Syllabus of Ph.D. Entrance Test 2021-2022
Faculty of Pharmaceutical Sciences

I. Pharmaceutical Chemistry:

Structure, nomenclature, classification, synthesis, SAR and mechanism of action of the following categories of drugs, which are official in Indian pharmacopoeia and British pharmacopoeia. Analgesics, Antidepressents, Anxiolytics, Neuroleptics, Hypnotics and sedative, Anticonvulsants, Antihistaminics, Local anaesthetics, Antianginal agents, Cardiotonic agent, Diuretic, Anticoagulants, Coagulants, Antihypertensive drugs, Adrenergic and Cholinergic drugs, Hypolipidemic agents, Hypoglycemic agents, Antiplatelet agent, Antibiotics, Antibacterials, Antiprotozoal drugs, Sulphonamides, Antimalarial, Antiviral, Antitubercular, Antimoebic drugs, Anticancer drugs, Antihelminthic agents. Introduction to drug design. Stereochemistry of drug molecules.

II. Pharmacognosy and Phytochemistry:

Chemical tests for identification, chemistry, isolation, characterizations and estimation of phytopharmaceuticals belonging to the groups of terpenoids, steroids, Bioflavanoids, Purines, Alkaloids, Guggul lipids, Glycosides. Pharmacognosy of crude drugs that contain the above constituents. Standardization of raw materials and Herbal products , WHO guideline quantitative microscopy including modern techniques used for evaluation, Biotechnological principles and techniques for plant development, tissue culture. Marine drugs, Nutraceuticals, Photosensitizing agents, Classification system of Plant drugs and Chemotaxonomy, Biosynthetic pathways, Factors affecting variability of drugs phyto constituents.

III. Pharmaceutics:

Micromeritics, Rheology, Complexation and Dispersion systems. Physical, Chemical, therapeutic incompatibilities and its rectification methods. Formulation, preparation and quality control of tablets, capsules, liquid dosage forms, parental preparations, ointment and creams, suppositories, and controlled release product, Quality control of containers, closers, caps, and secondary packing material like paper and board for pharmaceuticals. Storage & Stability studies of different dosage forms. Different methods of sterilization and evaluation of sterile products, sterility testing of pharmaceutical products e.g. sera, vaccines. Novel drug delivery systems.

Biopharmaceutics & Pharmacokinetics: Factors influencing absorption. Passage of drugs across biological barriers, Basic principles of Pharmacokinetics - Compartment modeling: One compartment model with reference to intravascular and oral drug administration, concept of Clearance. Non-linear pharmacokinetics, bioavailability and bioequivalence.

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IV. Pharmacology

Pharmacology of Autacoids: Histamine, Antihistaminic drugs, 5 HT- its agonists and antagonists, Prostaglandins and leucotrienes. Steroidal and non-steroidal anti-inflamatory drugs. Pharmacology of drugs acting on endocrine system: Thyroid hormones and anti-thyroid drugs, insulin, oral hypoglycemic, estrogens, progesterone and oral contraceptives. Chemotherapeutic agents including anticancer drugs. Immuno Pharmacology, general pharmacological principles including toxicology and drug interactions. Pharmacology of drugs acting on central nervous system, cardiovascular system, autonomic nervous system, gastro intestinal system and respiratory system, renal system, blood and blood forming organs.

Bioassays: Types, bioassay of insulin, oxytocin, vasopressin, d-tubocurarine, digitalis, histamine and 5-HT.

Therapeutic drug monitoring, dosage regimen in renal and hepatic impairment. Drug-drug interactions and drug-food interactions, adverse drug reactions. Medication history, review and patient counseling. Clinical trials: types and phases of clinical trials including good clinical practice.

V. Pharmaceutical Analysis

Principles, Instrumentation and applications of the following, Absorption spectroscopy UV visible, IR, Flame photometry, Potentiometry, Fluorimetry, Conductometry, Polarimeter and Polarography, Pharmacopoeial assays. Principles of NMR, Mass spectroscopy, X-ray diffraction and different chromatographic techniques (TLC, Column, Paper, HPLC, HPTLC and GC). Quality control of Radio pharmaceuticals. Concepts of GMP and GLP.

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Model Paper

The questions will be framed from all parts of the syllabus and the type is multiple choice. There will be 100 (Hundred) multiple choice questions.

Q. One of the following drugs belongs to hypoglycemic agents:

A). Aspirin

B). Imipramine

C). Phenformin

D). Chlordiazepoxide

Answer: C

Instructions to the paper setters:

1. The entire syllabus should be covered uniformly.
   (All units carries equal marks 5x20=100 marks)
2. There should be only one answer among the four choices.
3. Answers like "two of the above", "None of the above", "A & C" should be avoided.
4. In case of problems/spectral data etc. there should not be any scope for more than one answer.

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