

## CONTENTS

Chapter 1 Structure and Properties	1
Chapter 2 Methane Energy of Activation. Transition State	7
Chapter 3 Alkanes Free-Radical Substitution	13
Chapter 4 Stereochemistry I. Stereoisomers	23
Chapter 5 Alkenes I. Structure and Preparation Elimination	31
Chapter 6 Alkenes II. Reactions of the Carbon-Carbon Double Bond Electrophilic and Free-Radical Addition	37
Chapter 7 Stereochemistry II. Preparation and Reactions of Stereoisomers	47
Chapter 8 Alkynes and Dienes	59
Chapter 9 Alicyclic Hydrocarbons	73
Chapter 10 Benzene Aromatic Character	95
Chapter 11 Electrophilic Aromatic Substitution	103
Chapter 12 Arenes	115
Chapter 13 Spectroscopy and Structure	131
Chapter 14 Alkyl Halides Nucleophilic Aliphatic Substitution Elimination	143
Chapter 15 Alcohols I. Preparation and Physical Properties	161
Chapter 16 Alcohols II. Reactions	171
Chapter 17 Ethers and Epoxides	199
Chapter 18 Carboxylic Acids	219
Chapter 19 Aldehydes and Ketones Nucleophilic Addition	245
Chapter 20 Functional Derivatives of Carboxylic Acids Nucleophilic Acyl Substitution	263
Chapter 21 Carbanions I Aldol and Claisen Condensations	285
Chapter 22 Amines I. Preparation and Physical Properties	311
Chapter 23 Amines II. Reactions	319
Chapter 24 Phenols	345
Chapter 25 Aryl Halides Nucleophilic Aromatic Substitution	369
Chapter 26 Carbanions II Malonic Ester and Acetoacetic Ester Syntheses	385
Chapter 27 $\alpha,\beta$ -Unsaturated Carbonyl Compounds Conjugate Addition	409
Chapter 28 Rearrangements and Neighboring Group Effects Nonclassical Ions	433
Chapter 29 Molecular Orbitals Orbital Symmetry	463
Chapter 30 Polynuclear Aromatic Compounds	487
Chapter 31 Heterocyclic Compounds	519
Chapter 32 Macromolecules. Polymers and Polymerization	543
Chapter 33 Fats	555

Chapter 34 Carbohydrates I. Monosaccharides	565
Chapter 35 Carbohydrates II. Disaccharides and Polysaccharides	599
Chapter 36 Amino Acids and Proteins	619
Chapter 37 Biochemical Processes Molecular Biology	637