

10. TYPES OF CHEMICAL REACTIONS

Learning Objectives

After completing this lesson learners will be able to

- ❑ Infer different types of chemical reaction.
- ❑ Acquire knowledge about combination reaction and skill to perform a combination reaction using quick lime and water.
- ❑ Identify and differentiate between reversible and irreversible reactions.
- ❑ Explain the reversible reaction occurring at the equilibrium state.
- ❑ List and explain characteristics of equilibrium state.
- ❑ Define rate of reaction.
- ❑ Discuss the dependence of rate of reactions on concentration, temperature and catalyst.
- ❑ Define pH.
- ❑ Correlate the concentration of hydrogen ions and pH with neutral, acidic and basic nature of aqueous solutions.
- ❑ Recognize the importance of pH in everyday life.
- ❑ Explain the term ionic product of water.

Important Notes and Key Points

- ❖ A balanced chemical equation is the simplified representation of a chemical reaction which describes the chemical composition, physical state of the reactants and the products, and the reaction conditions.

- ❖ The phases or the physical state of the substances in a chemical reaction are denoted in short form within a bracket, as the subscript of the formula, of the respective substances.
- ❖ Solution of slaked lime is used for white washing walls. Calcium hydroxide reacts slowly with the carbon dioxide in air to form a thin layer of calcium carbonate on the walls. Calcium carbonate is formed after two to three days of white washing and gives a shiny finish to the walls. It is interesting to note that the **chemical formula for marble is also** CaCO_3
- ❖ If hydrogen peroxide is poured on a wound, it decomposes into water and oxygen. The gaseous oxygen bubbles away as it is formed and thus prevent the formation of H_2O_2 .
- ❖ Food kept at room temperature spoils faster than that kept in the refrigerator. In the refrigerator, the temperature is lower than the room temperature and hence the reaction rate is less.
- ❖ Aerated soft drinks contain dissolved carbon dioxide in a pop bottle (Soda). When the bottle is sealed, the dissolved carbon dioxide (in the form of carbonic acid) and gaseous CO_2 are in equilibrium with each other. When you open the bottle, the gaseous CO_2 can escape. So, the dissolved CO_2 begins to undissolve back to the gas phase trying to replace the gas that was lost, when you opened the bottle. That's why if you leave it open long enough, it will go 'flat'. All the CO_2 will be gone, blown away in the air.