

CONTENTS

Preface

vii

INTRODUCTION

1	General Instructions on Using The Laboratory	3
2	Biosafety	5
3	Some Useful Tips Regarding Weights, Measurements, Solution Preparation and Calculations	15

IMMUNOLOGY

4	Preparation of Antigen	37
5	Immunization Technique	39
6	Raising Antibodies in Mice	42
7	Blood Collection and Serum Preparation	45
8	Haemagglutination	46
9	Immuno-Electrophoresis /Immunodiffusion	49
10	Double Immunodiffusion	51
11	Single Radial Immunodiffusion	53
12	Immunoprecipitation Technique	55
13	Rocket Immuno-electrophoresis	57
14	Enzyme Linked Immunosorbent Assay (Elisa)	59
15	Elisa Procedure	66
16	Western Blot Analysis	68
17	Purification of Immunoglobulin	72
18	Conjugation of Enzyme with Antibody	74
19	Preparation of Lymphocytes	75
20	Plaques Forming Cell Assay	77

MICROBIOLOGY

	Laboratory Safety and Basic Requirements	83
21	Preparation of Liquid Culture Media	86
22	Preparation of Solid Culture Media	88
23	Isolation of Bacteria into Pure Culture	90
24	Determination of Microbial Growth	94
25	Isolation of Staphylococci	96
26	Gram Staining Technique	98
27	Determination of Microbial Quality of Milk	101

ANIMAL CELL CULTURE

28	Cell/Tissue Culture : Basic Concepts	105
29	Preparation of Medium	119
30	Preparation of Serum	120
31	Primary Cell Culture	123
32	Culturing and Sub-Culturing of Animal Cells	127
33	Vital Staining and Viable Counting	130
34	Chromosome Karyotyping	132

BIOCHEMICAL TECHNIQUES

35	pH and Buffers	137
36	Biological Buffers	147
37	Centrifugation	154
38	Colorimetry	163
39	Spectrophotometer	168
40	Estimation of Protein	173
41	Estimation of Amino Acid	181
42	Estimation of Carbohydrate	183
43	Estimation of Total Sugar	187
44	Estimation of Nucleic Acid	190
45	Estimation of RNA	193
46	Extraction of Lipid	196
47	Assay of Amylase Activity	198

SEPARATION AND ANALYTICAL TECHNIQUES

48	Electrophoresis	201
49	Agarose Gel Electrophoresis	206
50	DNA Gel Electrophoresis	210
51	RNA Gel Electrophoresis	219
52	Polyacrylamide Gel Electrophoresis	225
53	Western Blot Analysis	234
54	Chromatography	236
55	Chromatography of Amino Acids	241
56	Separation of Amino Acids by Paper Chromatography	243
57	Chromatographic Separation of Sugars	246

HAEMATOLOGY

58	Estimation of TLC	253
59	Estimation of TEC	257
60	Haemoglobin Estimation	261
61	Estimation of Haematocrit /PCV Erythrocyte Volume Fraction	265
62	Estimation of Mean Erythrocyte Haemoglobin Concentration (MEHC)	267
63	Estimation of ESR (Westergren Method)	269
64	Preparation & Staining of a Thin Blood Film	272
65	Examination of Leukocyte & Leukocyte Number Fraction	275

PHYSIOLOGY

66	Effect of Temperature on Rate of Heart Beat	283
67	Study of Estrous Cycle from Vaginal Smear of Rat	285
68	Estimation of Respiratory Rate in Fishes	287

APPENDICES

Appendices	293
Index	311