

1.2 PHARMACEUTICS (THEORY)

50 hours ; 2 hours/week

1. **Historical background** and development of profession of pharmacy. **Development of Indian pharmacopoeia** and introduction to other pharmacopoeias such as B.P, U.S.P, European pharmacopoeia, Extra pharmacopoeia and Indian National Formulary. **4 hours; 6-8 marks**
2. **Weights and measures:** Different types of weights and measures, modern methods of weighing, errors in weighing. Calculations involving percentage of solutions, allegation method, proof spirit, isotonic solutions. **4 hours; 6-8 marks**
 - a) **Prescription:** Definition, parts of prescription, handling and sources of errors.
 - b) **Posology:** Definition, factors affecting dose selection, calculation of child and infant doses.
 - c) **Incompatibility:** Introduction to physical and chemical incompatibility. Discussion of therapeutic incompatibility with examples. **5 hours; 8-10 marks**
3. **Introduction to dosage forms:** Classification and definitions. Theoretical aspects including commonly used vehicles, essential adjuvants like stabilizers, colorants and flavourants with relevance to monophasic liquid dosage forms. **6 hours; 10-12 marks**
4. **Biphasic liquid dosage forms:**
 1. **Suspensions:** Definition, classification, advantages and disadvantages. Study of diffusible and in-diffusible solids, flocculated and deflocculated suspension. Settling in suspension, discussion on wetting, controlled flocculation and flocculation in structured vehicles.
 2. **Emulsions:** Definition, classification and identification of types of emulsion, mechanism of action of emulsifying agents, theories of emulsification. Formulation of emulsion; stability of emulsions. **8 hours; 13-15 marks**
5. **Powders and granules:** Classification, advantages and disadvantages and methods of mixing of powders. Preparation of simple powders, compound powders, insufflations, dusting powders, Eutectic powders. Study of effervescent granules. **4 hours; 6-8 marks**
6. **Semi solid dosage forms:** Definition, types, semi-solid bases, their selection. Formulation of semi solids such as ointments, creams, pastes, gels, suppositories, packaging, and their evaluation. **8 hours; 13-15 marks**
7. **Galenicals:** Definition of infusion, decoction and expression. Detailed study of maceration and percolation and Soxhlet extraction. **4 hours; 6-8 marks**
8. **Surgical Aids:** Study of surgical dressings namely bandages, absorbent cotton and POP. Definition and types of surgical sutures and ligatures. Manufacturing, standardization and sterilization of surgical catgut. **4 hours; 6-8 marks**
9. **Radiopharmaceuticals:** Uses in diagnosis and treatment, methods of preparations, handling and safety precautions. **3 hours; 5-7 marks**

PHARMACEUTICS (PRACTICALS)

75 Hours ; 3 hours/week

1. **Syrups:**
 - a) Simple syrup IP *
 - b) Syrup of ephedrine hydrochloride NF*
2. **Elixirs:**
 - a) Piperazine citrate elixir BP*
 - b) Paracetamol paediatric elixir BPC*
3. **Linctuses:**
 - a) Simple linctus BPC*
 - b) Paediatric compound tolu linctus*
4. **Solutions:**
 - a) Solution of cresol with soap IP**
 - b) Aqueous iodine solution IP*
 - c) Strong ammonium acetate solution IP**
5. **Galenicals:**
 - a) Tincture of benzoin*
 - b) Spirit of camphor USP*
6. **Gargle:**
 - a) Potassium chlorate gargle*
7. **Mouth wash:**
 - a) Antiseptic mouth wash*
8. **Enema:**
 - a) Glycerin enema*
9. **Liniments:**
 - a) Liniment of turpentine IP**
 - b) Liniment of camphor BPC**
10. **Lotions:**
 - a) Calamine lotion IP**
 - b) Benzyl benzoate lotion USP*
11. **Suspensions:**
 - a) Magnesium hydroxide mixture BP**
 - b) Preparation of deflocculated and flocculated suspensions and their evaluation**
12. **Emulsions:**
 - a) Cod liver oil emulsion**
 - b) Liquid paraffin emulsion. Preparation and evaluation**
13. **Powders:**
 - a) Eutectic powder*
 - b) Dusting powder*
 - c) Effervescent granules**
14. **Semi solids:**
 - a) Simple ointment*
 - b) Zinc and Salicylic acid paste*
 - c) Diclofenac gel**
 - d) Boric acid suppository**
 - e) Lactic acid pessaries**

Note: ** Denotes major experiments

*** Denotes minor experiments**

SCHEME OF EXAMINATION

1. Synopsis	-10 Marks
2. Major experiment (indicated by **)	-30 Marks
3. Minor experiment (indicated by *)	-20 Marks
4. Viva voce	-10 Marks
Total	<u>=70 Marks</u>

PHARMACEUTICS REFERENCE BOOKS

1. Aulton ME. *Pharmaceutics, The science of dosage form design*. 2nd ed. Edinburgh:Churchill Livingstone;2002.
2. Bharat S. *Pharmaceutics*. New Delhi:Dorling Kindersley (India) Pvt Ltd;2013.
3. *British Pharmacopoeia (BP), United States Pharmacopoeia (USP), Extra Pharmacopoeia, Merck Index, and British Pharmaceutical Codex (BPC)*.
4. Carter SJ. Cooper and Gunn's *Dispensing for pharmaceutical students*. 12th ed. New Delhi:CBS Publishers;2000.
5. Carter SJ. Cooper and Gunn's *Tutorial pharmacy*. 6th ed. New Delhi:CBS Publishers;2000.
6. Gennaro AL. *Remington: The science and practice of pharmacy, Vol I and II*. 20th ed. Philadelphia:Lippincott Williams and Wilkns;2000.
7. *Indian Pharmacopoeia*. Delhi:The Controller of Publications;1966, 1977, 1985, 1996, 2007, 2014.
8. Loyd VA, Nicholas GP, Howard CA. *Ansel's pharmaceutical dosage forms and drug delivery systems*. 8th ed. Noida: BI Publications Pvt Ltd;2005.
9. Mehta RM. *Dispensing Pharmacy*. Delhi:Vallabh Prakashan;2013.
10. Mehta RM. *Pharmaceutics I*. Delhi:Vallabh Prakashan;2014.
11. Mitchell JS, Howard CA. *Pharmaceutical calculations*. 10th ed. New Delhi:BI Waverley Pvt Ltd;1996.
12. Rawlins EA. *Bentley's textbook of pharmaceutics*. 8th ed. New Delhi:Reed Elsevier India Pvt Ltd;2010.
13. Subrahmanyam CVS. *Textbook of physical pharmaceutics*. 2nd ed. Delhi:Vallabh Prakashan;2003.

LIST OF MINIMUM EQUIPMENTS REQUIRED

1. Electronic balances	02 nos.
2. Homogeniser	02 nos.
3. Mechanical stirrers	10 nos.
4. Oven	01 no.
5. pH meter	01 no.
6. Suppository moulds	20 nos.