

Biochemistry

Essential Concepts

Charles C. Hardin and James A. Knopp

*Department of Molecular and Structural Biochemistry,
North Carolina State University*

New York Oxford
OXFORD UNIVERSITY PRESS

Brief Contents

Preface	xv
Acknowledgments	xviii
Chapter 1. Biochemistry: Subject Overview	1
Chapter 2. Cell Biology Review	2
Chapter 3. Chemistry Review	9
Chapter 4. Amino Acids	20
Chapter 5. Proteins	26
Chapter 6. Protein Structure	33
Chapter 7. Ligand Binding and Functional Control	45
Chapter 8. Enzymes	51
Chapter 9. Metabolic Enzyme Action	70
Chapter 10. Coenzymes	81
Chapter 11. Carbohydrates and Glycoconjugates	93
Chapter 12. Lipids	102
Chapter 13. Membranes	111
Chapter 14. Transport Through Membranes	116
Chapter 15. Signal Transduction	120
Chapter 16. Nucleic Acids: DNA	125
Chapter 17. RNA	146
Chapter 18. Biotechnology	154
Chapter 19. Metabolism	163
Chapter 20. Bioenergetics	167
Chapter 21. Bioelectrochemistry	171
Chapter 22. Glycolysis	174
Chapter 23. The Krebs Cycle	180
Chapter 24. Gluconeogenesis	184
Chapter 25. Electron Transport and Oxidative Phosphorylation	186
Chapter 26. The Malate-Aspartate Shuttle and Proteomics	193
Chapter 27. Degradation and Synthesis of Lipids	196
Chapter 28. Photosynthesis	204
Chapter 29. The Calvin Cycle	208
Chapter 30. The Urea Cycle	211
STUDY GUIDE	215
Review Session for Chapters 1–3	215
Review Session for Chapter 4	217
Review Session for Chapters 5 and 6	220
Review Session for Chapters 7–8.6	224
Review Sessions for Chapters 8.7–8.8	225
Review Session for Chapter 9	226
Review Session for Chapters 10–11.4	227
Review Session for Chapters 10–11.4: Key	228
Review Session for Chapters 11.5–12.5	231
Review Session for Chapters 11.5–12.5: Key	232
Review Session for Chapters 13–14.7	235
Review Session for Chapters 13–14.7: Key	236
Review Session for Chapters 16.2–17.6	238
Review Session for Chapters 16.2–17.6: Key	239
Review Session for Chapters 19–20	242
Review Session for Chapters 19–20: Key	244

Review Session for Chapters 21–25	247
Review Session for Chapters 21–25: Key	249
Review Session for Chapter 27	253
Review Session for Chapter 27: Key	254
Practice Exam 1, Key	256
Practice Exam 2, Key	260
Practice Exam 3, Key	267
Practice Exam 4, Key	276
Final Test Review	281
Final Test Review (with answers)	291
 Index	 317