

Surface and Interfacial Phenomenon: HLB classification, surface energy, surface and interfacial tensions, solid-gas and liquid-gas interfaces, surface active agents detergency, adsorption of interface, liquid interface.

Properties of Matter: Eutectic mixtures, change in state, vapour pressure of gases, relative humidity, liquid. Complexes, glassy state and crystalline, sublimation critical point

Micromeritics and Powder Rheology: Average particle size, surface area, volume, methods of determining particle size- optical methods, sieving, powders, bulkiness & flow properties, number and weight average molecular weight. Particle size and distribution, packing arrangement, density

Complexation: Methods of preparation, applications, Characterization

Viscosity and Rheology: Thixotropy in formulation, thixotropy, falling ball, determination of viscosity, dilution viscosity, kinematic viscosity, effect of temperature, capillary

Kinetics and Drug Stability: Half-life determination, factors affecting drug stability, other factors, Accelerated stability study, expiration date

Dispersion Systems: Physical stability, protective colloids, emulsions, vehicles, Suspensions and Emulsions, effect of Bioturbation, flocculation, sedimentation of flocculated particles, sedimentation parameters, properties of suspended particles theories, properties of dispersions, types

Structure of bacterial cell; Classification of microorganisms: Bacteria, spirochetes and viruses

Identification of Microbes: isolation of bacteria, Staining, culture, cultivation, microbial genetics and variation, actinomycetes

Control of microbes by physical and chemical methods: Disinfection and their evaluation, factors influencing disinfectants

Sterilization: Microbial assays of antibiotics, vitamins, hormones. Different methods, Sterility testing of all pharmaceuticals

Immunology and Immunological Preparations: Cell mediated immunity, antigens and heptans, immunological tolerance, standardization, antibody reactions and their applications, Vaccines and serums

Genetic Recombination: Study of drugs produced by monoclonal antibodies, Humulin, conjugation, transduction, Humatrope, HB, Transformation

Antibiotics: Factors influencing rate of mutation, Assay, Screening of soil for organisms producing antibiotics, Industrial fermenter, design, control of different parameters, Isolation of mutants, streptomycins, tetracyclines and vitamins

Pharmaceutical Legislations: Drugs & Pharmaceutical

An elaborate study of the followings: Narcotic Drug Preparations (Excise Duties) Act 1955, Drugs Price Control Cosmetics Act 1940 and Rules 1945

A brief study of the following Acts with special reference to: 1919, Insecticides Act 1968, Medical Termination of Pregnancy Act 1960, States Shops & Establishments Act & Rules, Misleading Advertisements) Act 1954, Patents Act 1970, AICTE
brief study of the various Prescription/Non-prescription

Prescription: Handling of prescription, Enlarging and including labeling of dispensed products, Posology, all value, source of errors in prescription, calculation of dose procedures including labeling of dispensed products, Pharmaceutical

Principles involved and procedures adopted in dispensing: mixtures, emulsions, tablet triturates, creams, ointments, pastilles, paints, sprays, solutions, liniments

Incompatibilities: Inorganic incompatibilities including Purine bases, organic incompatibilities, Therapeutic incompatibilities, quaternary ammonium compounds, incompatibilities, acids, pyrazolone derivatives, alkalis

Community Pharmacy: Patient counseling, legal responsibilities, wholesale, role of pharmacist in community health care planning), Organization and structure of retail and wholesale dispensing of proprietary products, design

Organization and Structure of hospital pharmacy: therapeutic committee, Responsibilities of a hospital pharmacist

Hospital Formulary: Contents, preparation and revision

Drug Store Management and Inventory Control: Purchase order, Organization of drug store, storage conditions, Types of

Drug distribution Systems in Hospitals: Dispensing of drugs to ambulatory patients, Dispensing distribution systems, Out-patient dispensing

Central Sterile Supply Unit and their Management: Types of materials for sterilization, sterilization equipment

Manufacture of Sterile and Non-sterile Products: Master formula Card, demand and costing, personnel requirements

Drug Information Services: Computerized services, Adverse drug reaction correction and reporting, treatment schedules, Retrieval of information on drugs, disease

Records and Reports : Prescription filling, Adverse drug reaction, pharmacoeconomics, patient medication profile, application of pharmacokinetics, reactions, Introduction to pharmacoeconomics, idiosyncratic reactions

Pharmacoepidemiology: Advantages & disadvantages, Types of pharmacoepidemiological studies, Definition and scope

Nuclear Pharmacy: Radioisotope committee, Methods of handling

Importance of unit operations in manufacturing, Statistical methods: energy balances, different types of graphic representation, primary and secondary quantities, dimensionless groups, differential equations, molecular units, mathematical problems

Fluid Flow: Viscosity, basic equations of fluid flow, laminar and turbulent flow, boundary layer, manometers and measurement of flow rate

Heat transfer: Concept of heat flow, boiling liquids, condensing vapors, applications of Fourier's law, radiation, natural and forced convection

Evaporation: Evaporators, Basic concept of phase equilibrium, problems on evaporation, single effect and multiple effect

Distillation: Azeotropic and extractive distillation, Role of theoretical plates, simple steam and flash distillations

Drying: Classification and types of dryers, Moisture content, heat calculations, dryers used in pharmaceutical industries and

Size Reduction: Different techniques of size separation requirements of a mills including ball mill, Definition, r mill, Size separation, sieves, cyclone separators, sedime

Mixing: Solid-solid, theory of mixing, solid-liquid and

Filtration and Centrifugation: Principles of centrifug industrial filters including filter press, rotary filter, ed centrifugal sedimenters, continuous and batch filters, Fa

Crystallization: Swenson Walker, Characteristics of ci affecting them, , Numerical problems on yields theory Swenson Walker Crystallizer, Supersaturation, Single crystals and its prevention, circulating magma and Kry various types of Crystallizers

Dehumidification and Humidity Control: Hygrometr equipments for Dehumidification operations, wet bu measurement in pharmacy,

Refrigeration and Air Conditioning: Principle and app

Material of Construction: Resistance, General study c of construction with special reference to stainless steel a

Material Handling Systems: Air transport, Liquid h blowers and compressors, Conveyers, Gas handling-Var

Corrosion: Mechanism of corrosion, Classification, pre

Plant location: Layout, utilities and services

Industrial Hazards and Safety Precautions: Industri Accident records

Automated Process Control Systems: Reactors and variables, flow, elements of computer aided manufactu introduction to automatic process control systems, press

Dosages Forms, designing & evaluation- Liquid Dos: solubilizers, types of additives used in formulations, c clear liquids, stabilizers, suspensions and emulsions off

Semisolid Dosage Forms: Definitions, semisolid b; influencing penetration, General formulation of sem; penetration

Suppositories: Displacement value, bases, manufacturing

Extraction and Galenical Products: Preparation of infusions, tinctures

Blood Products and Plasma Substitutes: Concentrated plasma, PVP, dried human plasma, human fibrinogen, human thromboplastin, immunoglobulin, Collection, dextran for control of blood

Pharmaceutical Aerosols: Definition, propellants, pharmaceutical applications

Ophthalmic Preparations: Requirements, formulation, packaging

Cosmeticology and Cosmetic Preparations: Fundamentals of cosmetics, hair, nail polish remover, Formulation, eye lotions, skin products hair, dentifrice and manicure preparations like nail polish

Capsules: Quality control, Advantages and disadvantages, dosage forms, material for production of hard gelatin capsules, capsule filling, soft gelatin, importance of base absorption

Micro-encapsulation: Types of microcapsules, coacervation, micro capsules, coating pan and other techniques, air suspension spray drying, microencapsulation by phase separation, solvent evaporation

Tablets: Application of different types of tablets, technology, Formulation of different types of tablets, Advantages and disadvantages, machinery and the equipments employed, granulation

Coating of Tablets: Stability kinetics and quality aspects, solution, equipments for coating, evaluation of coated tablets

Parenteral Products: Formulation details, Sterility, administration, Laminar flow bench services and maintenance, aseptic area, vials, Aseptic Techniques-source of contamination, solution and suspensions, non-aqueous vehicles, label, manufacture and evaluation of parenteral products, Control, sterile powders, washing of containers and closuresfilling

Surgical products: Definition, ligatures and catguts, plaster dressings, protective cellulosic hemostastics, absorbents

Packaging of Pharmaceutical Products: Package types, containers, factors influence choice of containers, types of packaging, ability aspects of packaging

Designing of dosage forms: Design, Pre-formulation wetting, dielectric constant, Solubility, influence on properties and their effect on formulation, oxidation, physical form, bioavailability and elegance of form hydrolysis, Stabilization and stability testing protocol problems related to stability, ICH Guidelines for stability validation methods for pharmaceutical operations involving tablets

Performance evaluation methods: production and evaluation dissolution studies for solid dosage forms methods, design studies and bioavailability testing protocol and proper interpretation of dissolution data, Design

Biopharmaceutics & Pharmacokinetics- Introductory
Passage of drugs across biological barrier (passive diffusion pinocytosis), physico-chemical, plasma protein binding,

Pharmacokinetics: Non-linear pharmacokinetics with administration, extrahepatic circulation, Significance Compartment model- Definition and Scope, hepatic clearance absorption rate constant using Wagner-Nelson and residue and distribution coefficient, Extraction ratio, mechanism two compartment models, clearance ratio, Clearance from urine data after drug administration by intravascular and

Clinical Pharmacokinetics: Pharmacokinetic drug interaction adjustment in patients with and without renal and hepatic study and relevant statistics

Bioavailability and bioequivalence: Measures of bioequivalence statistics, Cmax, Biopharmaceutical Classification System conducting bioequivalent studies, K_{el} and Area Under the