



राष्ट्रीय प्रौद्योगिकी संस्थान श्रीनगर
NATIONAL INSTITUTE OF TECHNOLOGY SRINAGAR
(An autonomous Institute of National Importance under the aegis of Ministry of Education, Govt. of India)
 हजरतबल, श्रीनगर, जम्मू-कश्मीर, 190006, भारत
Hazratbal, Srinagar Jammu and Kashmir, 190006, INDIA

SYLLABUS FOR PHARMACIST

GENERAL APTITUDE SYLLABUS

Verbal Aptitude Basic English grammar: Tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech Basic vocabulary: words, idioms, and phrases in context Reading and comprehension Narrative sequencing

Quantitative Aptitude: Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables Numerical computation and estimation: ratios, percentages, powers, exponents and logarithms, permutations and combinations, and series Mensuration and geometry Elementary statistics and probability

Analytical Aptitude: Logic: deduction and induction ; Analogy Numerical relations and reasoning

Spatial Aptitude : Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping Paper folding, cutting, and patterns in 2 and 3 dimensions

CORE BRANCH SYLLABUS

Pathophysiology:

Basic principles of cell injury and adaptation, Basic mechanism of inflammation and repair, Hypersensitivity, Autoimmunity and diseases of immunity, Neoplastic diseases, Shock, Biological effects of radiation, Protein-calorie malnutrition, vitamins, Obesity and starvation, Pathophysiology of common diseases, Infectious diseases

Organic Chemistry

General principles, Different classes of compounds, Protection and deprotection of groups, Aromaticity and aromatic chemistry, Different aromatic classes of compounds, Polycyclic aromatic hydrocarbons, Carbonyl chemistry, Heterocyclic chemistry, Bridged rings, Kinetic and thermodynamic control, Stereochemistry, Carbohydrates, Amino acids and proteins, Organometallic chemistry, Pericyclic reactions

Pharmaceutical Chemistry: Pharmaceutical impurities, Monographs, Isotopes, Different classes of therapeutic drugs, SAR of important classes of drugs

Pharmaceutics: Pharmacy profession, Introduction to pharmaceuticals, Introduction to dosage form, Route of administration, Sources of drug information, Allopathic dosage form, Crude extract, Allergenic extract Ayurvedic system of medicine, Homeopathic system of medicine, Biological products, GMP, Pharmaceutical plant, location, layout Dosage form necessities and additives, Powders, Capsules, Tablets Parenterals – products requiring sterile packaging, Suspensions Emulsions, Suppositories, Semisolids, Liquids, Pharmaceutical aerosols Ophthalmic preparations, Preformulations , Radiopharmaceuticals Stability of formulated products, Kinetic principles and stability testing Prolonged action pharmaceuticals, Novel drug delivery system, Cosmetics, Packaging material, GMP and validation, Pilot plant scale-up techniques

Pharmacology: General pharmacology, Pharmacokinetics, Pharmacodynamics, Pharmacology for peripheral nervous system, Pharmacology of cardiovascular system, Drugs acting on urinary system, Drugs acting on the respiratory system, Pharmacology of central nervous system, Pharmacology of endocrine system, Chemotherapy, Autacoids and their antagonists, Pharmacology of drugs acting on the gastrointestinal tract, Chronopharmacology, Immunopharmacology, Chemotherapy of malignant diseases, Peptides and proteins as mediators, Nitric oxide, Vitamins and minerals, Principles of toxicology



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Pharmacognosy: Introductory Pharmacognosy, Classification of crude drugs, Sources of crude drugs, Factors influencing quality of crude drugs, Techniques in microscopy, Introduction to phytoconstituents, Principles of plant classification, Pharmaceutical aids, Animal products, Plant products, Toxic drugs, Enzymes, Natural pesticides and insecticides, Adulteration and evaluation of crude drugs, Quantitative microscopy, Biogenetic pathways, Carbohydrates and lipids, Tannins, Volatile oils, Resinous drugs, Glycocides, Alkaloids, Herbarium, Extraction and isolation techniques, Phytopharmaceuticals, Quality control and standardization of herbal drugs, Herbal formulations, Worldwide trade of crude drugs and volatile drug, Plant biotechnology, Herbal cosmetics, Traditional herbal drugs, Plant-based industries and research institutes in India Patents

Dispensing and Hospital Pharmacy: Introduction to laboratory equipment, weighting methodology, handling of prescriptions, labeling instructions for dispensed products. Preparations based on percolation process. Preparations based on maceration process. Study of difference between marketed and dispensed products of different dosage forms. Posological calculations involved in the calculation of dosage for infants. Enlarging and reducing formula, displacement value. Preparations of formulations involving allegation, alcohol dilution, isotonic solution.

Pharmaceutical Engineering: Fluid flow, Heat transfer, Evaporation, Distillation, Drying, Size reduction and size separation, Extraction, Mixing, Crystallization, Filtration and centrifugation, Dehumidification and humidity control, Refrigeration and air conditioning, Material of constructions, Automated process control systems, Industrial hazards and safety precautions

Clinical pharmacy and therapeutics General Principles, preparation, maintenance, analysis of observational records in Clinical Pharmacy, Clinical trials, type and phases of clinical trials, placebo, ethical and regulatory issues including Good clinical practice in clinical trials, Therapeutic drug monitoring, adverse drug reaction (ADR), types of ADR, Mechanism of ADR. Drug interaction, Monitoring and reporting of ADR and its significance, Drug information services, Drug interactions, Drug interaction in pediatric and geriatric patients, drug treatment during pregnancy, lactation and menstruation, Pharmacovigilance, Therapeutic drug monitoring, Nutraceuticals, essential drugs and rational drug usage, Age-related drug therapy: concept of posology, drug therapy for neonates, pediatrics and geriatrics. Drug therapy in gastrointestinal, hepatic, renal, cardiovascular, and respiratory Disorders, Drug therapy for neurological and psychological disorders, Drug therapy in infections of the respiratory system, urinary system, infective meningitis, TB, HIV, malaria, and filaria. Drug therapy for thyroid and parathyroid disorders, diabetes mellitus, menstrual cycle disorders, menopause, and male sexual dysfunction, Drug therapy for malignant disorders like leukemia, lymphoma, and solid tumors, Drug therapy for rheumatic, eye, and skin disorders.

Biotechnology

Plant cell and tissue culture, Animal cell structure, Fermentation technology and industrial microbiology, Recombinant DNA Technology, Process and applications, Biotechnology-derived products, Proteomics, Formulation of proteins and peptides

Microbiology

Introduction to microbiology, Microscopy and staining technique, Biology of microorganisms, Fungi and viruses, Aseptic technique, Sterilization and disinfection, Microbial spoilage, Immunology and health, Vaccines and sera, Microbial assay