D. Pharmacy First Year Syllabus 2025

As per Pharmacy Council of India (PCI) Education Regulations ER-2020

PHARMACEUTICS

Theory: 75 Hours |

Chapter 1: Introduction to Pharmacy

Definition and scope of pharmacy, History of pharmacy profession in India, Present day pharmacy education in India and abroad, Opportunities for pharmacist.

Chapter 2: Dosage Forms

Introduction, Definition, Classification of dosage forms, Advantages and disadvantages, Factors influencing choice of dosage forms, Routes of drug administration.

Chapter 3: Prescription

Definition, Parts of prescription, Types of prescription, Handling of prescription, Errors in prescription, Methods to avoid errors, Posology - Definition, factors affecting dose, calculation of doses.

Chapter 4: Pharmaceutical Calculations

Weights and measures - Imperial and metric system, Calculation of doses, Percentage calculations, Ratio and proportion, Concentration and dilution, Isotonic solutions, Business calculations.

Chapter 5: Powders

Definition, Advantages and disadvantages, Classification, Simple and compound powders, Effervescent powders, Eutectic mixtures, Geometric dilution technique, Dusting powders, Insufflations, Snuffs, Dentifrices.

Chapter 6: Liquid Dosage Forms

Solutions: Definition, advantages and disadvantages, types, solvents, concentration expressions, preparation. Suspensions: Definition, classification, advantages and disadvantages, stability, formulation, evaluation. Emulsions: Definition, types, theories of emulsification, emulsifying agents, preparation methods, identification tests, evaluation.

Chapter 7: Semi-Solid Dosage Forms

Ointments: Definition, classification, ointment bases, preparation, evaluation. Creams and Gels: Types, preparation, evaluation. Suppositories: Definition, types, suppository bases, preparation, evaluation.

Chapter 8: Pharmaceutical Incompatibilities

Definition, classification, physical, chemical, and therapeutic incompatibilities, methods of correction.

PHARMACEUTICAL CHEMISTRY

Theory: 75 Hours |

Chapter 1: Introduction to Pharmaceutical Chemistry

Definition, nomenclature of drugs - trivial, generic, chemical names, Sources and types of impurities, principles of limit tests.

Chapter 2: Inorganic Pharmaceutical Chemistry

Study of monographs of inorganic compounds: Sodium chloride, Potassium iodide, Calcium carbonate, Magnesium sulphate, Ferrous sulphate, Zinc sulphate, Potassium permanganate, Boric acid, Hydrogen peroxide, Sodium bicarbonate.

Chapter 3: General Anesthetics

Classification, Structural activity relationship, Mechanisms of action, Halothane, Isoflurane, Enflurane, Sevoflurane.

Chapter 4: Local Anesthetics

Classification, Structure activity relationship, Mechanism of action, Procaine, Lignocaine, Benzocaine, Bupivacaine.

Chapter 5: Hypnotics and Sedatives

Classification, Structure activity relationship, Barbiturates, Benzodiazepines, Phenobarbitone, Diazepam, Lorazepam, Chloral hydrate.

Chapter 6: Analgesics and Anti-Inflammatory Drugs

Classification, Narcotic analgesics: Morphine, Codeine, Pentazocine. Non-narcotic analgesics: Salicylates, Pyrazolone derivatives, Propionic acid derivatives, Paracetamol.

Chapter 7: Drugs Acting on Autonomic Nervous System

Classification of autonomic nervous system, Cholinergic drugs, Anticholinergic drugs, Adrenergic drugs, Adrenergic blocking agents.

Chapter 8: Cardiovascular Drugs

Cardiac glycosides, Antiarrhythmic drugs, Antianginal drugs, Vasodilators, Antihypertensive agents, Diuretics.

Chapter 9: Antimicrobial Agents

Classification, Mechanism of action, Structure activity relationship, β-lactam antibiotics, Aminoglycosides, Chloramphenicol, Tetracyclines, Sulfonamides, Quinolones.

PHARMACOGNOSY

Theory: 75 Hours |

Chapter 1: Introduction and Scope of Pharmacognosy

Definition, history, scope and development, Alternative system of medicine: Ayurveda, Unani, Siddha, Homeopathy, Sources of drugs, classification and evaluation of crude drugs.

Chapter 2: Quality Control Methods

Collection, preparation, and storage of crude drugs, Methods of adulteration and substitution, Evaluation: Organoleptic, microscopic, physical, chemical and biological evaluation.

Chapter 3: Carbohydrates and Related Compounds

Classification, properties, chemical tests, sources and uses of: Honey, sucrose, starch, cellulose, pectin, agar, acacia, tragacanth.

Chapter 4: Lipids

Classification, properties, chemical tests, sources and uses of: Fixed oils - Castor oil, Olive oil, Coconut oil, Linseed oil, Chaulmoogra oil. Waxes - Beeswax, Spermaceti, Carnauba wax. Fats - Shark liver oil, Cod liver oil, Wool fat.

Chapter 5: Proteins and Enzymes

Classification, properties, sources and uses of: Gelatin, Silk, Wool, Lac. Enzymes: Papain, Pepsin, Pancreatin, Streptokinase, Asparaginase.

Chapter 6: Volatile Oils

Definition, properties, classification, extraction methods, evaluation, preservation, chemical constituents, sources and uses of: Lemon oil, Orange oil, Caraway oil, Dill oil, Eucalyptus oil, Peppermint oil, Spearmint oil, Fennel oil, Coriander oil, Cardamom oil, Cinnamon oil, Clove oil, Turpentine oil.

Chapter 7: Resins and Tannins

Resins: Classification, properties, uses. Oleo-gum-resins: Asafoetida, Myrrh, Guggul. Glycoresins: Jalapa, Ipomoea. Oleo-resins: Ginger, Capsicum, Black pepper. Balsams: Tolu balsam, Peru balsam, Benzoin. Tannins: Classification, properties, chemical tests, pharmaceutical uses.

Chapter 8: Alkaloids

Definition, properties, classification, general isolation methods, chemical tests, sources, chemical constituents and uses of: Belladonna, Hyoscyamus, Stramonium, Tobacco, Lobelia, Ephedra, Tea, Coffee, Cocoa, Cola, Cinchona, Opium, Ipecac, Kurchi, Rauwolfia, Catharanthus, Ergot, Physostigma, Nux vomica, Colchicum.

Chapter 9: Glycosides

Definition, properties, classification, chemical tests, sources, chemical nature and uses of: Cardiac glycosides: Digitalis, Arjuna, Squill. Anthraquinone glycosides: Senna, Rhubarb, Aloes, Cascara. Saponin glycosides: Liquorice, Dioscorea, Ginseng. Cyanophore glycosides: Wild cherry. Isothiocyanate glycosides: Mustard. Phenolic glycosides: Salicin containing drugs.

Chapter 10: Pharmaceutical Aids from Natural Sources

Pharmaceutical aids: Talc, Kaolin, Bentonite, Diatomaceous earth, Charcoal, Pumice. Surgical aids: Absorbent cotton, Silk, Wool.

HUMAN ANATOMY AND PHYSIOLOGY

Theory: 50 Hours |

Chapter 1: Introduction to Human Body

Scope of anatomy and physiology, Levels of structural organization, Anatomical position, planes and directions, Body cavities and organs, Basic life processes, Homeostasis, Basic tissues.

Chapter 2: Cell and Tissues

Structure of cell, cell organelles and their functions, Transport across cell membrane, Cell division, Basic tissues: Epithelial, connective, muscular, nervous tissues.

Chapter 3: Skeletal System

Introduction to skeletal system, Classification of bones, Bone composition, Axial skeleton: Skull, vertebral column, thoracic cage, Appendicular skeleton: Upper and lower extremities, Types of joints and body movements.

Chapter 4: Muscular System

Classification of muscular tissue, Skeletal muscle: Structure and mechanism of contraction, Smooth muscle, Cardiac muscle, Major skeletal muscles.

Chapter 5: Cardiovascular System

Introduction to cardiovascular system, Heart: Chambers, layers, conducting system, cardiac cycle, cardiac output, regulation of heart activity. Blood: Composition and functions, Blood cells, Hemoglobin, Blood groups, Blood coagulation. Blood vessels: Structure and functions, Blood pressure, Pulse.

Chapter 6: Respiratory System

Introduction, Anatomy of respiratory system, Mechanics of breathing, Exchange and transport of gases, Regulation of respiration, Lung volumes and capacities.

Chapter 7: Nervous System

Introduction to nervous system, Classification, Neuron: Structure and properties, Nerve impulse and synapse. Central nervous system: Brain and spinal cord. Peripheral nervous system: Cranial and spinal nerves. Autonomic nervous system: Sympathetic and parasympathetic divisions. Special senses: Eye and ear.

Chapter 8: Digestive System

Introduction, Alimentary canal: Mouth, pharynx, esophagus, stomach, small intestine, large intestine. Accessory organs: Liver, pancreas, gall bladder. Digestion and absorption, Control of digestion.

Chapter 9: Excretory System

Introduction to excretory system, Kidneys: Structure and blood supply, Nephron structure and function, Mechanism of urine formation, Regulation of urine concentration and volume, Ureters, urinary bladder, urethra, Micturition.

Chapter 10: Reproductive and Endocrine System

Male reproductive system: Testes, accessory organs, spermatogenesis. Female reproductive system: Ovaries, accessory organs, oogenesis, menstrual cycle. Introduction to endocrine system, Hormone classification and mechanism, Pituitary, thyroid, parathyroid, adrenals, pancreas, gonads.

SOCIAL PHARMACY

Theory: 50 Hours

Chapter 1: Pharmacy Profession

Pharmacy as a profession, Professional ethics, Oath, Code of ethics prescribed by PCI, Functions and roles of pharmacist in health care system.

Chapter 2: Social Pharmacy Scope

Relationship of pharmacy with other health professions, Pharmacist as a member of health team, Pharmacy education in India, Professional bodies: PCI, IPA, APTI, etc.

Chapter 3: Primary Health Care

Concept of health and disease, Dimensions of health, Concepts of prevention: Primary, secondary, tertiary prevention, Concept of primary health care and its components.

Chapter 4: Health Education

Principles and methods of health education, Health education approaches, Planning and evaluation of health education, Communication in health education, Role of pharmacist in health education.

Chapter 5: Family Planning

Family welfare program in India, Objectives of family planning, Methods of family planning, Population problem in India, Organizational setup for family planning program.

Chapter 6: Public Health

Concept of public health, Public health problems in India, Role of pharmacist in public health, Epidemiology: Principles, methods, disease causation, Vital statistics.

Chapter 7: Nutrition

Nutritional requirements, Balanced diet, Deficiency diseases, Food hygiene, Food adulteration, Role of pharmacist in nutrition.

Chapter 8: First Aid

Principles of first aid, Management of burns, wounds, fractures, poisoning, snake bites, Emergency treatment.

Chapter 9: Drug Abuse

Drug abuse and dependence, Commonly abused drugs, Prevention and treatment, Role of pharmacist in drug abuse prevention, Rehabilitation.

Chapter 10: Community Pharmacy

Community pharmacy practice, Patient counseling, Pharmaceutical care, Communication skills, Professional development and career opportunities.