

# 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: Bioenergetics and Carbohydrate Metabolism**

- Chapter 6:** Bioenergetics and Oxidative Phosphorylation 69
  - Chapter 7:** Introduction to Carbohydrates 83
  - Chapter 8:** Introduction to Metabolism and Glycolysis 91
  - Chapter 9:** Tricarboxylic Acid Cycle and Pyruvate Dehydrogenase Complex 109
  - Chapter 10:** Gluconeogenesis 117
  - Chapter 11:** Glycogen Metabolism 125
  - Chapter 12:** Metabolism of Monosaccharides and Disaccharides 137
  - Chapter 13:** Pentose Phosphate Pathway and Nicotinamide Adenine Dinucleotide Phosphate 145
  - Chapter 14:** Glycosaminoglycans, Proteoglycans, and Glycoproteins 157
- 

## **UNIT III: Lipid Metabolism**

- Chapter 15:** Dietary Lipids Metabolism 173
  - Chapter 16:** Fatty Acid, Ketone Body, and Triacylglycerol Metabolism 181
  - Chapter 17:** Phospholipid, Glycosphingolipid, and Eicosanoid Metabolism 201
  - Chapter 18:** Cholesterol, Lipoprotein, and Steroid Metabolism 219
- 

## **UNIT IV: Nitrogen Metabolism**

- Chapter 19:** Amino Acids: Disposal of Nitrogen 245
  - Chapter 20:** Amino Acid Degradation and Synthesis 261
  - Chapter 21:** Conversion of Amino Acids to Specialized Products 277
  - Chapter 22:** Nucleotide Metabolism 291
- 

## **UNIT V: Integration of Metabolism**

- Chapter 23:** Metabolic Effects of Insulin and Glucagon 307
  - Chapter 24:** The Feed–Fast Cycle 321
  - Chapter 25:** Diabetes Mellitus 337
  - Chapter 26:** Obesity 349
  - Chapter 27:** Nutrition 357
  - Chapter 28:** Vitamins 373
- 

## **UNIT VI: Storage and Expression of Genetic Information**

- Chapter 29:** DNA Structure, Replication, and Repair 395
- Chapter 30:** RNA Structure, Synthesis, and Processing 417
- Chapter 31:** Protein Synthesis 431
- Chapter 32:** Regulation of Gene Expression 449
- Chapter 33:** Biotechnology and Human Disease 465

- Appendix: Clinical Cases 489**
- Index 522**

**Bonus chapter online! Chapter 34: Blood Clotting** (Use your scratch-off code provided in the front of this book for access to this and other free online resources on [thePoint](#).)