GITAM SCHOOL OF PHARMACY

PhD Entrance Test Syllabus

PhD in Pharmacy: Pharmaceutics

Module 1:

a) **Professional Pharmacy**: Professional Pharmacy, Pharmaceutical jurisprudence including Drugs and Cosmetics Act 1940 and rules 1945. Pharmacy Act 1948, Revised Schedule M, Code of Pharmaceutical ethics. Drug regulatory agencies. Concepts on ICH, WHO, FDA, TGA, ISO, GMP, SOP, QBD, Patents etc.

b) **Physical Pharmaceutics**: Physical properties of drug molecules, pH, buffers and isotonic solution, solubility phenomena, surface tension, interfacial phenomenon, Kinetics, Rheology, Micromeretics & powder flow, Diffusion and dissolution, Colloids, Complexation and protein binding.

Module 2:

Pharmaceutical Technology:

a) Principles, Formulation, Ingredients, method of manufacture, evaluation, quality control tests, labelling and packaging of the following class of product:

- **Solid dosage forms**- Tablets, coating, capsules, microcapsules, powders, granules etc. **Liquid dosage forms**- solutions, suspensions, emulsions,
- **Semisolid dosage forms**- ointment, creams, gels, suppositories,
- **Parenterals**- injections small volume, large volume, ophthalmic preparations and
- Pre-formulation studies, stability studies and pharmacopeial specifications for various formulations.
- Formulation of cosmetics preparation like lipstick, shampoo, creams, nail preparations, dentifrices, powers etc.

b) Novel Drug Delivery Systems, Targeted Drug Delivery Systems.

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Module 3:

Biopharmaceutics and Pharmacokinetics and their importance in formulation.

Introduction to biopharmaceutics: Drug absorption, distribution, metabolism and elimination. Compartment model- Definition and Scope. Pharmacokinetics of drug absorption - Zero order and first-order absorption rate constant. Determination of pharmacokinetic parameters. Dose adjustment in Renal and Hepatic failure.

Bioavailability and bioequivalence: Measures of bioavailability, Cmax, tmax, K_{el} and Area Under the Curve (AUC); Review of regulatory requirements for conducting bioequivalent studies. Biopharmaceutical Classification System (BCS) of drugs, Biosimilars.