon dioxide)</p> <p>$2\text{Pb(NO}_3)_2 \text{ (s)} \xrightarrow{\text{HEAT}} 2\text{PbO (s)} + 4\text{NO}_2 \text{ (brown fumes)} + \text{O}_2 \text{ (g)}$</p> <p style="text-align: center;">(Lead nitrate) (Lead oxide) + (Nitrogen dioxide) + (Oxygen)</p> <p>$\text{BaCl}_2 \text{ (aq)} + \text{Na}_2\text{SO}_4 \text{ (aq)} \rightarrow \text{BaSO}_4 \text{ (s)} + 2\text{NaCl (aq)}$</p> <p>$\text{Pb(NO}_3)_2 + 2\text{KI (aq)} \rightarrow \text{PbI}_2 \text{ (↓)} + 2\text{KNO}_3 \text{ (aq)}$</p> <p style="text-align: right;">PRECIPITATION</p>	