SHRI GURU RAM RAI UNIVERSITY

Estd. By. Govt of Uttarakhand, Vide Shri Guru Ram Rai University Act No. 03 of 2017 & Recognized by UGC u/c 2(f) of UGC Act 1956.

SCHOOL OF PHARMACEUTICAL SCIENCES

PhD

RESEARCH ENTRANCE TEST

SYLLABUS

MODULE 1- PHARMACEUTICAL CHEMISTRY- Introduction to pharmaceutical chemistry: definition, scope, and importance, Basics of organic chemistry: structure and reactivity of organic molecules, functional groups, isomerism, and stereochemistry, Medicinal chemistry: design and development of drugs, drug targets, drug-receptor interactions, drug metabolism, and pharmacokinetics, Biochemistry: biomolecules, enzymes, metabolic pathways, and their role in drug action and metabolism. Prodrugs and drug latentiation- Carrier-linked prodrugs, Bio precursors, Protein Binding and Bioisterism. Basic principles of analytical chemistry: qualitative and quantitative analysis, gravimetric and volumetric analysis, and acid-base titrations, Instrumental methods of analysis: spectrophotometry, chromatography, electrochemistry, and mass spectrometry, Quality control.

MODULE 2- PHARMACOLOGY- Introduction to pharmacology: definition, scope, and importance, Mechanism of drug action: drug-receptor interactions, signal transduction pathways, and molecular targets, Classification of drugs: based on their pharmacological activity, chemical structure, and therapeutic uses. Pharmacokinetics: absorption, distribution, metabolism, and excretion of drugs. Preclinical evaluation: Pharmacological evaluation of acute, sub-acute, and chronic toxicity studies. Guidelines of regulatory agencies- CPCSEA, WHO, FDA, etc.

MODULE 3- PHARMACEUTICS- Pharmaceutical dosage forms: types, formulations, and factors affecting drug absorption and bioavailability, Drug delivery systems: routes of administration, sustained-release systems, and targeted drug delivery, pharmaceutical technology: physical and chemical properties of drugs, stability, and formulation development, Biopharmaceutics: Biopharmaceutical classification, dissolution tests, Bioavailability. types of drug delivery systems, Applications of microspheres, Compartment Modeling. Dose adjustment in renal and hepatic failure.

MODULE 4- PHARMACOGNOSY- Introduction to pharmacognosy: sources, classification, quality control, and adulteration of crude drugs and their detection. Extraction techniques: successive and exhaustive extraction and other methods of extraction. Separation of phytoconstituents by the latest CCCET and SCFE techniques,

including preparative HPLC and flash column chromatography. Phytochemistry: chemical constituents of medicinal plants, their isolation, and biological activities. Quality control and Standardization of herbal drugs: Significance and determination of Extractive values, Ash values, Heavy metals, Pesticidal residue and microbial load in herbal preparations.

MODULE 5- PHARMACY PRACTICE- Definition and scope of clinical pharmacy, Concepts in Pharmaceutical Care, Activities of a clinical pharmacist (Drug therapy review, ward round participation, Detection & management of adverse drug reactions, Medication history interview, pharmacist interventions, patient medication counselling), critical evaluation of biomedical literature, Definition, aims & scope of pharmacovigilance, Hospital and its organization, Drug distribution systems, Rational drug use, Drug utilization evaluation, Pharmacoeconomic evaluation, Basic clinical pharmacokinetics, Clinical research study designs. Introduction to Clinical trials, Various phases of clinical trial, Introduction to Pharmacoepidemiology, Pharmacoepidemiologic Methods, Pharmacoeconomics, Community pharmacy and its management**.**