CCS 526: Medicinal, Supramolecular and Heterocyclic Chemistry Credit-2

UNIT I: Drug Design

Introduction: Drugs: Drug design, Classification of drugs, brief discussion of drug targets, Drugs based on enzyme inhibition: penicillin antibiotics and sulphonamides (Mechanism of drug action). Concepts of antagonist, agonist, prodrugs, pharmacokinetics and pharmacodynamics, concept of structure-activity relationship (SAR) with special reference to penicillin antibiotic and sulphonamides. Synthesis and mechanism of action of (i) fluoroquinolones – norfloxacin, antihypertensive agent – captopril, calcium channel blocker – amlodipine.

UNIT II: Supramolecular Chemistry

Introduction, Origins and Concept. Molecular recognition. Host-guest complex. Self-assembly, Supramolecular interactions (Bonding other than covalent bond) van der Waal interactions, dipole-dipole, pi-pi interactions. Different types of receptors with special reference of Crown ethers, cryptates, Cyclodextrins and Calix[4]arene. Applications of supramolecular chemistry.

UNIT III:Heterocyclic Chemistry

Systematic nomenclature of heterocycles. Principles of heterocyclic synthesis with special reference to aziridines, oxiranes, thiiranes, azetidines, oxetanes and thietanes, coumarins and chromones.