

1. **PHARMACY ORIENTATION:** Introduction and orientation to the Professional of Pharmacy in relation to Hospital Pharmacy, Retail Pharmacy, Industrial Pharmacy, Forensic Pharmacy, Pharmaceutical Education and research etc.
2. **HISTORY AND LITERATURE OF PHARMACY:**
 - a. A survey of the history of pharmacy through ancient, Greek and Arab periods with special reference to contribution of Muslim scientists to pharmacy and allied sciences.
 - b. An introduction of various official books.
3. **PHYSICO-CHEMICAL PRINCIPLES:**
 - a. Solutions: Introduction, types, concentration expressions, ideal and real solution, colligative properties, their mathematical derivations and applications in pharmacy, molecular weight determinations, distribution co-efficient and its applications in pharmacy.
 - b. Solubilization: Solubility, factors affecting solubility, surfactants, their properties and types. Micelles, their formulation and types.
 - c. Adsorption: Techniques and processes of adsorption in detail.
 - d. Ionization: pH, pH indicators, pka, buffers, buffer's equation, Isotonic solutions and their applications in pharmacy.
 - e. Hydrolysis: Types and protection of drugs against hydrolysis.
 - f. Micromeritics: Particle size and shapes, distribution of particles methods of determination of particle size and importance of particle size in Pharmacy.
4. **DISPERSIONS:**
 - a) Colloids: Types, methods of preparation, properties (optional, kinetic, electrical) Dialysis and artificial kidney, stability of colloids, protection and sensitization phenomenon and application of colloids in Pharmacy.
 - b) Emulsions: Types, theories of emulsification, Emulsifying agents their classification and stability of emulsion.
 - c) Suspensions: Type, Methods of Preparation, Properties, Suspending agents, their classification and stability.
5. **RHEOLOGY:** Definition and Fundamental concept; Properties contributing to Rheological behaviour; Graphic presentation of Rheological data.
6. **PHYSICOCHEMICAL PROCESSES:**
 - a. Precipitation: Process of precipitation and its applications in Pharmacy.
 - b. Crystallization: Types of crystals, Mechanism and methods of crystallization and its applications in Pharmacy.
 - c. Distillation: Simple, fractional, steam distillation, vacuum distillation, destructive distillation and their applications in Pharmacy.
 - d. Miscellaneous Processes: Efflorescence, deliquescence, lyophilization, elutriation, exiccation,

ignition, sublimation, fusion, calcination, adsorption, decantation, evaporation, vaporization, centrifugation, desiccation, levigation and trituration.

7. EXTRACTION PROCESSES:

- a. Maceration: Purpose & process.
- b. Percolation: Purpose and Process.
- c. Liquid-Liquid extraction: Purpose and Process.
- d. Large scale extraction: Purpose and Process.

8. RATE AND ORDER OF REACTIONS:

9. KINETIC PRINCIPLES AND STABILITY TESTING:

THEORETIC CONSIDERATIONS: (Degradation)

- a. Physical Factors: Influence of pH, temperature, ionic strength, acid-base catalysis, U.V. light.
- b. Chemical Factors: Complex chemical reactions. Oxidation-reduction reactions, Hydrolysis.

PHARMACEUTICS-I (PHYSICAL PHARMACY) (Practical)

Paper 09

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.

1. Experiments to demonstrate some of Physico-chemical processes like simple distillation, steam distillation, crystallization, dialysis.
2. Determination of Emulsion systems.
3. Determination of particle size.
4. Density, Specific Volume, Weights and Volumes of Liquids.
5. Preparation of Buffer solutions and isotonic solution.
6. Determination of %age composition of solutions by specific gravity method.
7. Partition-coefficient, surface tension, viscosity.

PHYSIOLOGY (Theory)

Paper 4

Marks 100

Course objective: After the completion of this course the students should be able to describe all the basic physiological processes which are the basis of pathophysiology of various diseases and their ultimate link with pharmacology for their treatment.

1. BASIC CELL FUNCTIONS:

- a. Chemical composition of the body: Atoms, Molecules, Ions, Free Radicals, Polar Molecules, Solutions, Classes of Organic Molecules
- b. Cell structure: Microscopic Observation of Cell, Microscopic, Cell Organelles, Cytoskeleton.
- c. Protein activity and cellular metabolism: Binding Site Characteristics, Regulation of Binding site Characteristics, Chemical Reactions, Enzymes, Regulation of Enzyme-Mediated Reactions, Multi-enzyme metabolic Pathways, ATP, Cellular Energy Transfer,