RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS **OF SCREENING TEST FOR THE POST OF**

ASSISTANT PROFESSOR– PHARMACOLOGY

MEDICAL & HEALTH (C.B.) DEPARTMENT

Theory :

1 Basic & clinical Pharmacology :

- Pharmacology History & Development.
- Structure activity, relationship and its significance.
- Chemical nomenclature as used in Pharmacology.
- Passage of drug across biological membranes.
- Absorption and Distribution of Drug : Binding of drugs to Plasma proteins.
- Biotransformation, Excretion of drugs & Factors affecting these.
- Mechanism of drug action.
- Drug – Drug Interaction and Iatrogenic Disorders.
- Pharmacogenetics.
- Drug addiction and its management.
- Teratogenicity and Carcinogenicity including methods for their study.
- Drug Resistance.

2 Autonomic Nervous System :

- Anatomical and Physiological considerations of A.N.S.
- Cholinergic agonists and antimuscarinic drugs.
- Neuromuscular blocking agents, Screening of Neuromuscular blocking and Ganglionic blocking agents.
- Anticholinesterases and Cholinesterase reactivators.
- Receptor mechanism, adrenergic receptors and their Pharmacological characterization.
- Catecholamine biosynthesis, release and factors affecting these.
- Catecholamines, their Pharmacology and therapeutics.
- Non Catecholamines, Sympathomimetics Agents.
- Alfa and Beta adrenergic blocking agents.

3 CNS

- Physiology and Pharmacology of nuerohormonal transmission in CNS.
- Pathophysiology of Parkinsonism and its management.
- Preanaesthetic medication and stages of anaesthesia.
- General anaesthetic agents.
- Local anaesthetic and their screening.
- Opioid receptors, enkephalins and endorphins.
- Opioid analgesics and their antagonists.
- Analgesics, Anti pyretics and Anti inflammatory agents.
- Anti depressant drugs.
- Anti psychotic drugs and Lithium.
- Anti anxiety drugs.
- Barbiturates.
- Centrally acting muscle relaxants and their screening methods.
- Alcohols.
- C.N.S. stimulants and cognition enhancers.
- Drugs of abuse.

4 C.V.S.

- Pathophysiology of Cardiac arrythmias, Anti arrhythmic drugs.
- Pathophysiology of cardiac failure, Angina Pectoris and Anti anginal drugs.
- Anti Hypertensive agents.

5 CHEMOTHERAPY

- Introduction to mechanism of action and principles of antimicrobial therapy.
- Sulfonamides.
- B-Lactam antibiotics.
- Tetracyclines, Chloramphenicol and macrolide antibiotics, Quinolones.
- Aminoglycosides.
- Antitubercular Drugs.
- Antileprotic Drugs.

- Antifungal Agents.
- Anti malarial Drugs.
- Viral replication and anti viral agents.
- Antiamoebic drugs and other anti protozoal drugs.
- Antihelminthics.
- Antineoplastic Agents.

6 ENDOCRINOLOGY :

- Androgents and anabolic steroids.
- Adrenal steroids and sex hormones, Anti-fertility agents.
- Hypothalamic and pituitary hormones.
- Pancreatic hormones.
- Anti diabetic agents.
- Thyroid and Anti thyroid drugs.
- Maintenance of Ca Metabolism.
- Drugs affecting bone mineralization.

7 RENAL PHARMACOLOGY

- Diuretics and Anti diuretics.

8 AUTOCOIDS AND RELATED PHARMACOLOGY

- Histamine, Anti-histaminics.
- 5-HT, its agonist and antagonist, Treatment of Migraine.
- Prostaglandins, Leukotrienes, PAF.
- Ergot alkaloids.

9 RESPIRATORY SYSTEM

- Treatment of Cough, Bronchial Asthma, COPD.

10 G.I.T.

- Treatment of Peptic Ulcer.
- Emetics and Anti Emetics.
- Drugs for constipation and diarrohea.

11 BLOOD

- Haematinics, erythropoetin.
- Coagulants and anticoagulants.
- Hypolipidaemic drugs.
- Plasma expanders.

12 MISCELLANEOUS

- Immunotherapy
- Gene therapy
- Chelating agents
- Vitamins, vaccines, Sera, Immunoglobulin
- Dermatological Pharmacology
- Antiseptics, disinfectans

13 APPLIED PHARMACOLOGY

- Vasoactive peptides
- Pharmaco economics
- Pharmaco genetics
- Pharmaco epidemiology
- Drugs in sports and Doping test
- Pharmaco genomics
- Microdosing
- Alternative to Animal experiments
- Role of biotechnology in recent drug development
- Role of free radicals in health and disease
- Newer drug delivery systems
- Noble laureates in Pharmacology
- Pharmaco vigilance

14 BIO CHEMICAL PHARMACOLOGY

- Analytical methods in Pharmacology and Toxicology
- Principals involved in identification and quantification of substances by
  - Chromatography
- Spectrophotometry

- Flame photometry
- Spectro flouro photometry
- H.P.L.C. and Gas chromatography
- Mass spectrometry

- Principles of immunological assays including radioimmunoassay and their importance
- Tracer techniques using radioactive substances and measurements

15 CLINICAL PHARMACOLOGY

- General principles of clinical Pharmacology i.e. dynamics, kinetics, ADRs and factors modifying drug effects
- Clinical pharmacokinetic concentration effect relationship & parameters, target concentration, strategies, plateau principles, population pharmacokinetics
- Therapeutic drug monitoring
- A.D.R. monitoring and prevention
- Bioavailability and Bioequivalence studies
- Placebo
- Designs and implementations of clinical trials
- Clinical drug developmental studies (phase 1, 2, 3, 4)
- Principles of rational drug therapy and concept of Essential drugs
- Drug therapy in extremes of age (neonate, elder and old)
- Drug therapy in pregnancy and lactation
- Iatrogenic disorders
- Prescription auditing and critical evaluation of research papers, promotional material etc.
- Ethical and legal aspects in clinical trials and drug therapy

16 RESEARCH METHODOLOGY

- Keeping and breeding laboratory animals
- Drug development (preclinical and clinical)
- Drug regulations
- Preclinical in ‘vitro and in vivo’ methods
- Bioassay and its importance
- Screening methods – in Pharmacology for evaluation of drug activities on :

A A.N.S.
B C.N.S. (sedatives, hypnotics, psychotropics, anxiolytics, antidepressants, anti convulsants, local anesthetics, anti Parkisonian drugs, NSAIDS, Opiods)
C Respiratory system drugs
D C.V.S. (anti anginal, anti hypertensive, anti arrythmics, drugs used in CHF)
E Diuretic screening
F G.I.T. drugs (Peptic ulcer, emetics and anti emetics, anti diarroheal agents)
G Oxytocin and tocolytics
H Hormones (Oral hypoglycemics, screening of fertility and anti fertility agents)

- Acute/sub acute/chronic toxicity studies on animals
- Protocol designing and writing of thesis
- Writing of papers, reports, review of scientific journals

17 BIO STATISTICS

- Normal distributions, random numbers
- Mean, mode, median, Standard Deviation, Standard Error
- Z Test and P values
- Student t test (paired and unpaired); chi-square test
- Non parameter tests for one, two and K sample problems
- ANOVA
- Correlation, simple linear regression and multiple linear regression
- Epidemiological statistics
- pA2 value

* * * * *

Pattern of Question Papers:

1. Objective Type Paper
2. Maximum Marks : 100
3. Number of Questions : 100
4. Duration of Paper : Two Hours
5. All Questions carry equal marks
6. There will be Negative Marking

* * * ****