SGT COLLEGE OF PHARMACY

SGT UNIVERSITY

SYLLABUS FOR PHD : (PRE PHD EXAMINATION)

PHARMACEUTICAL CHEMISTRY

1. Drug Design: Approaches to drug design, method of variation, biochemical and physiological approaches. Lead compound - Search & Optimization: Search of lead compound from natural products and other sources, selection of test compounds. Methods of lead optimization – synthesis of analogs, variation of substituents, extension of structure, ring versus chain structures, bioisosterism, ring contraction and expansion.

2. Theoritical aspects- Quantitative structure activity relationship (QSAR)- Physicochemical parameters – hydrophobicity, electronic and steric parameters, Hansch analysis – Steps involved, Facts to be considered, Development of one-target and multi-target QSAR models. Computer aided drug designs, Combinatorial chemistry.

3. Prodrugs: Objectives of Prodrug Design – increasing bioavailability, improving membrane permeability, prolonging activity, reducing side effects, removing undesirable properties. Prodrugs from different functional groups-carboxyl, amino, hydroxyl etc. Pharmaceutical applications of prodrug.

4. Principles, methods, interpretation of data and pharmaceutical applications of various anaytical techniques like- UV-Visible, IR, NMR spectroscopy, Mass spectrometry, TLC, HPLC, Column Chromatography.

PHARMACOGNOSY

1. Extraction: Different techniques adopted for the extraction of phytoconstituents like Maceration, percolation, sonication, soxhlet assisted extraction, ultrasound assisted extraction, super critical carbon dioxide extraction and SAP box.

2. Quality control studies: Methods involved in the standardization, quality control and safety studies of Herbal drugs and formulations.

3. Biological Screening methods: In vitro and in vivo Screening methods of herbal drugs and Formulations.

4. Isolation, Purification and Analysis: Recent advances in the various chromatographic techniques such as paper, column, UV, TLC, HPTLC, Preparative TLC, HPLC, GC and DCCC. **5. Regulatory**: Regulatory requirements for manufacture and distribution of herbal formulations in India.

PHARMACOLOGY

(RECENT ADVANCES AND EMERGING TRENDS IN PHARMACOLOGICAL SCIENCES)

1. Pharmacological Techniques to evaluate drugs belonging to following categories

a) Drugs acting on cardiovascular system

Antihypertensives, anti angina, drugs for myocardial infarction

b) Drug acting on Central nervous system

Antipsychotics, antianxiety agents, antidepressants, antiparkinsonian agents, non steroidal anti inflammatory drugs

c) Anticancer drugs,

2. Pharmacology and Toxicology

a) Drug Toxicity, Safety Evaluation of new drugs.
b)Regulations for Laboratory animal care and ethical requirements
c) Bioassays
d) New drug discovery

3. Emerging Trends & Recent advances in:

a) Receptor and G-Protein
c) TNF, Apoptosis
d) Ion channels
e) Anti oxidants: Melatonin

BOOKS RECOMMENDED

1. Modern Pharmacology by C.R. Craig and R.E. Stitzel
2. Goodman and Gilman's : The Pharmacogical Basis of Therapeutics edited by Alfred Goodman Gilman, Theodore W. Rall, Alan S. Nies and Palmar Taylor
3. Clinical Pharmacology by D.R. Laurence and P.N. Benett
4. Essenticals of Pharmactherapeutics by F.S.K. Barar
5. Pharmacology by H.P. Rang and M.M. Dale
6. Lewis's Pharmacology revised by James Crosslang
7. Oxfor Textbook of Clinical Pharmacology and Drug Therapy by D.G. Grahame Smith and J.K. Aronson
8. Vogel's Pharmacology

PHARMACEUTICS

Part-1

WHO cGMP:

Main principles for pharmaceuticals products (fundamentals of validation, DQ, IQ, PQ, calibration of instruments, validation of microbiological and analytical methods), GMPs for starting raw materials (Active pharmaceutical ingredients, pharmaceutical excipients), GMPs for

specific pharmaceutical products (sterile, biological, investigational products for clinical trials, herbal medicines, radiopharmaceuticals) Guidelines for area classification and air handling units.

Part 2:

New Drug Application:

Overview, Law regulations and guidance, new drug development and approval, NDA development preclinical investigation, new drug application (phase 1, phase11, phase iv and post marketing surveillance), contents of the NDA (chemistry, manufacturing, testing, packaging, labelling, controls, preclinical, clinical data) human Pharmacokinetic and bioavailability testing requirements, common technical document (CTD) for NDA, submission, review and maintains of NDA.

Part 3:

Dosage Form Design

Preformulation studies, general considerations, significance and recent advances.
Various dosage forms and their evaluation
Novel drug delivery systems

PHARMACY PRACTICE

Introduction to Pharmacy Practice – Definition, patient focused approach, scope/areas of Introduction to Clinical Pharmacy -

- a) Definition, Scope, Objectives of Clinical Pharmacy Practice
- b) international v/s National scenario
- c) Professional responsibilities of Clinical Pharmacists.

Community Pharmacy –

- a) Definition, scope and professional responsibilities of community
- Pharmacist.
- b) international scenario vs Indian Scenario of Community Pharmacy Practice
- c) Pharmacy Assistant/Technician/Salesperson – roles and responsibilities,
- d) Community pharmacist's services to other health care professionals, and to nursing homes

Pharmaceutical Care , Definition, principles and procedures of pharmaceutical care, Patient Counseling - 04 hours

Drugs, Industry & Policies - Drugs and developed countries, developing countries, GATT, patents, Patents Act., Pharmaceutical Industry and its activities, Classification systems of drugs, Social marketing – brief study of organizations and functioning like Medicines Sans Frontiers, Concept of RUM, WHO Essential Medicines, Irrational medicine use and its

associated problems, etc., Evidence based medicine, STGs (Standard Treatment Guidelines) National Drug Policy, National Health Policy, Pharmacy & Drug Ethics –

Pharmacovigilance - Scope, definition and aims of Pharmacovigilance, Adverse drug reactions - Classification, mechanism, predisposing factors, causality assessment [different scales use, Reporting, evaluation, monitoring, preventing & management of ADRs, Role of pharmacist in management of ADR.

Medication Errors - classification, consequences, prevention, and role of Pharmacist.Dispensing errors, and ways to minimize them. - **03 hrs**