पाटन स्वास्थ्य विज्ञान प्रतिष्ठान, सेवा आयोग
प्राज्ञिक सेवा, औषधी बिज्ञान समुह, सहायक प्राध्यापक पद नौं ख (९ ख) तहको
खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
Paper II: Technical Subject
Section (A) - 45 Marks

1. General Pharmacology

1.1 History, Terminology, Sources and Routes of Drug.

1.2 Pharmacokinetics

- 1.2.1 The Dynamics of drug absorption, distribution, metabolism and kinetics of elimination.
- 1.2.2 Optimization of dosage regimen: loading dose, maintenance dose and steady state plasma concentration.

1.3 Pharmacodynamics:

- 1.3.1 Action of drug and Receptor pharmacology.
- 1.3.2 The quantitative affects of drug action.

1.4 Adverse Drug Reactions, Monitoring and Pharmacovigilance:

- 1.4.1 Definition, types, clinical significance.
- 1.4.2 Heavy metals - antagonists

1.5 Drug Interactions (Food, Disease and Drugs)

1.6 Pharmacogenetics:

- 1.6.1 Importance of Pharmacogenetics to variability in Drug Response
- 1.6.2 Genomic Basis of Pharmacogenetics.

1.7 Evaluation of New Drugs:

- 1.7.1 Introduction of a New Drug
- 1.7.2 Drug Discovery
- 1.7.3 Preclinical Evaluation (Animal Studies)
- 1.7.4 Clinical Trials, Official Regulations and Drug Advertisement.

1.8 Concepts of Essential Medicines and Rational Use of Medicines

- 1.8.1 National and State Level EDL

1.9 Law Governing Drugs (Drug Schedules)

2. Neuropharmacology

2.1 **Drugs Acting at Synaptic and Neuroeffector Junctional Sites**

- 2.1.1 Neurotransmission : the autonomic and somatic nervous system
- 2.1.2 Muscarinic Receptor Agonists and Antagonists:
  - 2.1.2.1 Classifications, pharmacological basis for their actions, uses, contraindications and adverse effects.
- 2.1.3 Neuromuscular Blocker and Ganglion Blocker:
  - 2.1.3.1 Classifications, mechanism of actions, uses, contraindications and adverse effects.

2.1.4 Adrenergic Receptor Agonists and Antagonists:

2.1.4.1 Classifications, pharmacological basis for their actions, uses, contraindications and adverse effects.

2.1.5 Serotonin Receptor Agonists and Antagonists:

2.1.5.1 Classifications, pharmacological basis for their actions, uses and adverse effects.

2.2 **Central nervous system and special senses**

2.2.1 Aliphatic alcohols

2.2.1.1 Pharmacological properties and its effect of physiological system.

2.2.1.2 Etiology of alcohol use disorders and the role of gene.

2.2.1.3 Ethanol and methanol intoxication and its management, tolerance, dependence.

2.2.2 General anaesthetics and Therapeutic Gases:

2.2.2.1 Classifications, mechanism of action, uses, contraindications and adverse effects.

2.2.3 Local anaesthetics

2.2.3.1 Types of local anaesthesia, classification, mechanism, uses and adverse effects.

2.2.4 Therapy of epilepsies

2.2.4.1 Classification of antiepileptic drugs, mechanism of action, indication, adverse effects, drug interactions and contraindications.

2.2.5 Treatment of Central Nervous System Degenerative Disorders

2.2.5.1 Therapy of Parkinsonism

2.2.5.1.1 Classification of antiparkinsonian drugs, mechanism of action and adverse effects.

2.2.5.2 Therapy of Alzheimer's disease

2.2.5.3 Therapy of Huntington's Disease

2.2.6 Opioid analgesics and antagonists

2.2.6.1 Classification of opioid analgesics and antagonists, pharmacological actions, uses, contraindications, adverse effects and drug dependence-management.

2.2.7 Sedatives and hypnotics

2.2.7.1 Classification of sedatives and hypnotics, pharmacological actions, uses and adverse effects.

2.2.8 CNS stimulants- classification, uses and adverse effects.

2.2.9 Drug abuse

2.2.9.1 Types and management

2.2.10 Psychopharmacology

2.2.10.1 Antipsychotic, antidepressants and mood stabilizers

2.2.10.1.1 Classification, mechanism of action, uses, adverse effects and drug interactions of it.

3. Drugs used to treat disease of Inflammation and Related Autocoids

3.1 Histamine and bradykinin

3.1.1 Its analogues, mechanism of action, uses and adverse effects.

3.2 Prostaglandins, leukotrines and platelet activating factors

3.2.1 Its preperations, mechanism of action, uses and adverse effects.

3.3 Nonsteroidal anti-inflammatory drug (NSAIDS)

3.3.1 Classification of NSAIDs, salient features of various groups, mechanism of action, uses, adverse effects and drug interactions of it.

3.4 Disease modifying antirheumatic drugs (DMARDs)

3.4.1 Classification of antirheumatic drugs, mechanism of action, uses, adverse effects and drug interactions.

3.5 Drugs for gout

3.5.1 Classification of anti-gout drug, mechanism of action, uses and adverse effects.

4. Blood, reticulo-endothelial and immune system:

4.1 Haematinic and Hematopoietic Agents: Growth factors, minerals, vitamins and antioxidents:

4.1.1 Classification, their actions, indications and adverse effects.

4.2 Haemostatics

4.2.1 Classification, their actions and uses.

4.3 Therapy of Thromboembolic disorders

4.3.1 Anticoagulants

4.3.1.1 Introduction

4.3.1.2 General principles- Classification of anticoagulants, mechanism of action, therapeutic uses, adverse effects, contraindication and drug interactions.

4.3.2 Thrombolytics

4.3.2.1 Preparations, pharmacological basis for their actions, uses and adverse effects.

4.3.3 Antiplatelet agents

4.3.3.1 Classification of antiplatelet drugs, mechanism of action, therapeutic uses, adverse effects and contraindications.

4.4 Antileukaemic Drugs:

4.4.1 Classifications of anticancer drugs, mechanism of actions, uses, interactions, contraindications and adverse effects.

4.5 Immunomodulators and immunotherapy:

4.5.1 Classifications, mechanism of actions, uses and adverse effects.

5. Drugs Affecting Renal and Cardiovascular System and Related Autocoids

5.1 Diuretics

5.1.1 Classification of diuretics, mechanism of action, indications, adverse effects and contracindications.

5.2 Antidiuretics

5.2.1 Vasopressin analogues and vasoactive peptides-mechanism of action, indications, adverse effects and contraindications.

5.3 Nitric oxide donors and inhibitors

5.4 Therapy of hypertension

5.4.1 Antihypertensive drugs classification, mechanism of action, indications, adverse effects, contraindications and drug interactions.

5.5 Therapy of Myocardial ischaemia and Angina

5.5.1 Drugs used in myocardial ischaemia

5.5.2 Antianginal drugs classification, mechanism of action, therapeutic uses, adverse effects, contraindications and drug interactions

5.6 Therapy of Congestive Heart Failure

5.6.1 Classification of drugs used in Heart Failure, mechanism of action, therapeutic uses, adverse effects and drug interactions of it.

5.7 Therapy of Arrhythmia

5.7.1 Antiarrhythmic drugs classification, mechanism of action, therapeutic uses, adverse effects, contraindications and drug interactions.

5.8 Therapy of hypercholesterolemia and Dyslipidemia

5.8.1 Classification, mechanism of action, therapeutic uses and adverse effects of it.

6. Respiratory system

6.1 Therapy of Bronchial asthma

6.1.1 Classification of drugs used in Bronchial Asthma, mechanism of action, pharmacological basis for the us, adverse effects, drugs interactions, contraindications and special features.

6.2 Therapy of allergic rhinitis- antihistaminics

6.2.1 Classification of antihistamines, therapeutic uses and adverse effect.

6.3 Therapy of cough

6.3.1 Antitussives and mucolytics: classifications, mechanism of action, adverse reactions and cautions.

Section (B) - 55 Marks

7. Chemotherapy

7.1 **Classification, mechanism of action, therapeutic uses, adverse effects, contraindications and drug interactions of:**

7.1.1 Cotrimoxazole, sulphonamides
7.1.2 Fluoroquinolones
7.1.3 Lactam antibiotics: penicillins, cephalosporin etc…
7.1.4 Lactamase inhibitors
7.1.5 Aminoglycosides
7.1.6 Tetracyclines, chloramphenicol
7.1.7 Macrolides: Erythromycin: prototype
7.1.8 Miscellaneous groups of antibiotics e.g. lincosamide and Glycopeptidr and other antibacterial antibiotics.

7.2 Chemotherapy of Sexually transmitted diseases
7.3 Chemotherapy of Urinary Tract Infection- urinary antiseptics
7.4 Chemotherapy of leprosy

7.4.1 Classification of antileprotic drugs, uses and adverse effects of it.

7.5 Antiviral drugs

7.5.1 General principles- classification, mechanism of action, indications, adverse effects, contraindications, therapeutic uses and drug interactions.
7.5.2 Regimens and prophylaxis of HIV

7.6 Chemotherapy of fungal infection

7.6.1 Classification of anti-fungal drugs, uses and adverse effects of it.

7.7 Chemotherapy of Parasitic Infections**:**

7.7.1 Malaria
7.7.1.1 Classification of anti-malarial drugs according to parasitic stage, mechanism of action, uses and adverse effects.
7.7.1.2 Regimens and prophylaxis
7.7.2 Kalaazar- classification of drugs, uses and adverse effects of it.
7.7.3 Filariasis: classification of drugs, uses and adverse effects of it.

7.8 Chemotherapy of worm infestation

7.8.1 Anthelminthics list the drugs, mechanism of action, adverse effects, drug interactions and contraindications.

7.9 Chemotherapy of amoebiasis and giardiasis

7.9.1 Antiprotozoal drugs classification, mechanism of action, uses, adverse effects and drug interactions.

7.10 Chemotherapy of Tuberculosis-

7.10.1 Classification of antitubercular drugs, mechanism of actions, adverse effects, contraindication and drug interaction.

7.10.2 Regimens and prophylaxis

8. Drugs used in disorder of Gastrointestinal system

8.1 Drug therapy for gastric acidity, peptic ulcer and gastro esophageal disorder

8.1.1 Introduction, pathogenesis, list of drugs- classification, mechanism of action, uses, adverse effects and drug interactions

8.1.2 Drug regimen for H.pylori eradication

8.2 Therapy of nausea and vomiting-Emetics and anti-emetic agents

8.2.1 Classification of emetics, mechanism of action, uses and adverse effects.

8.2.2 Classification of antiemetics, mechanism of action, uses and adverse effects of it.

8.3 Therapy of diarrhea

8.3.1 Oral rehydration solution- constituents, indications

8.3.2 Antidiarrhoeals agents and antispasmodic agents- Classification, mechanism of action, uses and adverse effects of it

8.4 Therapy of constipation

8.4.1 Commonly used drugs in constipation, clinical importance and adverse actions.

8.5 Pharmacotherapy of Inflammatory Bowel Disease

9. Endocrine and metabolism system

9.1 Anterior pituitary hormones and analogues

9.1.1 Growth Hormone and its analogues, Growth hormone inhibitors-uses and adverse effects.

9.1.2 Prolactin analogues and inhibitors- preparations, uses, adverse effects.

9.1.3 Gonadotropins preparations, uses, advderse effects.

9.1.4 GnRH agonist and antagonist- preparations, uses, adverse effects.

9.2 Thyroid and antithyroid drugs

9.2.1 Consequences of excess and deficiency of thyroid hormones

9.2.2 Drugs for treating hypo and hyperthyroidism- classification, mechanism of action, uses and adverse effects.

9.3 Insulin, Oral Hypoglycaemic drugs and Glucagon

9.3.1 Classifications of drugs used in treatment of diabetes mellitus, pharmacological basis for their actions, uses, interactions, contraindications and adverse effects.

9.3.2 Glucagon- uses and the rationale

9.4 Adrenocorticosteroids and synthetic analogues and antagonist

9.4.1 Classification of adrenocorticosteroids, mechanism of action, indications, adverse effects, contraindications of it.

9.5 Drugs affecting calcium balance and bone turnover

9.5.1 Integrated physiological role, therapeutic implications of parathormone, calcitonin and vitamin –D

9.5.2 Bisphosphonates- classification, mechanism of action, uses and adverse effects

10. **Reproductive system**

10.1 Gonadal hormones and antagonists:

10.1.1 Androgens and Antiandrogens- Classifications, mechanism of actions, uses, interactions, contraindications and adverse effects.

10.1.2 Estrogens, Antiestrogens and Selective Estrogen Receptor Modulators (SERMs)- Classifications, mechanism of actions, uses, interactions, contraindications and adverse effects.

10.2 Hormonal contraceptives

10.2.1 Types, mechanism of action, pharmacological actions, uses, choice of preparation, adverse effects, contraindications.

10.3 Drugs acting on uterus

10.3.1 Classifications of oxytocics and tocolytics, mechanism of actions, uses, contraindications and adverse effects of it.

10.4 Medication during pregnancy and lactation

10.4.1 Drugs causing tratogenecity and its categories.

11. Special Systems Pharmacology

11.1Ocular Pharmacology

11.2 Dermatological Pharmacology

11.3 Environmental Toxicology: Carcinogens and heavy metals

11.4 Enzymes in therapy

11.5Vaccines and Sera

12. **Recent advances in Pharmacology**

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