

UNIT - I

INTRODUCTION TO PHARMACEUTICALS: History and definition of drugs; Sources of drugs, plant, animals, microbes and minerals; Routes of drug administration; Different dosage forms.

UNIT-II

STRUCTURE PREDICTION AND DRUG DESIGN Protein structure prediction; Introduction to comparative modeling; Sequence alignment; Constructing and evaluating a comparative mode Predicting protein structures by 'threading'; Molecular docking - AUTODOCK/EASYMODELLER and HEX; Structure based *de novo* ligand design; Drug discovery; Chemo informatics; QSAR.

UNIT-III

PHARMACODYNAMICS AND PHARMACOKINETICS: Physico-chemical principles; Pharmacodynamics - mechanism of drug action, drug receptors, physiological receptors, structural and functional families; Pharmacokinetics - drug absorption, factors that affect the absorption of drugs, distribution of drugs, biotransformation of drugs, bioavailability of drugs.

UNIT-IV

PRODUCTION AND APPLICATIONS OF BIOPHARMACEUTICALS: Manufacturing facilities, production and analysis of biopharmaceuticals; Recent advances in the manufacture of drugs using r-DNA technology; Production of therapeutic proteins, hormones, cytokines - interferons, interleukins 1 and 11, tumor necrosis factor (TNF) and nucleic acids; Role of biopharmaceuticals in treatment of various health disorders.

UNIT - V

DRUG DELIVERY SYSTEMS, BIOMATERIALS AND THEIR APPLICATIONS: Controlled and sustained delivery of drugs; Biomaterial for the sustained drug delivery; Liposome mediated drug delivery; Drug delivery methods for therapeutic proteins.