

CONTENTS

PREFACE, vii

SAFETY IN THE LABORATORY, ix

EXPERIMENTS

- 1 The Evaluation of Data, 1
- 2 The Determination of Water in Hydrated Salts, 13
- 3 The Determination of an Atomic Weight, 21
- 4 Use of the Gas Laws in the Determination of Nitrogen, 29
- 5 The Identification of an Organic Compound after Determining Its Molecular Weight, 41
- 6 The Determination of the pK_a of a Weak Acid and Its Content in an Unknown, 51
- 7 The Equilibrium Constant of an Indicator, 59
- 8 The Nonaqueous Titration of a Salt of a Weak Acid, 67
- 9 Hydrolysis of Salts, 75
- 10 The Investigation of Competing Equilibria, 81
- 11 The Calculation of Chemical Stoichiometry, 91
- 12 Verification of the Nernst Equation and the Determination of the Formal Potential E_f , 99
- 13 Thermochemistry, 109
- 14 Calculation of Thermodynamic Properties by Determining the Change in Equilibrium with Temperature, 119
- 15 The Determination of the Order, Rate, and Activation Energy of a Chemical Reaction, 127
- 16 Chemical Literature, 137
- 17 Chromium Chemistry, 147
- 18 Nickel Chemistry, 155
- 19 Manganese Chemistry, 163
- 20 Halogen Chemistry, 171
- 21 The Solution Chemistry of Selected Elements. I, 179
- 22 The Solution Chemistry of Selected Elements. II, 189
- 23 The Solution Chemistry of Selected Elements. III
Separation and Identification of Anions, 197
- 24 Synthesis and Study of Inorganic Compounds, 203

APPENDIXES

- I Laboratory Operations, 205
 - Common Laboratory Equipment, 207
 - The Laboratory Notebook, 208
 - Cleaning Glassware, 210
 - Handling Solutions, 212
 - Handling Solids, 216
 - Dispensing Reagents, 222
 - Working Glass, 224
 - Spectrophotometry, 230
 - The Measurement of pH, 233
 - Standard Solutions, 237

- II Review of Chemical Principles, 243
 - Chemical Nomenclature, 245
 - The Description of Chemical Reactions, 249
 - Expressions for the Equilibrium Constant, 250

- III Mathematical Techniques, 255
 - Reporting Data, 257
 - Exponential Numbers, 259
 - Logarithms, 262
 - The Graphical Interpretation of Data, 265
 - Constructing a Tangent to a Curve, 266

- IV Tables of Data, 269