

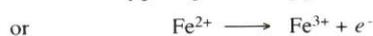
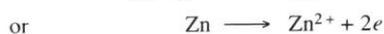
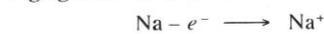


(CHEMISTRY)

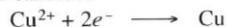
Oxidation and Reduction

1. Introduction

- **Oxidation** is a chemical change during which an atom or an ion loses one or more electrons. The atom or ion which loses the electrons is said to be **oxidised**. The species capable of losing electron is known as **reducing agent** or **reductant**.



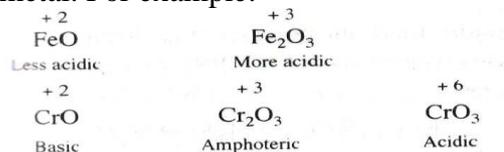
- **Reduction** is a chemical change during which an atom or ion gains one or more electrons. The atom or ion which gains electrons is said to be **reduced**. The species capable of accepting electrons acts as **oxidising agent** or **oxidant**.



2. Points of Remember

- In potassium superoxide the oxidation number of oxygen atom is $-\frac{1}{2}$ and in potassium ozonide (KO_3) it is $-\frac{1}{3}$. Super oxide ion (O_2^-) is coloured (orange red) and paramagnetic. Similarly ozonide ion (O_3^-) is also coloured and paramagnetic due to the presence of unpaired electrons in them.
- In metal carbonyls, the oxidation number of metal atom is zero. For example in $\text{Ni}(\text{CO})_4$, $\text{Fe}(\text{CO})_5$, $\text{Cr}(\text{CO})_6$, $\text{Mn}_2(\text{CO})_{10}$, the oxidation number of Ni, Fe, Cr and Mn is zero.
- $\text{H}_2\text{S}_2\text{O}_8$ is known as peroxydisulphuric acid (Marshall's acid) and H_2SO_5 is peroxomonosulphuric acid (Caro's acid). In the presence of peroxy linkage in the both.

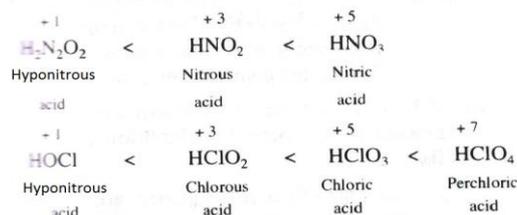
- Acidic nature of oxides of a metal increases with the increase in oxidation number of metal. For example:



- The acidic nature of oxides of a non-metal also increases with increase in oxidation number of non-metal. For exam:



- Acid strength of oxyacids of a non-metal increases with the increase in oxidation number of non-metal. For example:



- Note:** The thermal stability of oxyacids of an element also increases with increase in oxidation number of element.

- The oxidation number of Cr in CrO_5 is +6 because four of oxygen atoms are involved in peroxide linkage.