

**SAI TIRUPATI UNIVERSITY, UDAIPUR**  
**Ph.D. Entrance Test Syllabus for Ph.D. in Pharmacy**  
**SYLLABUS**  
**FACULTY OF PHARMACY**

**UNIT – 1: PHARMACEUTICS**

**Preformulation:** Preformulation studies of API, excipients, stability studies, etc.

**Conventional drug delivery systems:** Formulation and evaluation of oral solids and liquids (tablets, capsules, syrups, suspensions, emulsions etc.), injectable products (small volume and large volume parenteral) and topical preparations (creams, gels, ointments, etc.)

**Novel Drug delivery systems:** Liposomes, nanoparticles, microspheres, transdermals, gastro retentive delivery systems, ophthalmic and implantable systems, etc.

**Biopharmaceutics and Pharmacokinetics:** Basic aspects of drug absorption, distribution, metabolism, protein binding and excretion of drugs.

Rate and extent of bioavailability, assessing bioavailability, multiple dosing, bioavailability, in vitro bioavailability studies (dissolution), bioequivalence-general principles, criteria for establishing bioequivalence requirement, criteria for waiver of evidence for bioequivalence requirement and methodology.

**UNIT – 2: PHARMACEUTICAL CHEMISTRY**

**Pharmaceutical Analysis:** Principle and applications of UV/ visible spectroscopy, IR spectroscopy, NMR spectroscopy and chromatography.

**Chemotherapeutic agents:** Structure, classification, nomenclature, uses and mechanism of action of Sulphonamide, Anti-cancerous agents, antibiotics and anti-tubercular drugs.

**Pharmacotherapeutic agents:** Structure, classification, nomenclature, uses and mechanism of action of anti-hypertensive, antidepressant and anxiolytic, diuretic, antihistaminic and analgesic.

**Biochemistry:** Biochemical role of hormones, vitamins, enzymes, nucleic acids, carbohydrates, lipids and proteins.

### **UNIT – 3: PHARMACOLOGY**

**Central Nervous system:** Anatomy and Physiology of ANS, Functions of different parts of Brain, reflex action, physiology of nerve impulses, neurotransmitters.

**General pharmacology:** Routes of Drug administration, absorption, distribution, metabolism and excretion, molecular mechanism of drug action, theories of receptors, Dose response relationship.

**Chemotherapy** of Malaria, leprosy, Viral and Fungal agents.

Pharmacology of Autocoids, chemotherapeutic agents including anticancer drugs, Drugs acting on the blood, Drugs acting on the renal system, Drug-drug interactions and Drug food interactions, Adverse Drug reactions.

### **UNIT – 4: PHARMACOGNOSY**

Brief pharmacognostic characteristics of some plants such as Senna, Digitalis, Cinnamon, Opium, Clove, Belladonna and Rauwolfia.

Study of drugs containing: Carbohydrates, Alkaloids, and Glycosides.

Identification, purity and quality evaluation of the plant drugs on basis of organoleptic, microscopic, physical, chemical and biological methods.

### **UNIT – 5: PHARMACEUTICAL JURISPRUDENCE**

A brief overview on some important legislations related to Indian Pharmacy such as- Drugs and cosmetics Act 1940 and rules 1945 with respect to manufacture, sales and storage, Pharmacy Act 1948, Medicinal and Toilet Preparation 1955, Narcotic Drugs and Psychotropic Substances Act 1985, Drugs and Magic Remedies Act and DPCO 2013, etc.