

# Chemistry

## Part I

*Textbook for Class XI*



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राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्  
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## FOREWORD

The National Curriculum Framework (NCF), 2005 recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and causes a gap between the school, home and community. The syllabi and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries between different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

The success of this effort depends on the steps that school principals and teachers will take to encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that, given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as receivers of a fixed body of knowledge.

These aims imply considerable change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required number of teaching days are actually devoted to teaching. The methods used for teaching and evaluation will also determine how effective this textbook proves for making children's life at school a happy experience, rather than a source of stress or boredom. Syllabus designers have tried to address the problem of curricular burden by restructuring and reorienting knowledge at different stages with greater consideration for child psychology and the time available for teaching. The textbook attempts to enhance this endeavour by giving higher priority and space to opportunities for contemplation and wondering, discussion in small groups, and activities requiring hands-on experience.

The National Council of Educational Research and Training (NCERT) appreciates the hard work done by the textbook development committee responsible for this book. We wish to thank the Chairperson of the advisory group in science and mathematics, Professor J.V. Narlikar and the Chief Advisor for this book, Professor B. L. Khandelwal for guiding the work of this committee. Several teachers contributed to the development of this textbook; we are grateful to their principals for making this possible. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. As an organisation committed to systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

New Delhi  
20 December 2005

*Director*  
National Council of Educational  
Research and Training



### Under My Scheme

Thus, I claim that I am not an enemy of Higher Education. But I am an enemy of Higher Education as it is given in this country. Under my scheme, there will be more and better libraries, more and better laboratories, more and better research institutes. Under it, we should have an army of chemists, engineers and other experts who will be real servants of the nation and answer the varied and growing requirements of people who are becoming increasingly conscious of their rights and wants. And all these experts will speak, not a foreign language, but the language of the people. The knowledge gained by them will be the common property of the people. There will be truly original work instead of mere imitation. And the cost will be evenly and justly distributed.

– *Harijan* : 9 July 1938

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## CONTENTS

	<b>Foreword</b>	<b>iii</b>
<b>Unit 1</b>	<b>Some Basic Concepts of Chemistry</b>	<b>1</b>
	1.1 Importance of Chemistry	4
	1.2 Nature of Matter	4
	1.3 Properties of Matter and their Measurement	6
	1.4 Uncertainty in Measurement	10
	1.5 Laws of Chemical Combinations	14
	1.6 Dalton's Atomic Theory	16
	1.7 Atomic and Molecular Masses	16
	1.8 Mole Concept and Molar Masses	18
	1.9 Percentage Composition	18
	1.10 Stoichiometry and Stoichiometric Calculations	20
<b>Unit 2</b>	<b>Structure of Atom</b>	<b>29</b>
	2.1 Discovery of Sub-atomic Particles	30
	2.2 Atomic Models	32
	2.3 Developments Leading to the Bohr's Model of Atom	37
	2.4 Bohr's Model for Hydrogen Atom	46
	2.5 Towards Quantum Mechanical Model of the Atom	49
	2.6 Quantum Mechanical Model of Atom	53
<b>Unit 3</b>	<b>Classification of Elements and Periodicity in Properties</b>	<b>74</b>
	3.1 Why do we Need to Classify Elements ?	74
	3.2 Genesis of Periodic Classification	75
	3.3 Modern Periodic Law and the present form of the Periodic Table	79
	3.4 Nomenclature of Elements with Atomic Numbers > 100	79
	3.5 Electronic Configurations of Elements and the Periodic Table	82
	3.6 Electronic Configurations and Types of Elements: s-, p-, d-, f- Blocks	83
	3.7 Periodic Trends in Properties of Elements	86



<b>Unit 4</b>	<b>Chemical Bonding and Molecular Structure</b>	<b>100</b>
4.1	Kössel-Lewis Approach to Chemical Bonding	101
4.2	Ionic or Electrovalent Bond	106
4.3	Bond Parameters	107
4.4	The Valence Shell Electron Pair Repulsion (VSEPR) Theory	112
4.5	Valence Bond Theory	117
4.6	Hybridisation	120
4.7	Molecular Orbital Theory	125
4.8	Bonding in Some Homonuclear Diatomic Molecules	129
4.9	Hydrogen Bonding	131
<b>Unit 5</b>	<b>States of Matter</b>	<b>136</b>
5.1	Intermolecular Forces	137
5.2	Thermal Energy	139
5.3	Intermolecular Forces vs Thermal Interactions	139
5.4	The Gaseous State	139
5.5	The Gas Laws	140
5.6	Ideal Gas Equation	145
5.7	Kinetic Energy and Molecular Speeds	147
5.8	Kinetic Molecular Theory of Gases	149
5.9	Behaviour of Real Gases: Deviation from Ideal Gas Behaviour	150
5.10	Liquefaction of Gases	152
5.11	Liquid State	154
<b>Unit 6</b>	<b>Thermodynamics</b>	<b>160</b>
6.1	Thermodynamic Terms	161
6.2	Applications	164
6.3	Measurement of $\Delta U$ and $\Delta H$ : Calorimetry	169
6.4	Enthalpy Change, $\Delta_r H$ of a Reaction – Reaction Enthalpy	171
6.5	Enthalpies for Different Types of Reactions	176
6.6	Spontaneity	181
6.7	Gibbs Energy Change and Equilibrium	186



<b>Unit 7</b>	<b>Equilibrium</b>	<b>192</b>
7.1	Equilibrium in Physical Processes	193
7.2	Equilibrium in Chemical Processes – Dynamic Equilibrium	196
7.3	Law of Chemical Equilibrium and Equilibrium Constant	198
7.4	Homogeneous Equilibria	201
7.5	Heterogeneous Equilibria	203
7.6	Applications of Equilibrium Constants	205
7.7	Relationship between Equilibrium Constant $K$ , Reaction Quotient $Q$ and Gibbs Energy $G$	208
7.8	Factors Affecting Equilibria	208
7.9	Ionic Equilibrium in Solution	212
7.10	Acids, Bases and Salts	213
7.11	Ionization of Acids and Bases	216
7.12	Buffer Solutions	226
7.13	Solubility Equilibria of Sparingly Soluble Salts	228
	<b>Appendices</b>	<b>239</b>
	<b>Answer to some Selected Questions</b>	<b>253</b>
	<b>Index</b>	<b>259</b>

## Our National Anthem

*Jana-gana-mana adhinayaka, jaya he  
Bharata-bhagya-vidhata.  
Punjab-Sindh-Gujarat-Maratha  
Dravida-Utkala-Banga  
Vindhya-Himachala-Yamuna-Ganga  
Uchchhala-jaladhi-taranga.  
Tava shubha name jage,  
Tava shubha asisa mage,  
Gahe tava jaya gatha.  
Jana-gana-mangala-dayaka jaya he  
Bharata-bhagya-vidhata.  
Jaya he, jaya he, jaya he,  
Jaya jaya jaya, jaya he!*

Our National Anthem, composed originally in Bangla by Rabindranath Tagore, was adopted in its Hindi version by the Constituent Assembly as the national anthem of India on 24 January 1950.