



**Single Major**  
**Multidisciplinary Courses (w.e.f. AY 2023-24)**  
**SEMESTER-I**  
**PRINCIPLES OF CHEMICAL SCIENCES**

Credits: 2

2 hrs/week

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- I. Course Outcomes:** At the end of the course the student will be able to-
1. Understand the structure of atom.
  2. Identify the isotopes and isobars.
  3. Define acids and bases and predict the nature of salts.
  4. Explain ionic and covalent bonding.
  5. Describe the importance of Chemistry in daily life.

**II. Syllabus:**

**Unit I: Matter, Atoms, Molecules & Nuclear Chemistry**

Classification of matter, Dalton atomic theory, Thomson Model, Rutherford Model, Bohr's model of atom, quantum numbers, electronic configuration, Aufbau Principle, Pauli's exclusion principle, Hund's rule. Isotopes-Isobars, Nuclear decay, Band of Stability, Nuclear Reaction types, Nuclear Applications.

**Unit II: Elements, Classification and Chemical Bonding**

Classification of elements, Periodic Classification of elements based on electronic configuration, classification into types, classification into metals, non-metals and metalloids, periodic properties-atomic radii, ionisation enthalpy, electronegativity, Octet rule, ionic bond properties of Ionic compounds-covalent bond, properties of covalent molecule.

**Unit III: Acids, Bases, Salts, Chemistry in Daily life**

Definition, types and properties of Acids, Bases, Salts, strength of acids and bases, pH, Importance of Chemistry in daily life. (food, drugs, textiles, preservatives, soaps and detergents.)

**III. List of Reference Books:**

1. Inorganic Chemistry by Puri and Sharma
2. Basic concepts of Inorganic Chemistry by D.N.Singh

**IV. Co-curricular activities:**

Projects on Importance of Chemistry in food, drugs, textiles, preservatives, soaps and detergents.



**MODEL QUESTION PAPER**  
**Semester – I**  
**Multidisciplinary Course (w.e.f. AY 2023-24)**  
**Principles of Chemical Sciences**

**Time: 2 Hours**

**Maximum: 50 Marks**

SECTION – A

Answer any 4 questions. Each question carries 5 marks (4 X 5M = 20M)

1. What is matter. Write its classification.
2. Write about Thomson model for atom.
3. Write any five applications of nuclear reactions.
4. What are elements. Write their classification.
5. Write the properties of covalent molecules.
6. Write any five differences between ionic molecules and covalent molecules.
7. Define acids, bases and give examples.
8. Write the role of chemistry in action of soaps.

SECTION – B

Answer all the questions. Each question carries 10 marks (3 X 10 = 30M)

9. A) Write the postulates and importance of Bohr's model of atom.

(OR)

B) Write about Aufbau rule, Pauli's exclusion principle, Hund's rule and quantum numbers.

10. A) Write an essay on periodic classification of elements.

(OR)

B) Define and explain about atomic radii, ionization enthalpy and electronegativity.

11. A) Write about importance of chemistry in foods, drugs, preservatives and detergents.

(OR)

B) Write about (i) types and properties of acids and bases

(ii)  $P^H$  and strength of acids and bases