

Contents

Acknowledgments...iii

Preface...iv

UNIT I: Principles of Physiologic Function

- Chapter 1:** Cell and Membrane Physiology...1
 - Chapter 2:** Membrane Excitability...17
 - Chapter 3:** Osmosis and Body Fluids...29
 - Chapter 4:** Epithelial and Connective Tissue...39
-

UNIT II: Sensory and Motor Systems

- Chapter 5:** Nervous System Organization...55
 - Chapter 6:** Central Nervous System...68
 - Chapter 7:** Autonomic Nervous System...80
 - Chapter 8:** Vision...95
 - Chapter 9:** Hearing and Balance...107
 - Chapter 10:** Taste and Smell...120
 - Chapter 11:** Motor Control Systems...129
-

UNIT III: Musculoskeletal and Integumental Physiology

- Chapter 12:** Skeletal Muscle...141
 - Chapter 13:** Smooth Muscle...154
 - Chapter 14:** Bone...164
 - Chapter 15:** Skin...176
-

UNIT IV: Cardiovascular System

- Chapter 16:** Cardiac Excitation...189
 - Chapter 17:** Cardiac Mechanics...207
 - Chapter 18:** Blood and the Vasculature...223
 - Chapter 19:** Cardiovascular Regulation...242
 - Chapter 20:** Special Circulations...263
-

UNIT V: Respiratory System

- Chapter 21:** Lung Mechanics...273
 - Chapter 22:** Gas Exchange...292
 - Chapter 23:** Blood and Gas Transport...304
 - Chapter 24:** Respiratory Regulation...319
-

UNIT VI: Urinary System

- Chapter 25:** Filtration and Micturition...333
- Chapter 26:** Reabsorption and Secretion...350
- Chapter 27:** Urine Formation...364
- Chapter 28:** Water and Electrolyte Balance...381

UNIT VII: Gastrointestinal System

- Chapter 29:** Principles and Signaling...**399**
Chapter 30: Mouth, Esophagus, and Stomach...**408**
Chapter 31: Small and Large Intestines...**420**
Chapter 32: Exocrine Pancreas and Liver...**431**
-

UNIT VIII: Endocrine System

- Chapter 33:** Endocrine Pancreas and Liver...**439**
Chapter 34: Adrenal Glands...**451**
Chapter 35: Thyroid and Parathyroid Glands ...**461**
Chapter 36: Male and Female Gonads...**471**
-

UNIT IX: Living and Dying

- Chapter 37:** Pregnancy and Birth...**485**
Chapter 38: Thermal Stress and Fever...**499**
Chapter 39: Exercise and Bed Rest...**508**
Chapter 40: Systems Failure...**521**
-

APPENDICES

- Appendix A:** Clinical Cases...**541**
Appendix B: Normal Physiologic Values...**578**
Appendix C: Reference Equations...**581**

Figure Credits...**582**

Index...**585**