

CLASS-10
PHYSICAL SCIENCE
PERIOD PLANS

CHAPTER: 02 – CHEMICAL REACTIONS AND EQUATIONS

PERIOD PLAN-06 : Oxidation – Reduction
Oxidation agent – reduction agent

Content Analysis	Class Room Environment	Teaching Learning Material
<p><u>Oxidation :</u> Addition of oxygen Removal of hydrogen Loss of electrons $X + O_2 \rightarrow \dots\dots$ $X - H_2 \rightarrow \dots\dots$ $X \rightarrow X^+ + e^-$</p> <p><u>Reduction :</u> Addition of hydrogen Removal of oxygen Gain of electrons $X + H_2 \rightarrow \dots\dots$ $X - O_2 \rightarrow \dots\dots$ $X + e^- \rightarrow X^-$</p> <p><u>Oxidation states:</u> H^+, F^-, Na^+, Mg^{+2}</p>	<p><u>Conversation & Explanation:</u> About the process of oxidation and reduction. Also explained the atomic numbers of first 20 elements and their oxidation states.</p>	Chart
<p><u>Oxidation and Reduction :</u></p> $\begin{array}{ccccccc} Cu & + & O_2 & \rightarrow & 2CuO \\ \text{Oxidised} & & \text{Reduced} & & \\ \text{Reducing agent} & & \text{Oxidising agent} & & \end{array}$ <p>The substance which is oxidized in a chemical reaction is called reducing agent. The substance which is Reduced in a chemical reaction is called Oxidising agent.</p>	<p><u>Activity-17:</u> Take 1gm of copper powder in a china dish. Heat it with burner. What happens? <u>Observation:</u> Brown copper powder turns into black copper oxide ash. Means that Cu is oxidized. Oxygen is called as oxidizing agent.</p>	Cu- powder China dish Burner Tripod
<p><u>Oxidation and Reduction :</u></p> $\begin{array}{ccccccc} CuO & + & H_2 & \rightarrow & Cu & + & H_2 \\ \text{Reduced} & & \text{Oxidised} & & & & \\ \text{Oxidising agent} & & \text{Reducing agent} & & & & \end{array}$	<p><u>Activity-18:</u> If Hydrogen gas is sent through Copper oxide taken in a glass tube and heat it., What happens? <u>Observation:</u> Copper oxide reduced and copper is formed.</p>	Glass tube CopperOxide Hydrogen Burner
<p><u>Oxidation and Reduction :</u></p> $\begin{array}{ccccccc} Zn + 2HCl & \rightarrow & ZnCl_2 & + & H_2 \\ 0 & +1 & +2 & & 0 \end{array}$ <p>Zn is oxidized and it is reducing agent HCl is reduced and it is oxidizing agent</p> <p>Some more: $2Fe_2O_3 + 3C \rightarrow 4Fe + 3CO_2$ $2PbO + C \rightarrow 2Pb + CO_2$ Generally oxidation and reduction occurs in the same reaction. So these are called Oxidation-Reduction reactions (or) Redox reactions.</p>	<p><u>Conversation & Explanation:</u> About the process of oxidation and reduction. And electrons in elements.</p>	Chart