



Contents

Preface

v

Section I: General Laboratory Principles

1. Laboratory Hazards	3
2. Laboratory Safety Measures	7
3. Biomedical Waste Management	9
4. Glasswares	11
5. Blood Collection Techniques (Phlebotomy)	15
6. Anticoagulants and Vacutainers	20
7. 24 Hours Urine Collection and Urine Preservatives	22
8. Types of Solutions	24
9. Buffers and pH Indicators	26
10. Quality Control	28
11. Reference Ranges	30
12. Calibration	31

Section II: Laboratory Instrumentation

1. pH Meter	35
2. Balances	37
3. Pipettes	39
4. Centrifuge	41
5. Colorimeter	44
6. Spectrophotometer	46
7. Autoanalysers	48
8. Electrophoresis	50
9. Chromatography	52
10. Estimation of Electrolytes	53
11. Arterial Blood Gas (ABG) Analyser	55
12. Enzyme-linked Immunosorbent Assay (ELISA)	57
13. Radioimmunoassay (RIA)	59

Section III: Practical Biochemistry

1. Analysis of Normal Urine	63
2. Non-Protein Nitrogenous Substances	65
3. Abnormal Constituents of Urine	66
4. Estimation of Plasma Glucose	69
5. Estimation of Serum Urea	71
6. Estimation of Serum Creatinine	73
7. Estimation of Serum Total Protein	75
8. Estimation of Serum Albumin	77
9. Estimation of Serum Total Cholesterol	79
10. Estimation of Serum Triglycerides	81
11. Estimation of Serum HDL Cholesterol	83
12. Estimation of Serum Bilirubin	85
13. Estimation of Serum SGOT/AST	87
14. Estimation of Serum SGPT/ALT	89
15. Estimation of Serum Calcium	91
16. Estimation of Serum Phosphorus	93
17. Estimation of Serum Amylase	95
18. Estimation of Serum Lipase	96
19. Estimation of Glucose by Standardisation	97
20. Estimation of Urea by Standardisation	100
21. Estimation of Creatinine by Standardisation	103
22. Test for Carbohydrates	106
23. Test for Proteins	107
24. Test for Lipids	108
25. OSPE Stations	110
26. <i>Viva Voce</i> Questions and Answers	119

Section IV: Clinical Biochemistry

1. Liver Function Test	127
2. Renal Function Test	131
3. Renal Clearance Tests	133
4. Proteinuria	134
5. Thyroid Function Tests	135
6. Gastric Function Tests	137
7. Pancreatic Function Tests	138
8. Oral Glucose Tolerance Test	139

Contents	xi
9. Clinical Enzymology Enzymes Used as Cardiac Markers	141
10. Lipid Profile	142
11. Cerebrospinal Fluid Analysis	143
12. Pleural Fluid Analysis	144
13. Arterial Blood Gas Analysis	145
14. Plasma Proteins	147
15. Fibrinogen	148
16. Prothrombin Time (PT)	149
17. Applications of Radioisotopes	151
18. Stone Analysis	152

Section V: Metabolism

1. Metabolism of Carbohydrates	157
2. Metabolism of Lipids	163
3. Metabolism of Amino Acids and Proteins	169
4. Hemoglobin Metabolism	176
5. Neonatal Screening for Inborn Errors of Metabolism, Phenylketonuria and Albinism	177
6. Enzymology	183
7. Obesity	189

Section VI: Nutrition

1. Dietary Fibres	193
2. Balanced Diet, BMR, SDA	194
3. Fat Soluble Vitamins	196
4. Water Soluble Vitamins	199
5. Minerals	203
6. Dietetics	206

Section VII: Molecular Biology, Immunology

1. Structure of DNA	211
2. RNA: Types and Functions	212
3. Polymerase Chain Reaction (PCR)	213
4. Blotting Techniques	215
5. Structure and Functions of Immunoglobulins	217

<i>Index</i>	219
--------------	-----