



## TABLE OF CONTENTS

<b>Chapter 1</b>	Introduction .....	10
	Laboratory 1 Scientific Models .....	16
<b>Chapter 2</b>	Metric Measurements in Chemistry .....	18
	Laboratory 2 The Metric System .....	24
<b>Chapter 3</b>	Chemical Solutions — Percent Concentrations .....	28
	Laboratory 3 Preparing Percent Concentration Solutions .....	32
<b>Chapter 4</b>	Chemical Solutions — Molarity .....	36
	Laboratory 4 Measuring Moles .....	40
<b>Chapter 5</b>	Molecular Mass and Atomic Theory .....	44
	Laboratory 5 Chromatography .....	52
<b>Chapter 6</b>	Preparing Molar Solutions .....	56
	Laboratory 6 Preparation of Molar Solutions .....	60
<b>Chapter 7</b>	Chemical Reactions .....	64
	Laboratory 7 Evidence of a Chemical Reaction .....	72



<b>Chapter 8</b>	Chemical Equations I.....	76
	Laboratory 8 Looking at Chemical Reactions with Molecular Models.....	80
<b>Chapter 9</b>	Chemical Equations II.....	84
	Laboratory 9 Balancing Chemical Equations with Molecular Models.....	92
<b>Chapter 10</b>	Moles From Chemical Equations .....	96
	Laboratory 10 Estimating How Many Atoms Are in a Mole ..	102
<b>Chapter 11</b>	Finding The Grams of Reactant and Product.....	106
	Laboratory 11 Chromatography Using Different Solvents .....	110
<b>Chapter 12</b>	Electron Configurations .....	114
	Laboratory 12 Flame Tests .....	122
<b>Chapter 13</b>	Electron Configurations Continued.....	126
	Laboratory 13 Diagramming Electron Orbitals.....	130
<b>Chapter 14</b>	Periodic Table of the Elements .....	134
	Laboratory 14 Parts of the Periodic Table .....	140
<b>Chapter 15</b>	The Groups of the Periodic Table of the Elements.....	144
	Laboratory 15 Groups of the Periodic Table .....	152
<b>Chapter 16</b>	Ionic Bonds.....	154
	Laboratory 16 Conductivity of Ionic Solutions .....	160
<b>Chapter 17</b>	Covalent Bonds.....	164
	Laboratory 17 Polar and Non-Polar Molecules.....	170

<b>Chapter 18</b>	Metal Atoms.....	174
	Laboratory 18 Oxidation — Reduction .....	180
<b>Chapter 19</b>	Batteries.....	184
	Laboratory 19 Zn/Cu Galvanic Cell .....	188
<b>Chapter 20</b>	Acids And Bases I .....	190
	Laboratory 20 pH and NaHCO <sub>3</sub> .....	196
<b>Chapter 21</b>	Acids And Bases II .....	200
	Laboratory 21 pH of Various Liquids .....	206
<b>Chapter 22</b>	Weak Acids And Bases .....	210
	Laboratory 22 Acid-Base pH and Titration .....	216
<b>Chapter 23</b>	Buffers .....	220
	Laboratory 23 Preparing and Testing Buffers.....	226
<b>Chapter 24</b>	Chemistry Of Carbon.....	228
	Laboratory 24 Models of Carbon Compounds.....	234
<b>Chapter 25</b>	Organic Chemistry.....	236
	Laboratory 25 Fat and Water Soluble Compounds .....	242
<b>Chapter 26</b>	Biochemistry.....	244
	Laboratory 26 Comparative Nutritive Values of Foods .....	250
<b>Chapter 27</b>	Rates Of Chemical Reactions .....	252
	Laboratory 27 Reactions with and without Catalysts.....	258
<b>Chapter 28</b>	Environmental Chemistry.....	262
	Laboratory 28 Soil Testing.....	268
<b>Appendix 1</b>	Laboratory Procedures .....	272
<b>Appendix 2</b>	Christian Chemists .....	277
<b>Glossary and Index</b>	.....	285

### Glossary terms

On the first page of every chapter students will find glossary words introduced, which are bolded in that chapter's text and have brief definitions found in the glossary at the back of the book. Students are encouraged to either write these out on 3 x 5 cards or to create another useful means of reviewing these throughout their course of study. Comprehension of sometimes difficult terms and concepts is very important to completing a course in chemistry or any other complex science study.

