

Syllabus for PhD entrance Examination: Pharmacy

Medicinal Chemistry: Structure, nomenclature, classification, synthesis, SAR and metabolism of the following category of drugs, which are official in Indian Pharmacopoeia and British Pharmacopoeia. Introduction to drug design. Stereochemistry of drug molecules. Hypnotics and Sedatives, Analgesics, NSAIDS, Neuroleptics, Antidepressants, Anxiolytics, Anticonvulsants, Antihistaminics, Local Anaesthetics, Cardio Vascular drugs - Antianginal agents Vasodilators, Adrenergic & Cholinergic drugs, Cardiotonic agents, Diuretics, Antihypertensive drugs, Hypoglycemic agents, Antilipidemic agents, Coagulants, Anticoagulants, Antiplatelet agents. Chemotherapeutic agents - Antibiotics, Antibacterials, Sulphadruugs. Antiprotozoal drugs, Antiviral, Antitubercular, Antimalarial, Anticancer, Antiamoebic drugs. Diagnostic agents. Vitamins and Hormones.

Pharmaceutics: Development, manufacturing standards Q.C. limits, labeling, as per the pharmacopoeal requirements. Storage of different dosage forms and new drug delivery systems. Biopharmaceutics and Pharmacokinetics and their importance in formulation. Formulation and evaluation of tablets, capsules, parenterals, liquid dosage forms and cosmetics like lipstick, shampoo, creams, nail preparations and dentifrices, tablet defects and tablet coating defects, Pharmaceutical calculations. Various dissolution test apparatus. Biopharmaceutical classification of drugs. Method of preparation, evaluation and application of Novel drug delivery systems like liposomes, ethosomes, neosomes, nanoparticles, microemulsions, nanoemulsions.

Pharmacognosy and Biotechnology: General methods of extraction, isolation, purification and characterization of natural products. Various separation techniques used for isolation of natural products. Biosynthetic pathways of various metabolites (e.g. Alkaloids, glycosides, tannins, lignans, saponins, lipids, flavonoids, coumarins, anthocyanidines etc.). Quality control of crude drugs, phytochemical screening methods, plant tissue culture.

Recombinant DNA technique, Fermentation, Immunology and vaccines. Enzyme immobilization, Genetics and gene therapy, Fundamentals of cell and molecular biology.

Pharmacology: General pharmacological principles including Toxicology. Pharmacokinetics and pharmacodynamics, Drug interaction. Pharmacology of drugs acting on Central nervous system, Cardiovascular system, Autonomic nervous system, Gastro intestinal system and Respiratory system. Pharmacology of Autocoids, Hormones, Hormone antagonists, chemotherapeutic agents including anticancer drugs. Bioassays, Immuno Pharmacology. Drugs acting on the blood & blood forming organs. Drugs acting on the renal system.

Pharmaceutical Jurisprudence: Drugs and cosmetics Act and rules with respect to manufacture, sales and storage. Pharmacy Act. Pharmaceutical ethics.

Pharmaceutical Analysis: Fundamental principles, basic instrumentation, and pharmaceutical applications of UV Visible spectroscopy, Infrared spectroscopy, PMR, C13 NMR spectroscopy, HPLC, HPTLC, Gel chromatography, Electrophoresis and ion-pair chromatography. Introductory principle, instrumentation and application of GC-Mass. Theory, methods and applications of enzyme and radioimmunoassay techniques, Differential scanning calorimetry (DSC), X-ray diffractometry (XRD), Validation and Calibration.

Microbiology: Principles and methods of microbiological assays of the Pharmacopoeia. Methods of preparation of official sera and vaccines. Serological and diagnostics tests. Applications of microorganisms in Bio Conversions and in Pharmaceutical industries.