TABLE OF CONTENTS

Chapter No.		Title	Page No
1	Basi	01-19	
	1.1	Atomic Structure and Quantum Theory	
	1.2	Periodic Table and Periodicity	
	1.3	Chemical Bonding and Molecular Structure	
	1.4	States of Matter: Gases, Liquids, and Solids	
	1.5	Stoichiometry and Applications	
2	The	20-40	
	2.1	Laws of Thermodynamics	
	2.2	Enthalpy, Entropy, and Free Energy	
	2.3	Chemical Equilibria	
	2.4	Reaction Rates and Factors Affecting Kinetics	
	2.5	Catalysis	
3	Elec	41-62	
	3.1	Conductance and Electrolytic Cells	
	3.2	Electrochemical Cells and Nernst Equation	
	3.3	Corrosion and its Prevention	
	3.4	Batteries and Fuel Cells	
4	Wate	63-80	
	4.1	Water Quality Parameters	
	4.2	Water Treatment Methods	
	4.3	Boiler Feed Water and Scale Formation	
	4.4	Wastewater Treatment	
5	Poly	rmers and Composites	81-96
	5.1	Types of Polymers and Polymerization Techniques	
	5.2	Mechanical and Thermal Properties	
	5.3	Applications of Polymers in Engineering	
	5.4	Polymer Composites and Their Uses	

6	Fuel	s and Combustion	97-119	
	6.1	Classification and Characteristics of Fuels		
	6.2	Calorific Value and Measurement		
	6.3	Combustion Reactions and Air Requirements		
	6.4	Renewable Energy Sources		
7	Mate	erials Chemistry	120-143	
	7.1	Metals and Alloys		
	7.2	Ceramics and Glasses		
	7.3	Smart Materials		
	7.4	Nanomaterials		
8	Envi	ronmental Chemistry	143-164	
	8.1	Air Pollution and Control Measures		
	8.2	Water Pollution and Mitigation		
	8.3	Solid Waste Management		
	8.4	Green Chemistry Principles		
9	Spec	troscopic Techniques	165-185	
	9.1	UV-Vis Spectroscopy		
	9.2	Infrared (IR) Spectroscopy		
	9.3	Nuclear Magnetic Resonance (NMR)		
	9.4	Mass Spectrometry		
10	Adv	anced Topics in Chemistry	186-199	
	10.1	Photochemistry		
	10.2	Surface Chemistry and Catalysis		
	10.3	Bioinorganic Chemistry		
	10.4	Medicinal Chemistry		
	App	endix A: Common Chemical Constants	200	
	App	endix B: Laboratory Safety and Best Practices	201	
	App	endix C: Glossary of Terms	203	