Contents

Foreword by Dr M Jape Foreword by Dr Suraj Foreword by Dr Sachin Malhotra Contributors Preface to the Second Edition Preface to the First Edition		
	Section I Laboratory Medicine: Purpose and Practice	
2. 3. 4. 5. 6. 7. 8. 9.	Introduction Laboratory Management Laboratory Planning Containers and Swabs for the Collection of Specimens Reusable Glass Containers Disposable Specimen Containers Transport Medium Choice of Diagnostics Documentation of Specimens in the Laboratory Ethics in Laboratory Practice Disinfection, Washing and Sterilisation	3 4 6 8 9 11 13 14 16 18
	Section II Pathology	
2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.	Microscopic Study of Cells and Tissues Necrosis and Gangrene Amyloidosis Inflammation Chronic Inflammation and Repair Circulatory Disturbances 1 Circulatory Disturbances 2 Disorders of Cell Growth Malignant Tumours Alimentary System (Tongue, Oesophagus, Salivary Gland, Stomach) Hepatobiliary System (Necrosis of Liver, Viral Hepatitis and Liver Abscess) Hepatobiliary System: Cirrhosis and Carcinoma Liver Respiratory System Cardiovascular System	33 39 44 46 49 56 60 63 67 70 77 80 84 89

xi	Practical Textbook of Laboratory Medicine	
16. 17. 18. 19.	Diseases of Kidney Female Reproductive System Male Reproductive System Lymph Nodes and Spleen Diseases of Bones: Tumours of Bone and Skin Diseases Tumours of the Breast and Diseases of the Endocrine Organs	93 100 104 107 112 120
	Section III Clinical Pathology	
2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20.	Preparation of Different Kinds of Reagents, Solutions and Anticoagulants Preparation and Staining of Peripheral Blood Smears Haemoglobin (Hb) Estimation Total Leucocyte Count and Absolute Eosinophil Count Differential Leucocyte Count Total Red Blood Cell Count Erythrocyte Sedimentation Rate, Packed Cell Volume and Absolute Indices Bleeding Time and Clotting Time Platelet Count Study of Peripheral Smears in Cases of Anaemia Study of Leukaemia Smears Demonstration of Blood Parasites Preparation and Demonstration of LE Cell Reticulocyte Count and G6PD Estimation Osmotic Fragility and Sickling Phenomenon Urine Examination—Routine and Microscopic Urine Examination—Physical and Chemical Stool Examination—Microscopic Cerebrospinal Fluid Analysis Semen Examination	129 133 135 139 142 145 147 151 153 154 158 161 164 166 168 170 176 178 180 186 189
	Section IV Histopathology	
2. 3. 4. 5. 6. 7. 8. 9.	Reception, Registration and Fixation of the Specimen Grossing of Specimen and Decalcification Tissue Processing Embedding and Blocking Sharpening of Knives Trimming of Blocks (Section Cutting I) Trimming of Blocks (Section Cutting II) Staining of Sections and Routine H and E Stain Frozen Section: Cutting and Staining Special Stains Connective Tissue Stains—Masson's Trichome, PTAH, Reticulin, Elastin Stains	195 197 200 203 204 207 209 211 214 216 218

	Contents	xiii
13. 14. 15. 16. 17. 18.	Special Stain for Fat Special Stain for Amyloid Special Stain for Iron Cytology—Obtain Material Cytology Staining Museum Technology Autopsy Performance Autopsy Examination and Organ Removal Indexing, Recording and Dispatching of the Reports	221 223 225 226 228 230 233 235 237
	Section V Microbiology	
2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19.	General Requirements for Cultivation of Microorganism Optical Method in Specimen Examination Staining Formulae and Procedures Methods of Obtaining Pure Cultures Collection and Handling of Specimens for Microbiological Examinations Formulae and Preparation of Culture Media I Formulae and Preparation of Culture Media II Formulae and Preparation of Culture Media III Reagents and Tests Quality Control in Microbiology Laboratory Determination of Susceptibility of Bacteria to Antimicrobial Agents Antigen-Antibody Reactions I Antigen-Antibody Reactions II Bacteriological Examination of Food and Water Laboratory Methods in Diagnosis of Viral and Fungal Infections Laboratory Methods in Diagnosing Parasitic Infection Syphilis—Dark Field Examination, VDRL, TPHA Gonorrhoea—Smears, Staining and Culture Trichomonas vaginalis and Moniliasis Other Procedures for Diagnosis of Sexually Transmitted Diseases	241 245 248 251 253 255 258 261 264 267 269 271 273 276 279 281 284 287 288 290
	Section VI Biochemistry	
2. 3. 4. 5. 6. 7. 8.	The Analytical Balance Carbohydrates Proteins Determination of Glucose in Blood I Determination of Glucose in Blood II Determination of Urea in Blood I Determination of Urea in Blood II Determination of Creatinine in Blood Determination of Total Cholesterol in Blood	295 297 300 303 305 307 309 311 313

xi	v Practical Textbook of Laboratory Medicine	
	• • • • • • • • • • • • • • • • • • • •	
10.	Determination of Uric Acid in Blood	315
	Determination of Bilirubin in Blood	317
12.	Determination of Total Protein (Biuret Method)	319
13.	Determination of Albumin (Bromocresol Dye Method)	321
14.	Determine the Activities of SGOT and	
	SGPT in Serum (Reitman and Frankel Methods)	323
	Determine the Activity of Acid Phosphatase (ACP)	326
	Determine Alkaline Phosphatase Activity in Serum	328
	Determination of Calcium in Serum	330
	Determination of Inorganic Phosphate in Serum (Gomori's Method)	332
	Determine Sodium and Potassium in Serum	334
	Determine Chloride in Serum	336
	Determine the Amylase Activity in Serum	337
	Determine the Acid Content of Gastric Fluid after Alcohol Stimulation	338
	Qualitative Analysis of Gastric Fluid Automation	339 340
24.	Automation	340
	Section VII Blood Banking and Immunology	
1	Study of Blood Bank Structure Pagin Appliances and Equipment	353
	Study of Blood Bank Structure, Basic Appliances and Equipment Selection of Blood Donor Voluntary and Replacement Blood Donor	359
	ABO Blood Grouping Techniques	364
	Rh Blood Grouping	371
	Other Blood Group Systems	380
	Study of Storage and Preservation of Blood	389
	Study of Compatibility Testing and Crossmatching	399
	Anti-human Globulin and Coombs' Testing	405
10.	Study of Whole Blood and Transfusion of Store Blood	412
11.	Blood Transfusion and Transfusion Reactions	418
12.	Diseases Transmitted through Blood and their Screening	424
13.	Human Immunodeficiency Virus and Acquired Immunodeficiency Syndrome	435
	Hospital Infections, Biomedical Waste and Disposals	450
15.	Automation in Blood Bank and Transfusion Services,	
	Medicolegal Aspects of Blood Banking	473
16.	Blood Components I (Packed Red Cells, Platelet Concentrate and Granulocyte	400
17	Concentrate)	482
1/.	Blood Components II (Human Plasma Preparations, FFP (Fresh Frozen Plasma), Single Donor Plasma Cryoprecipitate)	490
	(1706) 1102011 Idditid), dirigio borioi ridditid Cryopiecipiidie)	770

496

499

507

18. Blood Components and Plasma Derivatives

20. Quality Control: Blood and Blood Components

19. Quality Assurance: Blood Bank and Transfusion Medicine

		Contents	χv
	Section VIII Laboratory Accreditation and Quality		
2.	Laboratory Accreditation Quality Control Computers in Laboratory Medicine		513 516 528
	Appendices		
Ар	oppendix 1 to 17		533
Inc	dex		573