

CHAPTER 02

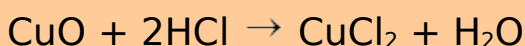
Acids, Bases and Salts

Reactions of acids with metallic oxides:

Most of the metallic oxides react with acids to form salt and water.

**Ex.**

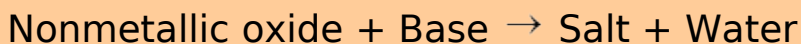
Black coloured powder of copper oxide when added to hydrochloric acid, it gets dissolved and turn bluish due to formation of copper chloride.



This reaction is similar to the reaction between acid and base. Because of this similarity, most of the metallic oxides are considered as basic.

Reaction of nonmetallic oxides with bases:

Nonmetallic oxides react with bases to form salt and water. We can describe the reaction as,



Ex.



This reaction is similar to that of acid base reaction. So nonmetallic oxides are considered as acidic.

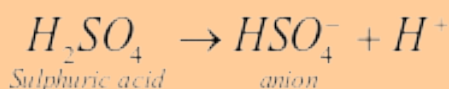
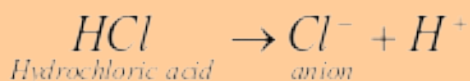
- Hence, the above reactions indicates metallic oxides are basic while nonmetallic oxides are acidic.
- From above we can observe, most of the acids (or) bases are showing similar reactions.

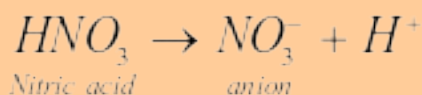
What is common in all acids and bases?

All acids in contains cations, which are called hydrogen ions (H^+).

When an acid is dissolved into water, it undergoes dissociation and produce the common H^+ ions and anions may be different.

Ex.





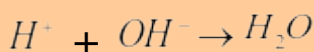
When a base is dissolved into water, it dissociates to produce ions. The common is OH^- ions, which are called as hydroxyl ions and cations may be different.

As the solutions of acids possess cations as well as anions, the acidic solutions are electrically conducting similarly; solutions of bases also produce cations and common anions OH^- ions. So solutions of bases also electrically conducting.

- The hydrogen ions (H^+ ions), which are produced in acids cannot exist alone. So, associate with water and exist as hydronium ions (H_3O^+ ions).



- The reaction between an acid and a base can be described as, reaction between H^+ and OH^- ions to produce water.



Ex.

The reduction of acids and bases, it means addition of water to acids and bases is highly exothermic. Due to ionization process, energy is

released in large excess. Hence, care must be taken when acids and bases are diluted.

We must not add water directly into acid. Add acid to the large excess and calculated amount of water slowly, stir, and drop by drop.

