PHARMA OLYMPIAD SYLLABUS
FOR
B. PHARM.

P.R.S. EDUCATIONAL TRUST

BS-1202 & 1206, 12th Floor, Galaxy diamond Plaza,
Sector-4, Greater Noida (West), Gautam Buddh Nagar, U.P-201308

Pharma Olympiad Syllabus for B. Pharm.

Pharmacology

General Pharmacology, Principles of toxicology, Drugs acting on urinary system, Pharmacology of peripheral nervous system, Pharmacology of central nervous System, Pharmacology of cardiovascular system, Immunopharmacology, Drugs acting on Respiratory system, Pharmacology of Endocrine system, Neurohumoral transmission in autonomic and central nervous system, Chemotherapy, Autacoids and their Antagonists, Pharmacology of drug acting on the gastrointestinal tract, Chronopharmacology.

Physical Chemistry

Composition & physical states of matter, Surface and Interfacial phenomenon, Refractive index, Solutions Electrochemistry, Kinetics, Colligative Properties, Thermodynamics Ionic equilibrium.

Physical Pharmacy

Buffer Solubility Matter, properties of matter, Viscosity and rheology, Surface and interfacial phenomenon, Dispersion systems, Complexation, Solubility, Micromeritics and powder rheology.

Organic Chemistry

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

Dispensing and Hospital Pharmacy

Introduction to laboratory equipment, weighing methodology, handling of prescriptions, labelling instructions for dispensed products, Posological calculations involved in the calculation of dosage for infants. Study of current patent and proprietary products, generic products and selected brand products, indications, contraindications, adverse drug reactions, available dosage forms and packing. Reading and counselling of prescriptions from the clinical practice. Enlarging and reducing formula, displacement value, Preparations of formulations involving allegation, alcohol dilution, isotonic solution.

Pharmaceutical Chemistry

Pharmaceutical Inorganic Chemistry, Dentifrices, desensitizing agents, & anticaries agents. Pharmaceutical Impurities, Isotopes, Monographs, Medicinal Chemistry. Various classes of therapeutic agents, Different classes of therapeutic drugs. Therapeutic classes of drugs. Different classes of therapeutic drugs like Antimalarials, Antibacterial sulpha drugs, Antifungal agents, Antiallergic agents and Anti-ulcer agents.

Pharmaceutical Jurisprudence

Narcotic Drugs and Psychotropic Substances Act, and Rules, Introduction to Intellectual Property Rights and Indian Patent Act 1970. An Introduction to Standard Institutions and Regulatory Authorities such as BIS, ASTM, ISO, TGA, USFDA, MHRA, ICH, WHO Minimum Wages Act 1948. Prevention of Food Adulteration Act 1954 and Rules. Industrial Development and Regulation act 1951. Drugs and Magic Remedies (Objectionable Advertisements) Act 1954, Medicinal and Toilet Preparations (Excise Duties) Act 1955, Rules 1976. Historical background, Drug legislation in India, Code of Ethics for Pharmacists. The Pharmacy Act 1948, Drugs and Cosmetics Act 1940, Rules 1945, including New Drug applications. Consumer Protection Act, Indian Pharmaceutical Industry-An Overview. Medical Termination of Pregnancy Act 1970 and Rules 1975. Prevention of Cruelty to Animals Act 1960. Drug (Price Control) Order.

Pharmaceutical Management

Introduction to Management, Inventory Management, Communication Research Management. Human resource and development (HRD), Planning and Forecasting Organization, World trade organization (WTO) and trade related intellectual property rights (TRIPS). Standard institutions and regulatory authorities, GATT Marketing Research, Leadership and motivation.

Pharmaceutics

Pharmacy Profession & Introduction to Pharmaceuticals, Introduction to dosage form, biological products, Pre-formulation, Ophthalmic preparations, Packaging Materials, Cosmetics, Pilot plant scale-up techniques, Dosage Form, Necessities and Additives, Powders, Sources of drug information, Tablets, Capsules, Parenteral - product requiring sterile packaging, Suspensions, Emulsions, Suppositories, Semi-solids. Stability of formulated products, Prolonged Action Pharmaceuticals, Novel Drug delivery system, GMP and Validation, Semisolids, Allopathic dosage form, Crude extract, Allergenic extract, Capsules, Liquids (solutions, syrups, elixirs, spirits, aromatic water, liquid for external uses), Pharmaceutical Aerosols.

Pharmaceutical Engineering

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

Pharmacognosy

Introductory Pharmacognosy, Classification of crude drugs, Plant products, Principles of plant classification, Pharmaceutical aids, Animal products, Traditional herbal drugs, Plants based industries and research institutes in India. Patents, Ayurvedic system of medicine. Homeopathic system of medicine, Toxic drugs, Enzymes, Natural pesticides and insecticides. Adulteration and evaluation of crude drugs, Quantitative microscopy, Factors influencing quality of crude drugs, Techniques in microscopy. Introduction to phytoconstituents,

Biogenetic pathways, Carbohydrates & lipids, Tannins, Volatile oils, Resinous drugs, Glycosides, Alkaloids, Extraction and Isolation Techniques. Phytopharmaceuticals, Quality control and Standardization of herbal drugs, Herbal formulations, Worldwide trade of crude drugs and volatile oils Herbal cosmetics.

Human Anatomy and Physiology

Cell physiology, Endocrine Glands, Reproductive System, Gastrointestinal tract, Respiratory System, Autonomic nervous system, Cardiovascular system, Lymphatic system. The Blood, Sense organs, Skeletal System, Central Nervous system, Urinary System.

Pharmaceutical Analysis

Importance of quality control in pharmacy, Acid-base titrations, Gravimetry Extraction techniques, Potentiometry, General principles of spectroscopy, Mass spectrometry, Polarography, Nephelometry & Turbidimetry. Ultraviolet-visible Spectrometry, Spectrofluorimetry. Flame photometry & atomic absorption spectrometry, Infrared spectrometry, Miscellaneous methods of analysis, Non-aqueous titrations, Oxidation-reduction titrations, Precipitation titrations, Complexometric titrations, Proton nuclear magnetic resonance spectrometry, Chromatography.

Clinical Pharmacy and Therapeutics

Drug information services, Drug interactions, Drug interaction in paediatric and geriatric patients, drug treatment during pregnancy, lactation and menstruation. Therapeutic drug monitoring, adverse drug reaction (ADR), types of ADR, Mechanism of ADR. Drug interaction, Monitoring and reporting of ADR and its significance, Age-related drug therapy: concept of posology, drug therapy for neonates, paediatrics and geriatrics. Drugs used in pregnancy and lactation, Drug therapy in gastrointestinal, hepatic, renal, cardiovascular and Respiratory Disorders, Pharmacovigilance, Therapeutic drug monitoring, Nutraceuticals, essential drugs and rational drug usage. General Principles, preparation, maintenance, analysis of observational records in Clinical Pharmacy, Drug therapy in infections of 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 leukaemia, lymphoma and solid tumours, Drug therapy for rheumatic, eye and skin disorders. Clinical trials, type and phases of clinical trials, placebo, ethical and regulatory issues including Good clinical practice in clinical trials. Drug therapy for neurological and psychological disorders.

Biochemistry

Cell, Lipids, Enzymes, Nucleic acids, Vitamins, Biological, oxidations & reductions, Carbohydrates, Proteins, Hereditary diseases.

Biopharmaceutics and Pharmacokinetics

Bio-pharmaceutics including drug absorption and factors affecting drug absorption, Post marketing Surveillance, Process validation. Bio-availability & Bio-equivalence.

Biotechnology

Plant Cell and Tissue Culture, Fermentation Technology and Industrial Microbiology. Recombinant DNA Technology Process and Applications. Animal Cell Culture, Biotechnology-Derived Products.

Pathophysiology

Basic principles of cell injury and adaptation, Neoplastic diseases, Pathophysiology of common diseases, Immunopathology including amyloidosis, Infectious diseases, Basic mechanisms of inflammation and repair. Disorders of fluid, electrolyte and acid-base balance. Disorders of homeostasis: white blood cells, lymphoid tissues, and red blood cells related diseases.

Microbiology

Introduction to Microbiology, Microscopy and staining technique, Biology of Microorganisms, Microbial spoilage, Immunology, Fungi and Viruses, Aseptic Technique, Sterilization & Disinfection, Microbial Assay.