

CONTENTS

1 Isolation of Caffeine from Tea	1
2 Purification of Hydrocarbons	7
3 Degradation and Structure of Caffeine	14
4 Qualitative Analysis	17
5 Solid Derivatives in Qualitative Analysis	26
6 Practical Infrared and Nuclear Magnetic Resonance Absorption Spectroscopy	34
7 Modifications of Functional Groups and Carbon Skeletons	50
8 6,6-Diphenylfulvene	56
9 Stereochemistry of Molecules and Reactions	58
10 Thin-layer Chromatography	63
11 Structure and Equilibria	68
12 Addition to Diphenylfulvene and Maleic Anhydride	72
13 Solvolysis of t-Butyl Chloride	75
14 Nucleophilic Substitution: Dibenzhydryl Ether	79
15 Nucleophilic Aromatic Substitution	89
16 Elimination Reactions	86
17 Nucleophilic Aromatic Substitution	89
18 Electrophilic Addition: Camphene Oxide	91
19 Electrophilic Aromatic Substitution	94
20 Electrophilic Substitution at Saturated Carbon	97
21 Molecular Rearrangements	102
22 Radical Reactions	105
23 Selective Reduction	109
24 Organic Synthesis	112
25 Heterocyclic Compounds	116
26 Peptide Synthesis	119
27 Phenolic Plant Products: Esculin	123
28 Steroids	128
29 Amino Acid Analysis	133
30 Fractional Distillation of Hydrocarbons	138
Appendix I: Spectra	142
Appendix II: Chemicals and Equipment	177
Appendix III: Vapor-phase Chromatography	180
Appendix IV: Problem Solutions (selected)	187
Index	191

