BIOPHARMACEUTICS & PHARMACOKINETICS

THEORY 3 hours/ week UNIT -I

Introduction to Biopharmaceutics and Pharmacokinetics and their role in information development and clinical setting. Biopharmaceutics : Passage of drugs across biological barrier (passive diffusion, active transport facilitated Diffusion and pinocytosis. Factors influencing absorption- Physicochemical, physiological and pharmaceutical.

UNIT -II

Distribution of drugs: Factors affecting distribution of drugs, Physiologic barriers to distribution of drugs, volume of distribution.

Protein Binding of drugs: plasma and tissue protein binding of drugs, factors affecting protein drug binding, Kinetics of protein drug binding.

Biotransformation of drugs: Introduction, chemical pathways of drug biotransformation, Factors affecting biotransformation of drugs.

UNIT -III

Excretion of Drugs: Renal excretion of drugs, concept of clearance, factors affecting renal clearance, and non-renal routes of drug excretion.

Pharmacokinetics: Basic consideration

Significance of plasma drug concentration time profile Rate, rate constants and orders of reaction Pharmacokinetic models Compartment models Non compartmental analysis Physiologic model

UNIT-IV

One compartment open model

Determination of pharmacokinetic parameters from blood and urine data I.V bolus, IV infusion and extra-vascular administration. Introduction to two compartment model.

UNIT -V

Bioavailability and bioequivalence: Consideration in bioavailability study design, Measurement of bioavailability by pharmacokinetic and pharmacodynamic methods, bioequivalence study design protocol, IVIVC.

RECOMMENDED BOOKS :

1. Biopharmaceutics and Pharmacokinetics by D.M. Brahmankar and Sunil B. Jaiswal
2. Fundamentals of Biopharmaceutics and Pharmacokinetics by V. Venkateswarulu
3. Biopharmaceutics and Clinical Pharmacokinetics by Notari
4. Biopharmaceutics and Clinical Pharmacokinetics by Gibaldi
5. Applied Biopharmaceutics and Pharmacokinetics by Shargel and Yu