PHARMACOLOGY IV

CLINICAL PHARMACOLOGY

- Definition, scope, organization and growth of clinical pharmacology
- Clinical pharmacokinetics
- Monitoring of drug therapy and adverse drug reaction
- Patient compliance
- Pharmacogenetics
- Pediatric and geriatric pharmacological drug interaction
- Drug therapy of:
  a. Infectious disease
  b. Cardiovascular disease
  c. Hepatic and biliary disease
  d. Diuretics
  e. Endocrine disorders
  f. Neurological disorders...Parkinsons disease, Epilepsy and migraine
  g. Psychiatric diseases
  h. Analgesics, narcotics and non-narcotic analgesics and neuropharmacology of pain
- Principles of cancer therapy
- Immunosuppressant
- Immunomodulators
PHARMACOLOGY III

PHARMACOLOGICAL METHODS AND TOXICOLOGY

- Principles of pharmacological and clinical evaluation of drugs.
- Pharmacological techniques to evaluate drugs on different system.
- Animal models of..............
  a. Diabetes
  b. Arrhythmia
  c. Asthma
  d. Hypertension
  e. Reproduction
  f. Ulcers
  g. Convulsions
- Evaluation of drugs acting on ANS
- Evaluation of drugs acting on CNS
- Drugs acting on respiratory system
- Evaluation of drugs acting on kidney
- Animal ethics
- Ethics of clinical trial and clinical evaluation of drugs
- Bioassays (Quantitative Determination) of PD, PA Quantal assays. Determination of LD 50 and ED 50
- Drug toxicity and safety evaluation
PHARMACOLOGY I

BASIC PRINCIPLE

- MOLECULAR MECHANISM OF DRUG ACTION
  a. Drug receptor interaction
  b. Ion channels
  c. Steroid hormone receptors

- RECEPTORS
  a. G-protein coupled receptors
  b. Cholinergic receptors
  c. Adrenergic receptors
  d. Dopamine receptors
  e. GABAergic receptors
  f. Excitatory amino acids
  g. Opioid receptors
  h. Receptor regulation
  i. Desensitization
  j. Supersensitivity
  k. 5HT receptors

- GENE BASED THERAPY
- AUTOCOIDS
- NITRIC OXIDE AND OTHER FREE RADICALS IN HEALTH AND DISEASES
- ANTI INFLAMMATORY DRUGS
- DEVELOPMENT OF NEW DRUGS
  The evaluation of new drug principles of therapeutics.
- DRUGS IN TREATMENT OF ASTHMA
- THERAPEUTIC WINDOW
DELHI INSTITUTE OF PHARMACEUTICAL SCIENCES AND RESEARCH

PHARMACOLOGY II
RECENT ADVANCES AND EMERGING TRENDS IN PHARMACOLOGICAL SCIENCES

- Autonomic nervous system
- Autacoids
- Central nervous system
- Cardiovascular system
- Immuno Pharmacology
- Hormone and their antagonists
- Drugs acting on Respiratory system
- Receptors update
- Chemotherapeutic agents
- Gastrointestinal system

as discussed in current periodicals like:

I. Trends in pharmacological sciences
II. Annual review of pharmacology
III. Pharmacological reviews
IV. Trends in neurosciences
V. Trends in biochemical sciences
VI. Indian Journal of Pharmacology
VII. Indian Journal of Physiology and Pharmacology
VIII. European Journal of Pharmacology
IX. British Journal of Pharmacology
X. Lancet New England Journal Medicine
XI. Indian Journal of Experimental Biology, etc.
M. Pharm. Part – I, A
Paper -I

Modern Pharmaceutical Analytical Techniques And Statistics
(Common to all branches of M.Pharm.) ....100 Marks

1.1 Principles of separation process, application of such techniques viz. adsorption, partition, paper, gas, thin layer & ion exchange chromatography, counter current distribution & electrophoresis.

2.1 Theoretical basis of working, instrumentation and its applications in pharmaceutical analysis for the following instrumental methods

2.2 (1) Potentiometry
   (2) Conductometry
   (3) Polarography
   (4) Colorimetry
   (5) Fluorimetry

3.1 Principles, techniques and applications including interpretation of data of the following:
   (1) U.V & IR spectrophotometry
   (2) X- Ray diffraction analysis
   (3) Thermal analysis
   (4) Optical rotation, optical rotatory dispersion and circular dichroism.
   (5) Water determination by Karl Fischer.
   (6) Gas chromatography
   (7) HPLC & HPTLC
   (8) NMR
   (9) Mass spectrometry
5.1 Microbiological assay

6.0 Statistics

6.1 Methods of collection of data, classification of data, mean, median, mode dispersion and standard deviation.

6.2 Confidence level, null hypothesis, calculation of statistical significance between two means, analysis of variance.

6.3 Association of attributes & contingency, classification of attributes, coefficient of association, Chi Square test.

6.4 Theory of probability, simple probability, laws of probability.

6.5 Correlation and regression, least square method & its application, significance of coefficient of correlation.

6.6 Non-parametric statistics, rank order correlation.

6.7 Calculation of LD<sub>50</sub>, ED<sub>50</sub>, probit analysis.

6.8 Application of statistics in pharmaceutical technology, statistical quality control and control of analytical methods.

Practicals: Based on the theory

100 Marks
LIST OF PRACTICAL EXPERIMENTS IN PHARMACOLOGY

1. To study oestrous cycle in rats using vaginal smear.
2. To study locomotor activity by using photoactometer.
3. To determine neurotoxic potential of drugs using rotarod apparatus.
4. To study analgesic effect of drug by acetic acid induced pain writhing method.
5. To evaluate analgesic activity of drug using tail flick latency test.
6. To determine the effect of carrageen induced edema in rats by using digital plethysmometer.
7. To study the anticonvulsant effect of phenobarbitone against MES induced convulsions in rats.
8. To determine the analgesic effect by using Eddy's hot plate.
9. To study screening of compounds for antiepileptic activity using pentylentetrazole induced seizures.
10. To study effect of pentobarbitone sodium on righting reflex (hypnosis) in mice.
11. To develop animal model for screening of anti parkinsonian drugs.
12. To study local anaesthetic activity of compound using rat.
14. To study antianxiety effect of diazepam in mice using elevated plus maze apparatus.
15. To record concentration curve of oxytocin using rat uterus preparation.
17. To record temperature using thermal transducer.
18. To measure blood pressure using Blood pressure transducer.
19. To measure drug response curve using isotonic transducer.
20. To measure a change in volume using volume transducer.
21. To measure a respiration using a respiratory transducer.
22. To study various transducers and couplers.
23. To study ECG using ECG coupler with physiograph.
24. To measure vital capacity, forced expiratory volume etc., using isotonic transducer and spirometer.
25. To study local anaesthetic effect using guinea pig method.
26. To evaluate the unknown by using rat BP preparation using panel of standard drugs like norepinephrine, epinephrine, isoprenaline, histamine, acetylcholine and blockers like prazosin, propranolol, pheniramine and atropine.
27. To determine cholesterol, triglycerides, LDL, HDL.
28. To determine liver enzyme in order to evaluate hepatoprotective drugs.
29. Determination of ALT, AST, Serum bilirubin and Alkaline phosphatases.
30. To evaluate renal function by measuring blood urea nitrogen, creatinine clearance.
31. To evaluate blood sugar by GOD-POD method.
32. To record concentration response curve of 5HT using rat fundus preparation.
33. To estimate unknown sample of acetylcholine by fourpoint assay method.
34. To record concentration response curve of oxytocin using rat uterus.
M.Pharm Part-II A

Computer In Pharmacy
(Common to all branches of M.Pharm.)

Application of computers in pharmaceutical sciences: Stores management & inventory control, production planning, quality control, and product development.
Data processing: System analysis, development & creation of a basis useful in pharmacy practice.
Writing programme in basic for pharmaceutical calculation
Information acquisition & retrieval systems, abstracting devices, drug information systems
Statistics in computing, statistical data analysis, quality control charts using computers
Use of application software like Harvard graphics, Nonlin, Windows etc.
Introduction to expert system, medical diagnosis aid systems
Computer modeling & simulation: Application in drug design
Quantitative structure activity relationship (QSAR)

Practicals: Based on theory

100 Marks