



Complete
CHEMISTRY

IIT-JEE · NEET · CBSE eBOOKS

CLASS 11 & 12th



Learning Inquiry
8929 803 804

CLASS 11th

Redox Reactions

misostudy



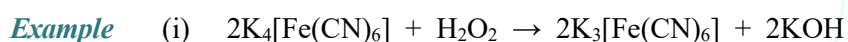
01. Introduction

There are some more reactions in which oxidation and reduction occur simultaneously. Such reactions are called redox reactions.

02. Classical Idea of Redox Reactions – Oxidation and Reduction Reactions

Oxidation involves

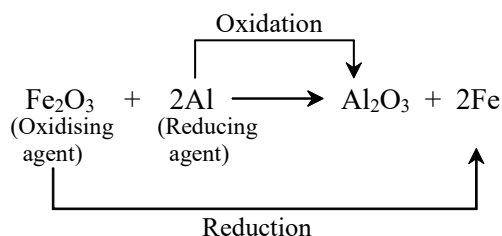
- (i) Addition of oxygen or
- (ii) Addition of electronegative element or
- (iii) Removal of hydrogen or
- (iv) Removal of electropositive element



Reducing agent or Reductant

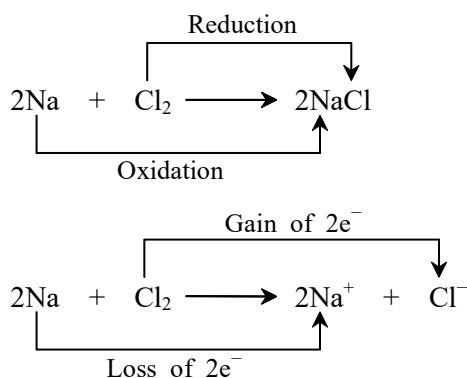
Whenever any substance is oxidised, another substance is always reduced at the same time. In other words, the oxidation-reduction reactions always occur simultaneously.


Example



04. Redox Reactions in Terms of Electronic Concept

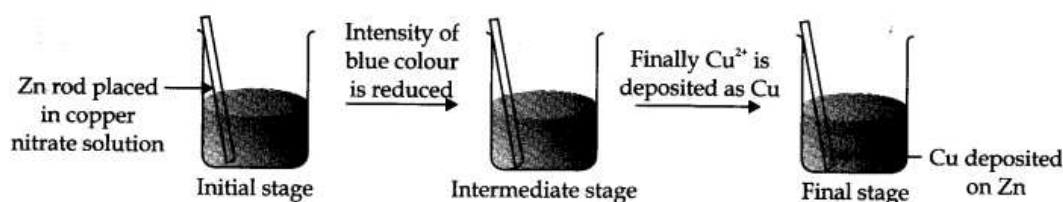
Let us consider a redox reaction :



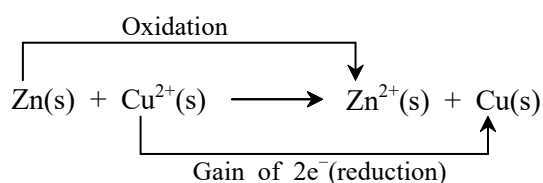
NOTE  In short
 Oxidation/Reducing agent – loss of electron
 Reduction/oxidising agent – gain of electron

05. Competitive Electron Transfer Reactions

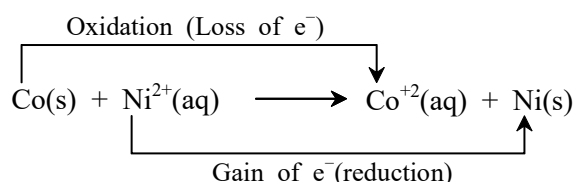
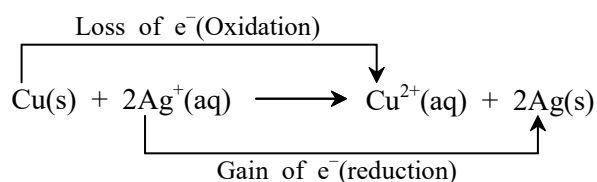
Place a strip of metallic zinc (Zn) in an aqueous solution of copper nitrate $\text{Cu}(\text{NO}_3)_2$ for about one hour,



Now, above reaction may be written as :



Let us now extend the electron transfer reaction to copper metal and silver nitrate (AgNO_3) solution.



In this case neither the reactants, Co(s) and $\text{Ni}^{2+}(\text{aq})$ nor the products, $\text{Co}^{2+}(\text{aq})$ and Ni(s) are greatly favoured. Therefore, the electron-releasing tendency of these three metals is in the order. $\text{Zn} > \text{Cu} > \text{Ag}$

06. Oxidation Number

The oxidation number is defined as the charge which appears on an atom of the element when all other atoms attached to it are removed in the form of their ions. Oxidation number is also called oxidation state.