Chapter 4

Atomic Structure

LESSON PLAN

SPECIFIC OBJECTIVES

The students will learn about

- structure of an atom
- Rutherford's model of an atom
- Bohr's model of an atom
- molecules; molecule of an element
- atomicity; classification of molecules based on it
- molecular formula of an element and molecule of a compound
- radicals and their kinds
- atomic number, mass number and calculation of number of neutrons
- arrangement of electrons in different orbits
- valence shell and valence electrons; isotopes
- chemical bonding; valency and classification of elements

Teaching Aids

Pictures/charts/models/animation on structure of an atom; Rutherford and Bohr's model of an atom; molecules and molecule of an element; atomicity and classification of molecules based on it; molecular formula of an element and molecule of a compound; radicals and their kinds; atomic and mass numbers along with calculation of number of neutrons; arrangement of electrons in different orbits; valence shell and valence electrons; chemical bonding; valency; classification of elements

Teaching Strategy

- Teacher will start the chapter by defining an atom and will explain the structure of atom and discuss the three major particles of atom.
- Teacher will explain Rutherford's and Bohr's model of an atom and will discuss energy shells around the nucleus in an atom.

- Now, teacher will ask the students to solve 'Check Point 1'.
- Teacher will discuss molecules and molecule of an element.
- Teacher will define atomicity and will discuss classification of molecules based on it.
- Teacher will define molecular formula of an element and molecule of a compound.
- Teacher will define radicals and their kinds.
- Teacher will define atomic number and mass number, and will explain calculation of number of neutrons.
- Teacher will explain arrangement of electrons in different orbits and will also discuss valence shell and valence electrons.
- Teacher will define isotopes and explain the isotopes of hydrogen.
- Now, teacher will ask the students to solve 'Check Point 2'.
- Teacher will define chemical bonding; and explain formation of ionic and covalent bonds between atoms of elements.
- Now, teacher will define valency and valency of an element, its types and calculation.
- Teacher will discuss classification of elements and characteristics of modern periodic table.
- Now, teacher will ask the students to solve 'Check Point 3'.
- At last, teacher will sum up the lesson by going through the points given under the head 'Wrapping It Up'.
- Teacher will finally help students to answer the questions given under the head 'Test Yourself'.

Boost Up

- Teacher can help students to perform the activities given in chapter.
- Teacher can make students revise new terms given under the head 'Know These Terms'.
- Teacher can encourage students to learn the facts given under the head 'Something More'.
- Teacher can show animations related to the topics taught, if possible.
- Teacher should ask the students to learn names of elements, their symbols, mass number and atomic number, and number of protons, electrons and neutrons.
- Teacher should ask the students to learn symbols, atomic numbers, electronic configurations and their place in the periodic table of first twenty elements.
- Students should be encouraged to find out the valence electrons of elements based on their electronic configuration.

Expected Learning Outcomes

The students understand and know:

- three particles of an atom.
- nucleus; energy shells.
- molecules and a molecule of an element.
- atomicity, and atomicity of elements.

- molecular formula of an element and molecule of a compound.
- radicals and their kinds.
- concept of atomic number and mass number and how to calculate the number of neutrons.
- arrangement of electrons in different orbits.
- valence shell and valence electrons.
- isotopes and isotopes of hydrogen.
- concept of chemical bonding.
- formation of ionic and covalent bonds.
- valency, its kinds and calculation of valency.
- classification of elements.
- characteristics of modern periodic table.

Evaluative Questions

The teacher should ask the following questions to evaluate the students.

1. Mention the charge present on a proton.
2. Define atomic number. Write the number of protons present in magnesium (atomic number 12).
3. Find the mass number and number of neutrons in $^{23}_{11}Na$.
4. Calculate the maximum number of electrons in M-shell.
5. Write the electronic configuration of nitrogen (7).
6. What is the difference between anion and cation?
7. Why is sodium called monovalent cation?
8. What are seven horizontal rows in modern periodic table called?