

CONTENTS

UNIT 1: BASICS OF CHEMISTRY 1

1. Introduction to Chemistry 2
2. Conducting Experiments 16
3. Lab Reports and Evaluating Results 27
4. Measurement 40
5. Lab Safety and Scientific Tools 56

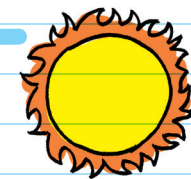


UNIT 2: ALL ABOUT MATTER 73

6. Properties of Matter and Changes in Form 74
7. States of Matter 86
8. Atoms, Elements, Compounds, and Mixtures 100



UNIT 3: ATOMIC THEORY AND ELECTRON CONFIGURATION 113



9. Atomic Theory 114
10. Waves, Quantum Theory, and Photons 123

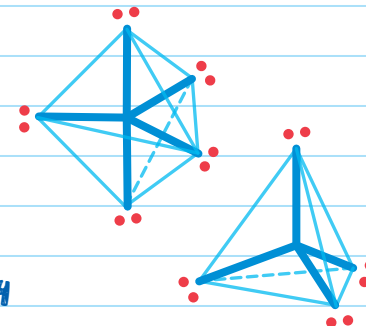
UNIT 4: ELEMENTS AND THE PERIODIC TABLE 135



11. The Periodic Table 136
12. Periodic Trends 151
13. Electrons 172

UNIT 5: BONDING AND VSEPR THEORY 179

14. Bonding 180
15. Valence Shell Electron Pair Repulsion (VSEPR) Theory 204
16. Metallic Bonds and Intramolecular Forces 218



UNIT 6:
CHEMICAL COMPOUNDS 231

- 17. Naming Substances **232**
- 18. The Mole **249**
- 19. Finding Compositions in Compounds **263**



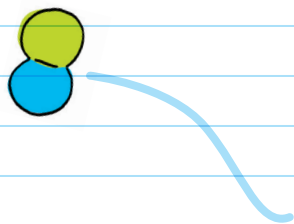
UNIT 7:
CHEMICAL REACTIONS AND CALCULATIONS 273



- 20. Chemical Reactions **274**
- 21. Chemical Calculations **290**

UNIT 8:
GASES 311

- 22. Common Gases **312**
- 23. Kinetic Molecular Theory **321**
- 24. Gas Laws **327**



UNIT 9:
SOLUTIONS AND SOLUBILITY 347

- 25. Solubility **348**
- 26. Solubility Rules and Conditions **361**
- 27. Concentrations of Solutions **372**



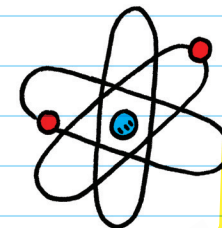
UNIT 10:
ACIDS AND BASES 383

- 28. Properties of Acids and Bases **384**
- 29. pH Scale and Calculations **393**
- 30. Conjugate Acids and Bases **405**
- 31. Titrations **415**



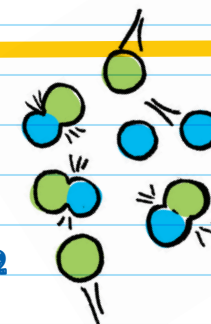
UNIT 11:
CHEMICAL COMPOUNDS 423

- 32. Chemical Equilibrium **424**
- 33. Le Châtelier's Principle **442**



UNIT 12:
THERMODYNAMICS 451

- 34. The First Law of Thermodynamics **452**
- 35. The Second Law of Thermodynamics **472**
- 36. Reaction Rates **481**



Index **495**