Swami Rama Himalayan University

Ph.D. Syllabus for Entrance Examination

(Pharmacology)

Unit I

Basic & Systemic Pharmacology

General Pharmacology:

- Pharmacology –history and development
- Pharmacokinetics
- Pharmacodynamics
- Adverse drug reactions
- Drug interactions and iatrogenic disorders
- Pharmacogenetics & genomics

Autonomic nervous system:

- Anatomical and physiological considerations of the autonomic nervous system
- Cholinergic system- Cholinergic agonists, anticholinesterases and antimuscarinic drugs
- Adrenergic system- Adrenergic drugs, Alpha adrenergic blocking agents, Beta adrenergic blocking agents

Autacoids & related drugs

- Prostaglandins & prostaglandin analogues
- Histamine & antihistaminics
- Pharmacology of serotonin & drug therapy of migraine
- NSAIDs & drug therapy of Rheumatoid arthritis & gout

Central Nervous system:

- Physiology and pharmacology of neurohumoral transmission in the central nervous system
- Anaesthetic agents used in general anaesthesia
- Central & peripheral analgesics- Opioids & NSAIDs
- Psychopharmacology- Antipsychotics, Antidepressant drugs & Antianxiety drugs
- Sedative-hypnotics & antiepileptics

UNIT II

Systemic Pharmacology

Cardiovascular system

- Basic physiology of cardiovascular system including electrophysiology of the heart, mechanics of myocardial contraction and RAAS system
- Anti hypertensive agents
- Antiarrhythmic drugs
- Drugs for CHF
- Angina pectoris & MI
- Hypolipidemic drugs
- Drugs acting on coagulation system
- Antiplatelet drugs

Endocrinology:

- Physiological considerations of endocrine system in relation to pharmacological actions of drugs & drug targets
- Antidiabetic drugs
- Thyroid and anti thyroid drugs
- Corticosteroids
- Sex Steroids & related drugs
- Drugs affecting calcium homeostasis

Chemotherapy

- Introduction to mechanism of action and principles of anti microbial therapy
- Antimicrobial agents
    - Antibacterial agents
    - Antifungal agents
    - Antiviral agents
    - Antimalarial agents
    - Antiamoebic agents
- Antineoplastic agents & immunomodulators

Respiratory Pharmacology

- Respiratory physiology in relation to pharmacological actions of drugs & drug targets
- Drugs used in Bronchial Asthma
- Drugs used in the treatment of cough

GIT Pharmacology

- Physiology of GI system in relation to pharmacological actions of drugs & drug targets
- Antiulcer drugs
- Antiemetics

- Drugs used in diarrhea & constipation

Unit III

Clinical & Applied Pharmacology

- Clinical pharmacokinetics, concentration effect relationship, pharmacokinetic parameters, target concentration strategies, plateau principle and population pharmacokinetics
- Bioavailability & Bioequivalence studies
- Therapeutic drug monitoring
- ADR monitoring and prevention
- Bioavailability and bioequivalence studies
- Pharmacoeconomics and pharmacoepidemiology
- Principles of rational drug therapy with emphasis on antimicrobial chemotherapy
- Concept of essential drugs
- Drug therapy in extremes of age (Neonatal/Geriatric)
- Drug therapy in pregnancy and lactation
- P drug & P-medicine
- Prescription auditing and critical evaluation of research papers, promotional materials / drug advertising materials etc.
- Evidence based medicine
- Recent advances

Unit IV

Research Methods in Pharmacology

- Keeping and breeding of laboratory animals
- Drug regulations
- Bioassay and its importance
- Drug development (Pre clinical and clinical)
- Drug discovery & evaluation through pharmacological assays
- Screening methods in pharmacology for evaluation of drug activities
- Acute/ subacute and chronic toxicity studies on animals
- Clinical trials
    - Design, implementation and evaluation
    - Phase 0, I, II, III, IV
    - Ethical and legal aspects in clinical trials and drug therapy
- Basic Biostatistics
- Research protocol and thesis writing, offline and online literature search and basics of MS-PowerPoint

UNIT V

Recent advances in Pharmacology

- Recent advances in ANS Pharmacology
- Recent advances in CNS Pharmacology
- Recent advances in CVS Pharmacology
- Recent advances in Endocrine Pharmacology
- Recent advances in antimicrobial and antineoplastic Pharmacology
- Recent advances in Respiratory Pharmacology
- Recent advances in GIT Pharmacology
- Recent advances in drug discovery & development

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7. Rowland M, Tozer TN, Clinical Pharmacokinetics Concept and Applications; Bi Waverly Pvt. Ltd. 4th edition/2007
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