

# ICSE Class 10 Chemistry

## Chapter 1: Periodic Table, Periodic Properties and Variations of Properties

### 1. Introduction

The Periodic Table is a systematic arrangement of elements in increasing order of their atomic numbers. Modern Periodic Law states: *"The physical and chemical properties of elements are periodic functions of their atomic numbers."*

### 2. Modern Periodic Table

Elements are arranged in horizontal rows called **Periods** and vertical columns called **Groups**. There are 7 periods and 18 groups in the modern periodic table.

### 3. Periods

- Period number indicates the number of shells present in the atom.
- Atomic size decreases from left to right in a period.
- Metallic character decreases across a period.

### 4. Groups

- Group number indicates the number of valence electrons.
- Elements in the same group show similar chemical properties.
- Atomic size increases down a group.

### 5. Periodic Properties

**(a) Atomic Size:** Distance between nucleus and outermost shell.

Trend: Decreases across a period, increases down a group.

**(b) Metallic Character:** Ability to lose electrons.

Trend: Decreases across a period, increases down a group.

**(c) Ionization Energy:** Energy required to remove an electron from an isolated atom.

Trend: Increases across a period, decreases down a group.

**(d) Electron Affinity:** Energy released when an atom gains an electron.

Trend: Increases across a period.

**(e) Valency:** Combining capacity of an element.

- In groups: Valency remains same.
- In periods: Increases from 1 to 4, then decreases.

### 6. Special Groups

**Noble Gases (Group 18):** Completely filled valence shell, chemically inert.

**Alkali Metals (Group 1):** Highly reactive metals.

**Halogens (Group 17):** Highly reactive non-metals.

### 7. Exam-Oriented Key Points

- Atomic number is the basis of modern periodic table.
- Similar properties are due to same valence electrons.
- Reactivity of metals increases down the group.
- Noble gases have zero valency.

### 8. Common ICSE Definitions

- **Period:** Horizontal row in periodic table.
- **Group:** Vertical column in periodic table.
- **Ionization Energy:** Energy needed to remove outermost electron.