

## **DETAILED SYLLABUS FOR THE POST OF ASSISTANT PROFESSOR IN PHARMACOLOGY IN MEDICAL EDUCATION - DIRECT RECRUITMENT**

**(Cat.Nos: 349/2023, 385/2023)**

### **MODULE 1 - GENERAL PHARMACOLOGY (15 MARKS)**

- Definitions, Nature & source of drugs, Classification and Nomenclature of drugs, Essential drug concept, Rational drug use, Fixed drug combinations, Evidence based medicine.
- Drug discovery - From Medicinal plants to Computer aided drug design
- Dosage forms, Routes of drug administration, New drug delivery systems.
- Pharmacodynamics - Drug receptors, Molecular mechanisms of drug action, factors modifying drug action, Therapeutic drug monitoring, Therapeutic index.
- Pharmacokinetics - Membrane transporters, Drug absorption, Distribution, Biotransformation, Excretion , Kinetics of Elimination.
- Adverse drug reactions and Pharmacovigilance
- Drug Interactions
- Pharmacogenetics, Pharmacogenomics, Gene therapy, Chronopharmacology, Orphan drugs, Over the counter drugs, Generic drugs.
- Drug therapy in extremes of age and in special situations
- Phases of clinical trial and official regulations, Good clinical practice.

### **MODULE II - AUTONOMIC AND NEUROPHARMACOLOGY ( 10 marks)**

- Adrenergic and cholinergic neurohumoral transmission and drugs modulating it.
- Cholinergic agonists and antagonists, Neuromuscular blockers, Ganglion blockers, Adrenergic agonists and antagonists
- Neurotransmitters of Central Nervous system, Sedative hypnotics, Alcohol, General anesthetics and Preanesthetic medication, Antiepileptic drugs, AntiParkinsonian drugs, Drugs for other neurodegenerative disorders.

- Psychopharmacology (Antipsychotic drugs, Antidepressants, Lithium, Anti anxiety drugs)
- Drugs of abuse and Drug dependence.
- CNS stimulants, Analeptics, Cognition enhancers.
- Local Anesthetics

### **MODULE III - CARDIOVASCULAR AND RENAL PHARMACOLOGY, DRUGS ACTING ON BLOOD**

#### **(10 marks)**

- Antihypertensive drugs, Anti anginal drugs and treatment of Myocardial infarction.
- Drugs for treatment of Heart failure, Anti Arrhythmic drugs.
- Drug treatment of Shock and Peripheral Vascular disease.
- Diuretics and Antidiuretics
- Hematinics and Hematopoietic growth factors.
- Coagulants, Anticoagulants, Styptics, Antiplatelet drugs, Fibrinolytics and Antifibrinolytics.
- Treatment of Dyslipidemias

### **MODULE IV - ENDOCRINE PHARMACOLOGY**

#### **(10 marks)**

- Hypothalamus and Pituitary hormones.
- Thyroid and Antithyroid drugs
- Adrenocorticosteroids and Adrenocortical antagonists
- Androgens, Oestrogens, Progestins and their antagonists.
- Drugs for Contraception, Drugs for infertility, Drugs acting on uterus.
- Agents that affect bone mineral homeostasis.
- Endocrine Pancreas and treatment of Diabetes Mellitus and Hypoglycemia.

**MODULE V - GASTROINTESTINAL AND RESPIRATORY PHARMACOLOGY, INFLAMMATION, AUTACOIDS (10 marks)**

- Drug treatment of Peptic Ulcer, Gastroesophageal reflux disease.
- Drug treatment of Constipation and Diarrhoea.
- Inflammatory bowel disease, Irritable bowel syndrome, Biliary and Pancreatic disorders
- Emetics and Antiemetics
- Treatment of Bronchial Asthma and Chronic obstructive Pulmonary disease
- Drug treatment of Cough
- Non steroidal anti inflammatory drugs, Treatment of Rheumatoid arthritis and Gout
- Histamine, Serotonin and their antagonists, Ergot alkaloids, Prostaglandins, Leukotrienes, Platelet activating factor, Plasma kinins, Thromboxane and related compounds
- Nitric oxide and Vasoactive Peptides.

**MODULE VI - ANTIMICROBIALS AND CHEMOTHERAPY (10 marks)**

- General principles of antimicrobial therapy
- Sulfonamides, Trimethoprim, Cotrimoxazole, Fluoroquinolones
- Beta lactam antibiotics (Penicillins, Cephalosporins, Carbapenems, Monobactam)
- Tetracyclines, Chloramphenicol, Aminoglycosides, Macrolides, Lincosamides, Glycopeptide and polypeptide antimicrobials, Streptogramins, Oxazolidinones, Pleuromutilins and other miscellaneous antimicrobials.
- Antimycobacterial drugs (including TB, Leprosy)
- Antifungal drugs, Antiviral and Antiretroviral drugs
- Antiprotozoal drugs (including Antiamoebic drugs)
- Antimalarial drugs, Anthelmintic drugs
- Treatment of Urinary tract infection , Urinary antiseptics
- Treatment of Sexually transmitted diseases.

- Treatment of COVID 19

**MODULE VII - CHEMOTHERAPY OF MALIGNANCY  
(5 marks)**

- General principles, Alkylating agents, Platinum coordination complexes, Antimetabolites
- Natural products in cancer chemotherapy, Anticancer Antibiotics
- Protein kinase inhibitors and pathway- targeted small molecules
- Antibodies, CAR T cells and protein to treat cancer
- Hormones and Hormone related agents in treatment of cancer.
- Metronomic chemotherapy

**MODULE VIII - MISCELLANEOUS TOPICS  
(10 marks)**

- Ocular Pharmacology (including treatment of Glaucoma)
- Dermatological Pharmacology
- Drugs for Erectile Dysfunction.
- Drug treatment of Obesity.
- Toxicology – Drug treatment of poisonings, Heavy metal Poisonings and chelating agents
- Antiseptics, Disinfectants, Ectoparasiticides
- Vaccines, Antisera and Immunoglobulins.
- Vitamins, Minerals, Antioxidants and Enzymes in therapy.
- Immune System, Immunostimulants and Immunosuppressants
- Occupational and Environmental pesticides, Food adulterants, Pollutants, Insect repellents, Herbal medicines, Dietary supplements, Nutraceuticals

**MODULE IX - EXPERIMENTAL PHARMACOLOGY, BIOASSAY, STATISTICS  
(10 marks)**

- Common laboratory animals, Anesthetics used in animals, Physiological salt solutions, Levers used in animal experiments, Care and handling of laboratory animals, Types and methods of breeding, Restraining of animals and blood collection techniques, Methods of euthanasia, Toxicity studies, Drug screening methods

- CCSEA, Composition and functions of Institutional animal ethics committee, Good laboratory practice, Ethics in animal research.
- Recombinant DNA technology, HPLC, PCR, Other Instruments used in animal experiments. Bioassay, Immunoassay, ELISA
- Dose response curve, Cumulative Dose response curve
- Statistics

**MODULE X - RECENT ADVANCES IN PHARMACOLOGY (10 marks)**

- Recent trends in treatment of various diseases, Pharmacology of Newer drugs
- Ethnopharmacology, Ecopharmacology, Reverse pharmacology, Photopharmacology, Drug repositioning, Biosimilars, Hemovigilance, Cosmetovigilance, Materiovigilance, Therapeutic audit, Pharmacoconomics, Pharmacoepidemiology, Drug utilization studies, Drug information services, Translational pharmacology, Antibiotic stewardship...

**NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.**