

Contents

Preface to the <i>Oklahoma Notes</i>	v
Preface	vii
1. Amino Acids and Proteins <i>A. Chadwick Cox</i>	
Amino Acids	1
Protein Structure: General	3
Collagen and Fibrous Proteins	4
Hemoglobin	5
Plasma Proteins	6
Hemostasis and Blood Coagulation	7
Genetic Diseases	12
Review Questions on Amino Acids and Proteins	14
2. Enzymes <i>A. Chadwick Cox and Wai-Yee Chan</i>	
Nature of Enzymes	19
Enzyme Kinetics	21
Effects of Kinetic Parameters on Enzyme Activity	24
General Aspects	26
Review Questions on Enzymes	27
3. Carbohydrates <i>Albert M. Chandler</i>	
Introduction	31
Structural Aspects of Carbohydrates	31
Digestion	34
Glycolysis	35
Entry of Other Hexoses into the Glycolytic Pathway	38
Metabolism of Pyruvate	39
Regulation of Glycolysis	40
Pentose Phosphate Pathway	41
Gluconeogenesis	42
Glycogen Metabolism	44
Glycogen Storage Diseases	47
Hormonal Regulation of Carbohydrate Metabolism	47
Review Questions on Carbohydrates	49
4. Energetics and Biological Oxidation <i>Thomas Briggs</i>	
Concepts in Biological Oxidation	61
Metabolism of Pyruvate to Carbon Dioxide	63
Electron Transfer via the Respiratory Chain	67
Chemi-Osmotic Theory of Oxidative Phosphorylation	71
Review Questions on Energetics and Biological Oxidation	72

5. Amino Acid Metabolism	<i>Albert M. Chandler</i>	
Functions of Amino Acids in Man.		80
Essential and Non-Essential Amino Acids		80
Nitrogen Balance.		81
Protein Quality		81
Protein Digestion.		81
Amino Acid Absorption		82
Amino Acid Degradation		83
The Urea Cycle (Krebs-Henseleit Cycle)		84
Excretion of Free Ammonia		86
Degradation of the Carbon Skeletons		87
One-Carbon Fragment Metabolism		88
Metabolism of Phenylalanine and Tyrosine		91
General Precursor Functions of Amino Acids.		93
Review Questions on Amino Acid Metabolism		94
6. Porphyrins	<i>Thomas Briggs</i>	
Structure and Chemistry.		104
Metabolism		105
Disorders of Porphyrin and Heme Metabolism		106
Genetic Diseases		107
Review Questions on Porphyrins.		109
7. Lipids	<i>Chi-Sun Wang</i>	
Classification of Lipids.		113
Functions of Lipids.		113
Digestion and Absorption of Lipids.		114
Fatty Acids		114
Ketone Bodies		121
Triacylglycerols.		122
Phospholipids		123
Glycosphingolipids (Glycolipids)		125
Lipoproteins		125
Genetic Diseases		127
Review Questions on Lipids.		130
8. Steroids	<i>Thomas Briggs</i>	
Cholesterol: Structure and Chemistry		139
Occurrence and Function		140
Biosynthesis of Cholesterol		140
Metabolism of Cholesterol		142
Action of Steroid Hormones.		144
Cholesterol Levels.		145
Disorders of Cholesterol and Steroid Metabolism.		146
Cholesterol in Perspective		147
Review Questions on Steroids		148
9. Membranes	<i>Thomas Briggs</i>	
Overview.		154
Chemistry and Structure.		155
Functions.		157
Review Questions on Membranes		165

10. Nutrition	<i>Thomas Briggs</i>	
Major Nutrients		171
Micronutrients		174
Review Questions on Nutrition		185
11. Purines and Pyrimidines	<i>Leon Unger</i>	
Structure and Nomenclature		193
Synthesis of Nucleoside Diphosphates and Triphosphates		194
Purine Metabolism		195
Pyrimidine Metabolism: Biosynthesis		199
Deoxyribonucleotides Are Formed by Reduction of Ribonucleoside Diphosphates by Ribonucleoside Diphosphate Reductase (Ribonucleotide Reductase)		199
Some Anticancer Drugs Act by Blocking Deoxythmidylate Synthesis		201
Functions of Nucleotides		202
Review Questions on Purines and Pyrimidines		203
12. Nucleic Acids: Structure and Synthesis	<i>Jay Hanas</i>	
DNA		207
RNA		215
Review Questions on Nucleic Acids		219
13. Protein Biosynthesis	<i>Jay Hanas and Albert M. Chandler</i>	
Introduction		227
Cellular Machinery		227
Information Transfer		232
Peptide Bond Formation		233
Postribosomal Modification of Proteins		236
Some Antibiotics Acting as Inhibitors of Protein Synthesis		238
Review Questions on Protein Biosynthesis		239
14. Medical Genetics	<i>Sara L. Tobin, with figures by Ann Boughton</i>	
Basic Genetics		247
Mutations		252
Recombinant DNA Techniques		254
Genetic Diagnostic Techniques		270
Gene Therapy		274
Well-Known Genetic Diseases		279
Review Questions on Medical Genetics		280