Contents

UNIT I: Protein Structure and Function

Chapter 1: Amino Acids 1

Chapter 2: Structure of Proteins 13
Chapter 3: Globular Proteins 25
Chapter 4: Fibrous Proteins 43

Chapter 5: Enzymes 53

UNIT II: Intermediary Metabolism

Chapter 6: Bioenergetics and Oxidative Phosphorylation 69

Chapter 7: Introduction to Carbohydrates 83

Chapter 8: Glycolysis 89

Chapter 9: Tricarboxylic Acid Cycle 107 Chapter 10: Gluconeogenesis 115

Chapter 11: Glycogen Metabolism 123

Chapter 12: Metabolism of Monosaccharides and Disaccharides 135

Chapter 13: Pentose Phosphate Pathway and NADPH 143 Chapter 14: Glycosaminoglycans and Glycoproteins 155

UNIT III: Lipid Metabolism

Chapter 15: Metabolism of Dietary Lipids 171

Chapter 16: Fatty Acid and Triacylglycerol Metabolism 179

Chapter 17: Complex Lipid Metabolism 199

Chapter 18: Cholesterol and Steroid Metabolism 217

UNIT IV: Nitrogen Metabolism

Chapter 19: Amino Acids: Disposal of Nitrogen 243

Chapter 20: Amino Acid Degradation and Synthesis 259

Chapter 21: Conversion of Amino Acids to Specialized Products 275

Chapter 22: Nucleotide Metabolism 289

UNIT V: Integration of Metabolism

Chapter 23: Metabolic Effects of Insulin and Glucagon 305

Chapter 24: The Feed/Fast Cycle 319

Chapter 25: Diabetes Mellitus 335

Chapter 26: Obesity 347 Chapter 27: Nutrition 355

Chapter 28: Vitamins 371

UNIT VI: Storage and Expression of Genetic Information

Chapter 29: DNA Structure and Replication 393

Chapter 30: RNA Structure and Synthesis 413

Chapter 31: Protein Synthesis 429

Chapter 32: Biotechnology and Human Disease 445

UNIT VII: Review of Biochemistry

Chapter 33: Summary of Key Biochemical Facts 469

Index 509