Gujarat Technological University

M. Pharm.

Semester – III

Paper code -930101

Advanced Medicinal Chemistry

Subject of Specialization Paper- V (Pharmaceutical Chemistry)

Theory

(Four hours per week, 7 credits)

Combinatorial Chemistry

Introduction, combinatorial approaches, applications, methodology, combinatorial organic synthesis, Peptide and small molecule libraries, assays and screening of combinatorial libraries, introduction to High Throughputs Screening (HTS)

1. **Peptides as a Drug**
   Chemistry, structure and stability, Reactivity of proteins and peptides. Different methods of synthesis. Study of Insulin, Relaxin, Somatostatin, Interferon, Peptidomimetics

2. **Microorganisms in Drug Synthesis and Development**
   Microbial conversions of drugs like steroids, prostaglandin, antibiotics, enzyme immobilization Techniques.
3. **Recent advances in therapy of following**
   - **a.** Neurodegenerative diseases: Alzheimer's and Parkinsonism
   - **b.** CVS disorders: Hypertension, Arrhythmia,Atherosclerosis.
   - **c.** Hormonal disorder: hypoglycemic agents and steroidal agents
   - **d.** Disorders of immune system: NSAID's, antihistamines, immunomodulators
   - **e.** Chemotherapeutic agents: antituberculer, antimalarial, antiviral, anti-cancer, antifungal, antibacterials

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Practical

(Six hours per week, 8 credits)

Practical exercises based on the relevant topics. Synthesis of some drug and drug intermediate falls under therapeutic class mentioned in theory syllabus.

Reference Books:

1. Corwin Hansch, Peter G. Sammes, John B. Taylor; Comprehensive Medicinal Chemistry Vol. 4, Pergamon.
2. John H. Block, John M. Beale; Wilson & Gisvold's Text book of Organic Medicinal and Pharmaceutical Chemistry, 11th edition, Lippincott Williams and Wilkins.
3. Davis A. Williams, Thomas L. Lemke; Foye: Principles of Medicinal Chemistry, 5th edition, Lippincott Williams Wilkins.
4. Bernard Testa, Walter Fuhrer – Perspectives in Medicinal Chemistry.
5. Donald J. Abraham; Berger's Medicinal Chemistry and Drug Discovery, 6th edition, John Wiley and Sons.
6. Daniel Lednicer; the Organic Chemistry of Drug Synthesis, Vol. 1-6, Wiley Interscience.
7. Richard B. Silverman: The Organic Chemistry of Drug Design and Drug action; 2nd edition, Elsevier.