

SUBJECT - PHARMACOLOGY

1. General Pharmacology

1. Approaches to drug discovery and development of new drugs
2. Routes of administration and new drug delivery system
3. Absorption, Distribution & binding of drugs to plasma proteins
4. Pharmacokinetics, Plasma half life and biological half life
5. Biotransformation and excretion of drugs
6. Enzyme induction, enzyme inhibition and completion; and drug interactions
7. Mechanism of drug action and drug-receptor interactions
8. Pharmacogenetics
9. Terratogenicity and Carcinogenicity of drugs
10. Adverse effects of drugs
11. Factors modifying drug action
12. Rational use of drugs and essential drugs

2. Autonomic Nervous System (A.N.S.)

1. Anatomical and physiological consideration of Autonomic Nervous System
2. Cholinergic drugs, Cholinergic receptors and their pharmacological characterization
3. Anticholinergic, ganglion blocking and neuromuscular blocking drugs
4. Irreversible cholinesterases and cholinesterase reactivating drugs
5. Adrenergic drugs, adrenergic receptors and their pharmacological characterization
6. Adrenergic blocking drugs.

3. Drugs affecting blood & Blood formation

1. Haematinics
2. Drugs affecting coagulation

4. Drugs acting on respiratory system

1. Drugs used in Bronchial asthma and anti tussive agents.

5. Central nervous system (C.N.S.)

1. Physiology and Pharmacology of neuro humoral transmission in the CNS
2. Drug therapy of Parkinsonism
3. Pre-anaesthetic medication, pharmacodynamics and pharmacokinetics of general anesthetic agents.

4. Antiepileptic drugs
5. Local anaesthetics
6. Sedatives and hypnotics
7. The alcohols
8. Antipsychotic drugs and antimaniac drugs
9. Opioid analgesics
10. NSAIDs
11. Drug abuse and drug dependence
12. Drug therapy of rheumatoid arthritis, gout and other types of arthritis
13. CNS stimulants and cognitive enhancers

6. Cardiovascular system

1. Electrophysiology of heart
2. Patho-physiology of cardiac arrhythmias and anti-arrhythmic drugs
3. Pharmacotherapy of congestive heart failure
4. Anti-anginal agents
5. Anti-hypertensive agents.
6. Drugs for dyslipidaemia

7. Drugs acting on Kidney

1. Diuretics and anti-diuretics

8. Drugs acting on Gastro-intestinal tract

1. Drugs acting on gastro-intestinal tract
2. Emetics & anti emetics
3. Drugs for constipation & diarrhea

9. Endocrinology

1. Hormones of anterior pituitary gland
2. Thyroid hormones and thyroid inhibitors
3. Insulin, oral hypoglycemic agents and glucagon
4. Pharmacology and therapeutics of corticosteroids
5. Gonadal hormones and their antagonists, oral contraceptive pills
6. Oxytocin and drugs acting on uterus

10. Autacoids and related drugs

1. Histamine & anti-histaminics
2. Drug affecting serotonin and anti migraine drugs
3. Prostaglandins analogues

11. Antimicrobial agents (AMAS)

1. General concept of chemotherapy and mechanism of action of AMAS
2. Sulphonamides, co-trimoxazole and quinolones
3. β - Lactam antibiotics
4. Tetraacyclines and chloramphenicol
5. Aminoglycoside antibiotics
6. Miscellaneous antibiotics
7. Chemotherapy of tuberculosis and leprosy
8. Anti-viral agents
9. Anti-fungal agents
10. Chemotherapy of malaria and other protozoan diseases
11. Chemotherapy of helminthiasis

12. Chemotherapy of Neoplastic diseases

Practicals Contents:

(Sequence of the Practical-topics should be relevant to the theory topics covered in the term, by end of third term all the practical topics will be covered.)

Routes of administration

Dosage forms and Handling of dosage forms

Pharmacokinetics: clinical application using a simulation model and calculation

Experimental pharmacology using computer simulation module/ animal experiment

Effects of drugs in eye

New drug development

Drug Regulation in India /Banned and bannable drug/

Adverse drug reactions and pharmacovigilance

Drug Promotional Literature

Essential Drug List /Pharmacoeconomics

Principles & Practice of Prescription writing; Rational Pharmacotherapy and P drug concept

*Prescription writing, comments on therapeutic problems and handling of dosage-forms (formulations) in various systems: Respiratory system

Gastro-intestinal tract

Anaemia

Pain management

Cardiovascular system

Diabetes mellitus

Common Infections

Malaria & other infections

Skin disorders

Fixed dose combinations: Use and misuse of commonly used preparations: vitamins, antioxidants, enzymes etc.

Emergency therapeutics

Concept and practice of Clinical pharmacology

*Special note:

(a) Exercises above this heading will lead to development of better understanding about rationale therapeutics, application of principles of therapy in practice and will have relevance of pharmacology in day to day to practice of science of medicine.

(b) It is to be emphasized that while doing the Prescription writing exercises there should not be load on memory by remembering the doses and formulations of the drugs. There should be access to the information about doses and formulations of the drugs while solving these exercises. This is done by providing a “Drug Doses and Formulation-information booklet” or allowing the students to use CIMS, MIMS or Drug Index

(c) Exercises on Handling of dosage-forms (formulations) will give the students a special opportunity to be conversant with of uses of drugs in actual practice. Students are expected to read the instructions about use of formulations, understand the units of strength of drugs expressed on label, calculate the proper dose for a given patient, particularly for children when dose is expressed as mg/kg or rate as mg/kg/min etc. In case of injectable drug administration the student needs to select the syringe and needle, follow the proper technique of filling the syringe with drugs from ampoule/vial, adjust the intravenous infusion-set, set the proper rate of intravenous infusion, observe appropriate precautions and know the proper techniques of disposal of needle and syringes. Also know the practical aspects of while handling of other formulations like MDI, dry powder for Syrup for paediatric use, Eye drops etc.

Following are the examples of exercises, which can be incorporated during training in practical sessions at appropriate time.

Intravenous infusions of the drugs like:

- • Dopamine
- • Aminophylline
- • Insulin for diabetic coma
- • Quinine
- • Ringer lactate/Saline for acute dehydration
- • Oxytocin
- • Lignocaine for arrhythmia
- • Sodium nitroprusside

To fill up syringe with drugs like:

- • Insulin (combination)

- • Benzathine Penicillin
- • Ceftriaxone
- • Adrenaline for s.c. injection
- • Adrenaline for slow i.v. injection
- • Atropine for colicky pain
- • Atropine for organo-phosphate poisoning
- • Aminophylline for slow i.v. injection
- • Furosemide

MDI salbutamol, beclomethasone, etc,

Powder for preparing syrup for child : amoxicillin, Eye drops etc.

Evaluation

Methods

Theory, Practical & viva

No.		Total
1	Theory (2 papers – 40 marks each)	80
2	Oral (Viva)	15
3	Practical	25
4	Internal assessment (theory –15, practical's –15)	30
5	TOTAL	150