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

Properties of Matter: Eutectic mixtures, change in the state of matter, aerosols, gases, relative humidity, liquid. Complexes, glassy state crystalline, sublimation critical point

Micromeretics and Powder Rheology: Average particle volume, methods of determining particle size—optical microscopy, powder, bulkiness & flow properties, particle number and volume. Particle size and distribution, packing arrangement, density

Complexation: Methods of preparation, applications, C

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

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

Dispersion Systems: Physical stability, protective colloid vehicles, Suspensions and Emulsions, effect of Bi sedimentation of flocculated particles, sedimentation parameters of suspended particles, properties of dispersions, types

Structure of bacterial cell; Classification of microbes and viruses

Identification of Microbes: isolation of bacteria, Stains and types of staining techniques, cultivation, microbial genetics and variation, actinomyces

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

Sterilization: Microbial assays of antibiotics, vitamins, and other factors, Different methods, Sterility testing of all pharmaceutical substances

Immunology and Immunological Preparations: Cell antigens and heptans, immunological tolerance, antibodies, antibody reactions and their applications, Vaccines and sera
Genetic Recombination: Study of drugs produced by biotechnology such as Activase, Humulin, conjugation, transduction, Humatrope, HB, Transformation

Antibiotics: Factors influencing rate of mutation, A screening of soil for organisms producing antibiotics, I fermenter, design, control of different parameters, Iso, isolation of mutants, streptomycins, tetracyclines and vit

Pharmaceutical Legislations: Drugs & Pharmaceutical Industry

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

A brief study of the following Acts with special reference to the main provisions and the latest amendments:


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

Principles involved and procedures adopted in dispensing:

- mixtures, emulsions, tablet triturates, creams, ointmen 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 re 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 ph

Hospital Formulary: Contents, preparation and revision
Drug Store Management and Inventory Control: Purchase and Inventory Control principles, Purchase procedures, Purchase order, Organization of drug store, storage conditions, Types of materials stocked, Procurement.

Drug distribution Systems in Hospitals: Dispensing of drugs to ambulatory patients, Dispensing of controlled drugs, Dispensing of ancillary supplies, Types of distribution systems, Out-patient dispensing.

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

Manufacture of Sterile and Non-sterile Products: Master formula Card, demand and costing, personnel requirements, Policy making of manufacturable items.

Drug Information Services: Computerized services correction and reporting, treatment schedules, Retrieval on drugs, disease.

Records and Reports: Prescription filling, pharmacoeconomics, patient medication profile, application of pharmacoeconomics, idiosyncrasy.

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

Nuclear Pharmacy: Radioisotope committee, Methods.

Importance of unit operations in manufacturing, Stoichiometry: Unit processes: energy balances, different types of graphic representations, primary and secondary quantities, dimensionless groups, equations, molecular units, mathematical problems.

Fluid Flow: Viscosity, basic equations of fluid flow, boundary layer, manometers and measurement of flow.

Heat transfer: Concept of heat flow, boiling liquids, condensing vapors, applications of Fourier’s law, radiation, convection.

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

Distillation: Azeotropic and extractive distillation, Roult’s law, volatility, principles of rectification.

Drying: Classification and types of dryers, Moisture content and mechanism of drying, rate of drying and time of drying calculations, dryers used in pharmaceutical industries and special drying methods.
Size Reduction: Different techniques of size separation, requirements of a mill including ball mill, Definition, Size separation, sieve, cyclone separators, sedimentation tank, bag fillers, objectives.

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


Dehumidification and Humidity Control: Hygrometric chart and measurement of humidity, Basic concepts and definition, equipments for Dehumidification operations, wet bulb measurement in pharmacy.

Refrigeration and Air Conditioning: Principle and application of refrigeration and air conditioning.


Material Handling Systems: Air transport, Liquid transport, Blowers and compressors, Conveyers, Gas handling.

Corrosion: Mechanism of corrosion, Classification, prevention and control.

Plant location: Layout, utilities and services

Industrial Hazards and Safety Precautions: Industrial safety, Accident records.


Dosages Forms, designing & evaluation- Liquid Dosages: Solubilizers, types of additives used in formulations, clear liquids, stabilizers, suspensions and emulsions offi.

Semisolid Dosage Forms: Definitions, semisolid bases influencing penetration, General formulation of sem solid penetration.
Suppositories: Displacement value, bases, manufacturing, evaluation

Extraction and Galenical Products: Preparation of infusions, tinctures

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

Pharmaceutical Aerosols: Definition, propellants, pharmaceutical applications

Ophthalmic Preparations: Requirements, formulation, evaluation

Cosmeticology and Cosmetic Preparations: Fundamentals of cosmetic science, hair products, nail polish remover, hair products, hair dyes, products, hair, dentifrice and manicure preparations

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

Micro-encapsulation: Types of microcapsules, coacervation, importance of microencapsulation in pharmacy, evaluation of microcapsules, coating pan and other techniques, air suspension technique, multi-spray drying, microencapsulation by phase separation, spray congealing

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 of coated tablets, equipment 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, labelling, manufacture and evaluation of parenteral products, CPG sterile powders, washing of containers and closures, filling and closing of ampoules

Surgical products: Definition, ligatures and catguts, primary wound dressing, absorbable and non-absorbable sutures, official dressings, protective cellulotic hemostatics, absorbents

Packaging of Pharmaceutical Products: Package containers, factors influence choice of containers, type 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 involves to tablets

Performance evaluation methods: production and ev2 dissolution studies for solid dosage forms methods, de- studies and bioavailability testing protocol and pro interpretation of dissolution data, Design

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

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

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

Bioavailability and bioequivalence: Measures of bio statistics, Cmax, Biopharmaceutical Classification System conducting bioequivalent studies, Kel and Area Under i