

SECOND PROFESSIONAL

PHARMACEUTICS-II (DOSAGE FORMS SCIENCE) (Theory)

Paper 1

Marks 100

1. **PHARMACEUTICAL CALCULATIONS:** Some Fundamentals of Measurements and Calculations. The Metric System. The Common Systems. Conversions. Calculation of Doses. Percentage calculations, Reducing and Enlarging Formulas. Weights and Volumes of Liquids. HLB Values. Industrial Calculations. Calculations involving parenteral admixtures. Some calculations involving Hydrogen-ion concentration. Calculations involving isotonic, electrolyte and buffer solutions.
2. **INTRODUCTION:** Dosage form, Ingredient, Product formulation.
3. **GALENICAL PREPARATIONS:** Infusions, Decoctions, Extracts, Fluid extracts, Tinctures, Aromatic waters.
4. **SOLVENTS USED IN PHARMACEUTICAL PREPARATIONS:**
5. **ORAL SOLUTIONS, SYRUPS, ELIXIRS AND SPIRITS:** Solutions: Preparation, dry mixtures for solution, oral rehydrate solutions, oral colonic lavage solution. Syrup: components and preparation of syrups. Elixirs: Preparation of elixirs, Medicated and non-Medicated elixirs. Spirits: Preparation of Spirits.
6. **ORAL SUSPENSIONS, EMULSIONS, MAGMA AND GELS:** Preparations, examples and importance.
7. **TOPICAL AND TRANSDERMAL DRUG DELIVERY SYSTEMS:** Introduction of Ointments, Creams, Pastes, Poultice, Plasters, Lotions, Liniments, Topical gels, Topical Tinctures, Collodions, Topical solutions, Topical powders, Percutaneous absorption, Transdermal systems in use.
8. **OPHTHALMIC, NASAL AND OTIC PREPARATIONS:** Ophthalmic solutions, suspensions, ointment, inserts, contact lens solutions. Nasal decongestant solutions, Decongestant inhalers. Ear preparations: Anti-infective, anti-inflammatory and analgesic.
9. **SUPPOSITORIES AND ENEMAS:** Semi-solid preparations, Suppositories: Bases, preparation, packaging and storage; Solutions/Enemas: Preparation, packaging and storage.
10. **AEROSOLS, INHALATIONS AND SPRAYS:** Aerosol: Principle, container and valve assembly, propellants, filling, testing, packaging, labelling and storage. Inhalations: Principle, container and valve assembly, propellants, filling, testing, packaging, labelling and storage. Sprays: Principle, container and valve assembly, propellants, filling, testing, packaging, labelling and storage.
11. **POWDERS, CAPSULES, TABLET DOSAGE FORMS:** Preparation of Powders, mixing

of powders, uses and packaging of powders, granules, effervescent granulated salts. Hard gelatin capsules: Capsule sizes, preparation of filled hard gelatin capsules. Soft gelatin capsules: Preparation and its application. Tablets, their types, characteristics and methods of preparation.

12. **INTRODUCTION TO PARENTERALS:** Official types of injections, solvents and vehicles for injections, added substances.

13. **A BRIEF INTRODUCTION TO ORAL HYGIENE PRODUCTS:**

PHARMACEUTICS-II (Dosage Forms Science) (Practical)

Paper 7

Marks 100

NOTE: Practicals of the subject shall be designed from time to time on the basis of the above mentioned theoretical topics and availability of the facilities, e.g. Preparation of simple syrup, Orange syrup, Ferrous sulphate syrup, Cod Liver oil Emulsion, Liquid paraffin Emulsion, Throat paint (Mandle's paint), Boroglycerine glycerite, Tannic acid glycerin, Spirit ammonia aromatic, Spirit of Ethyl Nitrite. Preparation of Methyl salicylate ointment, Sulphur ointment, Calamine lotion, Iodine tincture, Preparations of oral hygiene products, Poultice of Kaolin, Effervescent granules, Distilled Water for injections (A minimum of 20 practicals will be conducted).

PHARMACOLOGY AND THERAPEUTICS-I (Theory)

Paper 2

Marks 100

1. **GENERAL PHARMACOLOGY:**

- a. **Pharmacology:** Definition, History, and its various branches. Drug: Definition and its various sources.
- b. **Routes of drugs administration, advantages and disadvantages.**
- c. **Pharmacokinetics:** Drug solubility and passage of drug across the biological membranes. Absorption, distribution, metabolism and elimination of drugs and factors affecting them. Various pharmacokinetic parameters including volume of distribution (V_d), clearance (Cl), Biological half life ($t_{1/2\beta}$), Bioavailability and various factors affecting it. Dose, Efficacy and potency of drugs. Hypersensitivity and Idiosyncratic reactions, drug tolerance and dependence. Drug interactions. Plasma protein binding.
- d. **Pharmacodynamics:** How drugs act? Receptors and their various types with special reference to their molecular structures. Cell surface receptors, signal transduction by cell surface receptors, signaling Mediated by intra cellular receptors, target cell and hyper sensitization, Pharmacological effects not Mediated by receptors (for example anesthetics and cathartics) Ion channel, enzymes, carrier proteins, Drug receptor interactions and theories of drug action. Agonist, antagonist, partial agonist, inverse agonist. Receptors internalization and receptors co-localization. Physiological Antagonism, Pharmacological Antagonism (competitive and noncompetitive), Neutralization Antagonism, Neurotransmission and neuro-modulation. Specificity of