

152265

**LANGE
PHYSIOLOGY
SERIES**

Vander's Renal Physiology

- Study questions and answers for each chapter
- Essential clinical examples and illustrations
- Great review for USMLE

**Douglas C. Eaton
John P. Pooler**

sixth
edition

Contents

Preface		vii
Chapter 1	Renal Functions, Anatomy, and Basic Processes	1
	Functions / 2	
	Anatomy of the Kidneys and Urinary System / 4	
	The Nephron / 5	
	Blood Supply to the Nephrons / 12	
	Basic Renal Processes / 16	
Chapter 2	Renal Blood Flow and Glomerular Filtration	24
	Glomerular Filtration and Renal Blood Flow / 25	
	Flow, Resistance, and Pressure in The Kidneys / 25	
	Glomerular Filtration / 26	
	Autoregulation / 33	
Chapter 3	Clearance	37
	Clearance Units / 38	
	Plasma Creatinine and Urea Concentrations as Indicators of GFR Changes / 42	
Chapter 4	Basic Transport Mechanisms	46
	Crossing the Epithelial Barriers / 47	
	Receptor-Mediated Endocytosis and Transcytosis / 51	
	Transport Mechanisms in Reabsorption / 53	
Chapter 5	Renal Handling of Organic Substances	60
	Active Proximal Reabsorption of Organic Nutrients (Eg, Glucose, Amino Acids) / 61	
	Proteins and Peptides / 63	
	Active Proximal Secretion of Organic Anions / 64	
	Active Proximal Secretion of Organic Cations / 66	
	pH Dependence of Passive Reabsorption or Secretion Urea / 68	
Chapter 6	Basic Renal Processes for Sodium, Chloride, and Water	73
	Overview / 74	
	Individual Tubular Segments / 79	
	Urinary Concentration: The Medullary Osmotic Gradient / 90	

Chapter 7	Control of Sodium and Water Excretion: Regulation of Plasma Volume and Plasma Osmolality and Renal Control of Systemic Blood Pressure	97
	Regulation of Blood Pressure / 98	
	Contribution of The Kidney to The Long-Term Regulation of Blood Pressure / 104	
	Control of Sodium Balance / 116	
	Control of Water Excretion / 122	
Chapter 8	Renal Regulation of Potassium Balance	134
	Regulation of Potassium Between the Intracellular and Extracellular Compartments / 135	
	Renal Potassium Handling / 136	
Chapter 9	Regulation of Hydrogen Ion Balance	150
	Guidelines for Studying Acid-Base Biology / 151	
	Renal Handling of Acids and Bases / 157	
	Renal Excretion of Acid and Base / 161	
	Hydrogen Ion Excretion on Urinary Buffers / 163	
	Phosphate and Organic Acids as Buffers / 165	
	Hydrogen Ion Excretion on Ammonium / 166	
	Quantification of Renal Acid-Base Excretion / 167	
	Regulation of the Renal Handling of Acids and Bases / 170	
	Control of Renal Glutamine Metabolism and NH_4 Excretion / 171	
	Intravenous Solutions: Lactated Ringer's / 172	
	Specific Categories of Acid-Base Disorders / 173	
	Renal Response to Metabolic Acidosis and Alkalosis / 174	
	Factors Causing the Kidneys to Generate or Maintain A Metabolic Alkalosis / 175	
Chapter 10	Regulation of Calcium and Phosphate Balance	180
	Effector Sites for Calcium Balance / 182	
	Hormonal Control of Effector Sites / 185	
	Overview of Renal Phosphate Handling / 189	
	Answers to Study Questions	193
	Appendix A	201
	Appendix B	203
	Index	205