

**PHARMACEUTICAL CHEMISTRY**  
**(DEGREE STANDARD)**

**Code No.245**

**UNIT I**

- 1) Atomic structure and valency, Radioactivity, Radio isotopes and Pharmaceutical applications of Radio Pharmaceuticals, hazards and precautions.
- 2) Sources of impurities in Pharmaceutical substances; Limit test as per I.P; Fundamentals of volumetric Analysis.
- 3) A systematic study of inorganic compounds for their preparation, assay and use which includes Gastrointestinal agents, Topical agents and Dental products.

**UNIT II**

- 1) Assay, test for purity of sodium, calcium, iron, aluminium and ammonium compounds. Major intracellular and extra cellular electrolytes.
- 2) Preparation and use of Chemical reagents and Volumetric Solutions as per Pharmacopia in Pharmaceutical Analysis.
- 3) Theory of Co-ordination Compounds with special reference to application in Pharmaceutical Analysis via EDTA, Dimercaprol, Pencillamine.

**UNIT III**

- 1) Physiochemical properties of gases, liquids and solids. Density, Surface tension, Viscosity and physical properties.
- 2) Osmosis, osmotic pressure, vapour pressure, Raoult's law, Ostwalds dilution law, Molecular weight determination by osmotic pressure.
- 3) Non- aqueous and complexometric titrations, analysis of fats, oils and waxes. Importance of quality control, Different types of titrations, Gasometric analysis and determination of Nitrogen.

**UNIT IV**

- 1) Gases in liquids, liquids in liquids, partially miscible, completely miscible and completely immiscible liquids.
- 2) Thermochemistry: Heat of reaction, heat of solution, heat of formation and heat of neutralization and Hess law.
- 3) Stereo chemistry, optical isomerism, Geometrical isomerism.
- 4) Theory of Polarimetry, Refractometry and catalyst.

## UNIT V

- 1) Electronic configuration and electron displacement effects, chemical bonds and polarity.
- 2) Chemistry and medicinal uses of cardiac glycosides and vitamins.
- 3) Synthetic utility of acetoacetic ester, Grignard reagent and Diazonium compounds.

## UNIT VI

- 1) Aromaticity, concept of resonance, Nucleophilic, Electrophilic substitution reaction, Elimination reactions in aliphatic and aromatic compounds.
- 2) Anti-infective agents comprising of Anti-fungal agents, synthetic antibacterial agents, anti-tubercular Agents, and Anthelmintics agents.

## UNIT VII

Chemical structure, Synthesis, assay and therapeutic uses of organic synthetic drugs like, Antidepressants, General anesthetics, Sedatives and hypnotics, Narcotic analgesics, Anti-histaminics, Antimalarials., Sulphonamides, Drugs acting on CVS.

## UNIT VIII

- 1) Structural elucidation of natural products - General methods.
- 2) Structure, chemistry, methods of estimation, and uses of Alkaloids, Carbohydrates, and Proteins.
- 3) Chemistry of steroids and natural hormones, currently used steroidal drugs.

## UNIT IX

- 1) Study of separations and determination involving TLC, HPTLC, and column chromatography.
- 2) Colorimetry, UV and Visible Spectrophotometry, Spectrofluorimetry- Theory , Principle ,Instrumentation and working.
- 3) Theory and principles of separation techniques involving Ultra centrifugation, HPLC and Gel filtration.

## UNIT X

- 1) Conductometry, Potentiometry and Amperometric titrations, Basic concepts and application in pharmaceutical analysis.
- 2) Radio Immuno Assay and Electrophoresis.
- 3) Theory, Principle and application of NMR, MS, IR spectroscopy.