

Contents

Preface

vii

1. History of Pharmacy 1–13

- Origin and Development of Pharmacy 1
- Oath of a Pharmacist 3
- Scope of Pharmacy 4
- Career Opportunities 5
 - Production and Manufacturing 5
 - Research and Development 6
 - Analysis and Testing 6
 - Marketing 7
 - Hospital Pharmacy 7
 - Community Pharmacy 7
 - Academics 8
 - Regulatory Affairs 8
 - Documentation, Library Information Services and
Pharmaceutical Journalism 9
 - Consultancy 10
 - Opportunities Abroad 10
- Key Points 11
- Practice Questions 12

2. Pharmacopoeia 14–33

- Introduction to Pharmacopoeia 14
- History of Pharmacopoeia 14
 - Official Compendia 16
 - Nonofficial Compendia 17
- Indian Pharmacopoeia (IP) 17
 - Main Features of First Edition of Indian
Pharmacopoeia (1955) 18
 - Main Features of the Second Edition of Indian
Pharmacopoeia (1975) 19

Main Features of Third Edition of Indian Pharmacopoeia (1985)	21
Main Features of the Fourth Edition Of Indian Pharmacopoeia (1996)	22
British Pharmacopoeia (BP)	23
British Pharmaceutical Codex (BPC)	25
United States Pharmacopoeia (USP)	26
Main Features of USP	27
The International Pharmacopoeia	29
Key Points	29
Practice Questions	31
3. Dosage Forms	34–59
Introduction to Dosage Forms	34
Solid Dosage Forms	34
Tablet	34
Pills	36
Powders	37
Capsule	39
Granules	39
Liquid Dosage Forms	40
Monophasic Liquid Dosage Forms	40
Elixirs	40
Mouthwashes	42
Gargles	42
Liniments	43
Inhalation	43
Lotions	43
Eye Drops	44
Ear Drops	44
Nasal Drops and Sprays	45
Biphasic Liquid Dosage Form	45
Emulsion	45
Suspensions	46
Semisolid Dosage Forms	46
Creams	47
Suppositories	50
Key Points	51
Practice Questions	56
4. Prescription	60–78
Rx	60
Parts of a Prescription	61
Physician (Prescriber) Information	61
Patient Information	61
Superscription	61

Inscription	61
Subscription	62
Signatura	62
Renewal	62
Signature	62
Other Important Instructions	62
Handling of Prescripton	63
Receiving	64
Reading and Checking	64
Collecting and Weighing the Material	65
Compounding, Labelling and Packaging	65
Modern Methods of Prescribing	66
Care Required in Dispensing Prescription	67
Sources of Error in Prescription	68
Abbreviation	68
Name of the Drug	68
Strength of the Preparation	69
Dosage Form of the Drug Prescribed	69
Dose	69
Instructions for the Patient	69
Incompatibilities	70
Legality of Prescription	70
Writing a Good Prescription	70
Key Points	75
Practice Questions	76
5. Posology	79–86
Posology	79
Factors Affecting Dose	79
Calculation of Doses	82
Key Points	84
Practice Questions	85
6. Pharmaceutical Calculations	87–111
Enlarging and Reducing Recipes	90
Ratio and Quantity Method	90
Conversion Factor Method	91
Practice Questions	92
Percentage Preparations	93
Types of Percent	93
Alcohol Dilution	94
Dilution Method for Stock Preparations	97
Practice Questions	99
Alligation Method	101
Practice Questions	104
Proof Spirit	105

Practice Questions	107
Isotonic Solutions	108
Isotonicity	108
Hypertonicity	108
Hypotonicity	108
Calculation Based on Isotonicity	110
Practice Questions	111

7. Powders 112–127

Powders	112
Classification of Powders	115
Bulk Powder for External Use	115
Bulk Powder For Internal Use	117
Simple and Compound Powder For Internal Use	118
Effervescent Granules	118
Cachets	119
Key Points	124
Practice Questions	125

8. Liquid Dosage Forms 128–141

Liquid Dosage Forms	128
Classification	129
Excipients Used in Liquid Dosage Form	129
Vehicle	130
Buffering Agents	133
Isotonicity Modifiers	133
Viscosity Modifiers	133
Preservatives	133
Antioxidants	134
Sweetening Agents	134
Flavors and Perfumes	135
Coloring Agents	135
Wetting Agents and Surfactants	135
Methods to Enhance the Solubility	136
Surfactants	137
Cosolvency	137
pH Adjustment	137
Key Points	138
Practice Questions	140

9. Monophasic Liquids 142–164

Gargles	143
Mouthwashes	144
Throat Paints	145
Ear Drops	147
Nasal Drops	148

- Enema 150
 - Cleansing Enemas 150
 - Therapeutic Enemas 150
 - Diagnostic Enemas 151
 - Disposable Enemas 151
- Syrups 151
 - Preservatives 153
 - Label And Storage 153
- Elixirs 154
- Liniments 156
 - Labeling 157
 - Container 157
- Lotions 159
- Key Points 161
- Practice Questions 163

10. Biphasic Liquids—Suspension and Emulsion .. 165–200

- Emulsion 165
 - Types of Emulsions 166
 - Test for Identification of Emulsion 169
 - Emulsifying Agents 171
 - Method of Preparation of Emulsion 175
 - Stability Problems of Emulsion 177
 - Parameters for Assessing the Emulsion Stability 180
 - Packaging of Emulsions 182
- Suspensions 183
 - Classification of Suspensions 185
 - Method of Preparation 185
 - Important Considerations in Formulation of a Suspension 186
 - Factors Affecting Sedimentation 187
 - Sedimentation Behavior 189
 - Stability Problems with Suspension 191
- Key Points 194
- Practice Questions 197

11. Suppositories 201–229

- Introduction 201
 - Rectal 203
 - Vaginal Suppositories 204
 - Urethral 204
 - Inserting Suppositories 205
 - Inserting Vaginal Suppositories 206
 - Types of Suppository Bases 208
 - Methods of Preparation 215
 - Evaluation of Suppositories 222
 - Packaging and Storage 225

Key Points 225
Practice Questions 227

12. Pharmaceutical Incompatibilities 230–241

Types of Incompatibilities 230
Physical Incompatibility 230
Chemical Incompatibility 233
Therapeutic Incompatibility 235
Key Points 239
Practice Questions 240

13. Semisolid Dosage Forms 242–269

Types of Conventional Semisolid Dosage Forms
and their Properties 242
Ideal Properties of Semisolid Dosage Forms 242
Mechanisms of Drug Penetration and Route of
Absorption 244
Mechanism of Drug Absorption 245
Factors Affecting Skin Penetration 246
Ointments 246
Characteristics of an Ideal Ointment 247
Classification of Ointments 247
Methods of Preparation of Ointment 247
Pastes 250
Preparation of Paste 251
Storage of Pastes 252
Creams 253
Types of Cream 254
Gels (Jellies) 255
Types of Jellies 256
Method of Preparation 257
Preservation of Jellies 257
Excipients Used in Preparation of Semisolids 257
Evaluation of Semisolid Dosage Form 263
Microbial Test 263
Physical Tests 264
Chemical Tests 265
In Vitro Release Profile Test 265
Packaging of Semisolids 266
Key Points 266
Practice Questions 268

14. Experiments in Pharmaceutics 270–306

Laboratory Manners 270
Glassware Handling 271
Washing 271
Drying 271

Heating	272
Glassware Care	272
Materials Required for Practical	272
Journal Writing	272
Writing in the Index	273
Writing Experiment	273
Details of Journal Writing	273
Examination	275
Viva Voce Questions	276
Experiment 1: To prepare 100 g of simple syrup (IP)	277
Experiment 2: To prepare 100 ml of peppermint spirit (BPC)	278
Experiment 3: To prepare 100 ml of calamine lotion (IP)	279
Experiment 4: To prepare 100 ml of methyl salicylate liniment (BP)	281
Experiment 5: To prepare 100 ml of turpentine liniment (BP)	282
Experiment 6: To prepare 100 ml of kaolin poultice (BP)	283
Experiment 7: To prepare 28 g of ORS powder (IP)	284
Experiment 8: To prepare 100 g of absorbable dusting powder (USP/NF)	285
Experiment 9: To prepare and submit 20 ml of cresol with soap solution IP (lysol solution)	286
Experiment 10: To prepare and submit 100 ml of aluminium hydroxide antacid suspension	288
Experiment 11: To prepare and submit 20 ml of liquid paraffin emulsion IP	290
Experiment 12: To prepare and submit 20 ml of castor oil emulsion	292
Experiment 13: To prepare and submit 20 ml of cod liver oil emulsion IP	293
Experiment 14: To prepare and submit 5 boric acid suppositories	294
Experiment 15: To prepare and submit 20 ml of potassium chlorate gargles	296
Experiment 16: To prepare and submit 20 ml of antiseptic mouthwash	297
Experiment 17: To prepare and submit 20 g of nonstaining iodine ointment BPC	298
Experiment 18: To prepare and submit 20 ml of strong ammonium acetate solution IP	300

Experiment 19: To prepare 10 g of coal tar and salicylic acid ointment 301

Experiment 20: To prepare and submit 100 ml of paracetamol pediatric elixir IP 302

Experiment 21: To prepare and submit 25 gm of cold cream 303

Experiment 22: To prepare and submit 5 g of tooth powder 305

Glossary 307–320

Appendices 321–328

Index 329