

CONTENTS

Preface	vii	4.4 Nervous Tissue	83
		4.5 Body Membranes	84
		Chapter Summary	86
		Self-Review	87
		Critical Thinking	87
		Additional Resources	87
PART ONE		PART TWO	
Organization of the Body	1	Covering, Support, and Movement of the Body	88
■ CHAPTER ONE		■ CHAPTER FIVE	
Introduction to the Human Body	1	Integumentary System	88
Chapter Outline	1	Chapter Outline	88
Selected Key Terms	2	Selected Key Terms	89
1.1 Anatomy and Physiology	2	5.1 Functions of the Skin	89
1.2 Levels of Organization	2	5.2 Structure of the Skin and Subcutaneous Tissue	89
1.3 Directional Terms	6	5.3 Skin Color	93
1.4 Body Regions	6	5.4 Accessory Structures	94
1.5 Body Planes and Sections	6	5.5 Temperature Regulation	97
1.6 Body Cavities	9	5.6 Aging of the Skin	99
1.7 Abdominopelvic Subdivisions	13	5.7 Disorders of the Skin	100
1.8 Maintenance of Life	13	Chapter Summary	101
Chapter Summary	17	Self-Review	102
Self-Review	18	Critical Thinking	102
Critical Thinking	18	Additional Resources	102
Additional Resources	18	■ CHAPTER SIX	
■ CHAPTER TWO		Skeletal System	103
Chemicals of Life	24	Chapter Outline	103
Chapter Outline	24	Selected Key Terms	104
Selected Key Terms	25	6.1 Functions of the Skeletal System	104
2.1 Atoms and Elements	25	6.2 Bone Structure	104
2.2 Molecules and Compounds	28	6.3 Bone Formation	106
2.3 Compounds Composing the Human Body	33	6.4 Divisions of the Skeleton	109
Chapter Summary	46	6.5 Axial Skeleton	109
Self-Review	47	6.6 Appendicular Skeleton	120
Critical Thinking	48	6.7 Articulations	125
Additional Resources	48	6.8 Disorders of the Skeletal System	127
■ CHAPTER THREE		Chapter Summary	132
Cell	49	Self-Review	134
Chapter Outline	49	Critical Thinking	134
Selected Key Terms	50	Additional Resources	134
3.1 Cell Structure	50	■ CHAPTER SEVEN	
3.2 Transport Across Plasma Membranes	56	Muscular System	135
3.3 Cellular Respiration	60	Chapter Outline	135
3.4 Protein Synthesis	61	Selected Key Terms	136
3.5 Cell Division	63	7.1 Structure of Skeletal Muscle	137
Chapter Summary	66	7.2 Physiology of Skeletal Muscle Contraction	141
Self-Review	68	7.3 Actions of Skeletal Muscles	147
Critical Thinking	68	7.4 Naming of Muscles	147
Additional Resources	68	7.5 Major Skeletal Muscles	147
■ CHAPTER FOUR		7.6 Disorders of the Muscular System	157
Tissues and Membranes	69		
Chapter Outline	69		
Selected Key Terms	70		
4.1 Epithelial Tissues	70		
4.2 Connective Tissues	75		
4.3 Muscle Tissues	81		

Chapter Summary	159
Self-Review	161
Critical Thinking	161
Additional Resources	161

PART THREE

Integration and Control 162

■ CHAPTER EIGHT

Nervous System	162
Chapter Outline	162
Selected Key Terms	163
8.1 Divisions of the Nervous System	163
8.2 Nervous Tissue	164
8.3 Neuron Physiology	167
8.4 Protection for the Central Nervous System	172
8.5 Brain	173
8.6 Spinal Cord	179
8.7 Peripheral Nervous System (PNS)	181
8.8 Autonomic Nervous System (ANS)	185
8.9 Disorders of the Nervous System	189
Chapter Summary	191
Self-Review	193
Critical Thinking	193
Additional Resources	193

■ CHAPTER NINE

Senses	194
Chapter Outline	194
Selected Key Terms	195
9.1 Sensations	195
9.2 General Senses	196
9.3 Special Senses	198
9.4 Disorders of The Special Senses	214
Chapter Summary	216
Self-Review	217
Critical Thinking	218
Additional Resources	218

■ CHAPTER TEN

Endocrine System	219
Chapter Outline	219
Selected Key Terms	220
10.1 The Chemical Nature of Hormones	220
10.2 Pituitary Gland	224
10.3 Thyroid Gland	228
10.4 Parathyroid Glands	230
10.5 Adrenal Glands	230
10.6 Pancreas	233
10.7 Gonads	236
10.8 Other Endocrine Glands and Tissues	237
Chapter Summary	237
Self-Review	239
Critical Thinking	239
Additional Resources	239

PART FOUR

Maintenance of the Body 240

■ CHAPTER ELEVEN

Blood	240
Chapter Outline	240
Selected Key Terms	241
11.1 General Characteristics of Blood	241
11.2 Red Blood Cells	242
11.3 White Blood Cells	244
11.4 Platelets	248
11.5 Plasma	248
11.6 Hemostasis	249
11.7 Human Blood Types	251
11.8 Disorders of the Blood	255
Chapter Summary	256
Self-Review	257
Critical Thinking	257
Additional Resources	257

■ CHAPTER TWELVE

The Cardiovascular System	258
Chapter Outline	258
Selected Key Terms	259
12.1 Anatomy of the Heart	259
12.2 Cardiac Cycle	266
12.3 Heart Conduction System	267
12.4 Regulation of Heart Function	268
12.5 Types of Blood Vessels	270
12.6 Blood Flow	273
12.7 Blood Pressure	274
12.8 Circulation Pathways	276
12.9 Systemic Arteries	276
12.10 Systemic Veins	281
12.11 Disorders of the Heart and Blood Vessels	286
Chapter Summary	287
Self-Review	289
Critical Thinking	289
Additional Resources	289

■ CHAPTER THIRTEEN

Lymphoid System and Defenses Against Disease	290
Chapter Outline	290
Selected Key Terms	291
13.1 Lymph and Lymphatic Vessels	291
13.2 Lymphoid Organs	292
13.3 Lymphoid Tissues	295
13.4 Nonspecific Resistance	297
13.5 Immunity	299
13.6 Immune Responses	302
13.7 Rejection of Organ Transplants	304
13.8 Disorders of the Lymphoid System	304
Chapter Summary	306
Self-Review	307
Critical Thinking	307
Additional Resources	307

■ CHAPTER FOURTEEN

Respiratory System	308
<i>Chapter Outline</i>	308
<i>Selected Key Terms</i>	309
14.1 Structures of the Respiratory System	309
14.2 Breathing	315
14.3 Respiratory Volumes and Capacities	316
14.4 Control of Breathing	318
14.5 Factors Influencing Breathing	319
14.6 Gas Exchange	320
14.7 Transport of Respiratory Gases	321
14.8 Disorders of the Respiratory System	322
<i>Chapter Summary</i>	324
<i>Self-Review</i>	325
<i>Critical Thinking</i>	325
<i>Additional Resources</i>	325

■ CHAPTER FIFTEEN

Digestive System	326
<i>Chapter Outline</i>	326
<i>Selected Key Terms</i>	327
15.1 Digestion: An Overview	327
15.2 Alimentary Canal: General Characteristics	327
15.3 Mouth	330
15.4 Pharynx and Esophagus	333
15.5 Stomach	334
15.6 Pancreas	336
15.7 Liver	338
15.8 Small Intestine	340
15.9 Large Intestine	344
15.10 Nutrients: Sources and Uses	345
15.11 Disorders of the Digestive System	350
<i>Chapter Summary</i>	352
<i>Self-Review</i>	354
<i>Critical Thinking</i>	354
<i>Additional Resources</i>	354

■ CHAPTER SIXTEEN

Urinary System	355
<i>Chapter Outline</i>	355
<i>Selected Key Terms</i>	356
16.1 Functions of the Urinary System	356
16.2 Anatomy of the Kidneys	357
16.3 Urine Formation	360
16.4 Excretion of Urine	366
16.5 Maintenance of Blood Plasma Composition	368
16.6 Disorders of the Urinary System	371
<i>Chapter Summary</i>	372
<i>Self-Review</i>	373
<i>Critical Thinking</i>	373
<i>Additional Resources</i>	373

PART FIVE**Reproduction 374****■ CHAPTER SEVENTEEN**

Reproductive Systems	374
<i>Chapter Outline</i>	374
<i>Selected Key Terms</i>	375
17.1 Male Reproductive System	375
17.2 Male Sexual Response	382
17.3 Hormonal Control of Reproduction in Males	382
17.4 Female Reproductive System	384
17.5 Female Sexual Response	389
17.6 Hormonal Control of Reproduction in Females	389
17.7 Mammary Glands	392
17.8 Birth Control	393
17.9 Disorders of the Reproductive Systems	396
<i>Chapter Summary</i>	397
<i>Self-Review</i>	399
<i>Critical Thinking</i>	399
<i>Additional Resources</i>	399

■ CHAPTER EIGHTEEN

Development, Pregnancy, and Genetics	400
<i>Chapter Outline</i>	400
<i>Selected Key Terms</i>	401
18.1 Fertilization and Early Development	401
18.2 Embryonic Development	403
18.3 Fetal Development	406
18.4 Hormonal Control of Pregnancy	407
18.5 Birth	409
18.6 Cardiovascular Adaptations	410
18.7 Lactation	413
18.8 Disorders of Pregnancy, Prenatal Development, and Postnatal Development	413
18.9 Genetics	414
18.10 Inherited Diseases	418
<i>Chapter Summary</i>	419
<i>Self-Review</i>	421
<i>Critical Thinking</i>	421
<i>Additional Resources</i>	421

PART SIX**Study Guides 422****Appendices**

A Keys to Medical Terminology	531
B Answers to Self-Review Questions	536
<i>Glossary</i>	538
<i>Photo/Line Art Credits</i>	553
<i>Index</i>	554