

DETAILED SYLLABUS

TECHNICAL PAPER –I (150 MARKS)

UNIT – I : PHARMACEUTICS

50 marks

1. Prescriptions-Reading and understanding of prescription, Latin terms commonly used.
2. Incompatibilities in Prescriptions-Study of various types of incompatibilities-physical chemical and therapeutics.
3. Posology-Dose and Dosage of drugs, Factors influencing dose, Calculations of doses on the basis of age, sex and surface area.
4. Introduction to Pharmacopoeias with special reference to the Indian Pharmacopoeia.
5. Introduction of different dosage forms.
6. Packing of Pharmaceuticals-Desirable features of a container, types of containers. Study of glass and plastics as materials for containers and rubber as a material for closures.
7. Sterillization-Concept of sterillization. Study of the following sterillization process.
 - (i) Sterillization with moist heat,
 - (ii) Dry heat sterillization,
 - (iii) Sterillization by radiation,
 - (iv) Sterillization by filtration and
 - (v) Gaseous sterillization.
8. Aseptic techniques. Application of sterilization processes particularly with reference to surgical dressings and intravenous fluids. Precautions for safe and effective handling of sterillization equipments.
- 9.. Processing of Tablets-Definition; Different types of compressed tablets and their properties. Tablets excipients; Defects in tablets. Evaluation of Tablets; Introduction to Tablets coating-Sugar coating; film coating, enteric coating.
10. Processing of Capsules-Hard and soft gelating capsules; different sizes of capsules; filling of capsules; handling and storage of capsules.
11. Study of immunological products like sera vaccines, toxoids & their preparations.
12. Parenteral dosage forms - Definations, general requirements for parenteral dosage forms. Types of parenteral formulation, Vehicles, adjuvants, processing, personal, facilities and quality control. Preparation of intravenous fluids and admixture-total parenteral nutrition, Dialysis fluids.
13. Sterility testing, particulate matter monitoring- faulty seal, packaging.
14. Ophthalmic product- Study of essential characteristics of different ophthalmic preparation. Formulation additives, special precaution in handling and storage of ophthalmic products.

UNIT –II : PHARMACEUTICAL CHEMISTRY

150 marks

The Chemistry of following Pharmaceutical organic compounds, covering their nomenclature, uses and their important physical and chemical properties, stability and storage conditions of the different type of Pharmaceutical formulations of the following drugs.

1. **Antiseptics and Disinfectants:** Proflavine, Benzalkoniumchloride, Cetrimide, Chlorocresol, Chloloroxyline, Formaldehyde solution, Hexachlorophene, Liquified phenol, Nitrofurantoin.
2. **Sulfonamides:** Sulfadiazine, Sulfaguanidine, Phthalylsulfathiazole, Succinylsulfathiazole, Sulfadimethoxine, Sulfamethoxypyridazine, Sulfamethoxazole, co-trimoxazole, Sulfacetamide
3. **Anti-tubercular Drugs:** Isoniazid, PAS, Streptomycin Rifampicin, Ethambutol, Thiacetazone, Ethionamide, Cycloserine, Pyrazinamide.
4. **Antiamoebic and Anthelmintic Drugs :** Emetine, Metronidazole, Halogenated hydroxyquinolines diloxanidefuroate, Paramomycin Piperazine, Mebendasole, D.E.C.
5. **Antibiotics :** Benzatine, Penicillin, Ampicillin, Cloxacillin, Carbenicillin, Gentamicin, Neomycin, Erythromycin, Tetracycline, Cephalexin, Cephaloridine, Cephalotin, Griseofulvin, Chloramphenicol.
6. **Antimalarial Drugs :** Chloroquine, Amodiaquine, Primaquine, Proguanil, Pyrimethamine, Quinine. Trimethoprim.
7. **Tranquilizers:** Chlorpromazine, Prochlorperazine, Trifluoperazine, Thiothixene, Haloperidol, Triperidol, Oxypertine, Chlordiazepoxide, Diazepam, Lorazepam, Meprobamate.
8. **Hypnotics :** Phenobarbitone, Butobarbitone, Cyclobarbitone, Nitrazepam, Glutethimide, Methypylone, Paraldehyde, Triclofos sodium.
9. **Antidepressant Drugs:** Amitriptyline, Nortriptyline, Imipramine, Phenelzine, Tranylcypromine.
10. **Diuretic Drugs :** Furosemide, Chlolorothiazide, Hydrochlorothiazide, Benzthiazide, Urea, Mannitol, Ethacrynic Acid.
11. **Cardiovascular Drugs :** Ethyl nitrite, Glyceryl trinitrate, Alpha methyl dopa, Guanethidine, Clofibrate, Quinidine.
12. **Hypoglycemic Agents :** Insulin, Chlorpropamide, Tolbutamide, Glibenclamide, Phenformin, Metformin.
13. **Histamine and Anti-histaminic Agents:** Histamine, Diphenhydramine, Promethazine, Cyproheptadine, Mepyramine, Pheniramine, Chlorpheniramine.
14. **Analgesics and Anti-pyretics:** Morphin, Pethidine, Codeine, Methadone, Aspirin, Paracetamol, Analgin, Dextropropoxyphene, Pentazocine.
15. **Steroidal Drugs:** Betamethazone, Cortisone, Hydrocortisone, prednisolone, Progesterone, Testosterone, Oestradiol, Nandrolone.
16. **Anti-Neoplastic Drugs :** Actinomycins, Azathioprine, Busulphan, Chlorambucil, Cisplatin cyclophosphamide, Daunorubicin hydrochloride, Fluorouracil, Meceaptopurine, Methotrexate, Mytomycin.

UNIT –III : BIOCHEMISTRY AND CLINICAL PATHOLOGY**10 marks**

1. Brief chemistry and role of Vitamins and Coenzymes.
2. Brief concept of normal and abnormal metabolism of proteins, carbohydrates and lipids.
3. Introduction to pathology of blood and urine.
 - (a) Lymphocytes and Platelets, their role in health and disease.
 - (b) Erythrocytes Abnormal cells and their significance.
 - (c) Abnormal constituents of urine and their significance in diseases.

UNIT –IV : HUMAN ANATOMY AND PHYSIOLOGY**10 marks**

1. Structure of cell, function of its components with special reference to mitochondria and microsomes.
2. Composition of blood, functions of blood elements. Blood group and coagulation of blood. Brief information regarding disorders of blood.
3. Name and functions of lymph glands.
4. Structure and functions of various parts of the heart. Arterial and venous system with special reference to the names and positions of main arteries and veins. Blood pressure and its recording. Brief information about cardiovascular disorders.
5. Respiratory system and their functions..
6. Urinary system. and their functions, structure and functions of kidney. Physiology of urine formation. Pathophysiology of renal diseases and oedema.
7. Digestive system; names of the various parts of digestive system and their functions. Structure and functions of liver, Physiology of digestion and absorption.
8. Reproductive system - Physiology and anatomy of reproductive system.

UNIT-V : HEALTH EDUCATION & COMMUNITY PHARMACY**30 marks**

1. Nutrition and health-Classification of foods requirements, disease induced due to deficiency of proteins, Vitamins and minerals-treatment and prevention.
2. Fundamental principles of microbiology classification of microbes, isolation, staining techniques of organisms of common diseases.
3. Communicable diseases-Causatives agents, modes of transmission and prevention.
 - (a) Respiratory infections-Chicken pox, measles. Influenza, diphtheria, whooping cough and tuberculosis.
 - (b) Intestinal infections: Poliomyelitis. Hepatitis. Cholera. Typhoid. Food poisoning, Hook-worm infection.
 - (c) Arthropod borne infections-plague, Malaria, Filariasis.
 - (d) Surface infections-Rabies, Trachoma, Tetanus, Leprosy.
 - (e) Sexually transmitted diseases-Syphilis. Gonorrhoea. AIDS.
4. Non-communicable diseases-Causative agents, prevention, care and control of Cancer, Diabetes, Blindness, Cardiovascular diseases.

5. Epidemiology-Its scope, methods, uses, dynamics of disease transmission, immunity and immunization: Immunological products and their dose schedule.
6. Disinfection, types of disinfection, disinfection procedures for faeces, urine sputum, room linen, dead-bodies, instruments.

TECHNICAL PAPER – II (150 marks)

UNIT – I : PHARMACOLOGY & TOXICOLOGY

50 marks

1. Routes of administration of drugs, their advantages and disadvantages.
2. Various processes of absorption of drugs and the factors affecting them, Metabolism, distribution and excretion of drugs.
3. Pharmacological classification, Pharmacological action and adverse effects of the following drugs:
 - (i) Drugs acting on the Central Nervous System:
 - (a) General anaesthetics, adjunct to anaesthesia, intravenous anaesthetics.
 - (b) Analgesic antipyretics and non-steroidal anti-inflammatory drugs, Narcotic analgesics, Antirheumatic and antigout remedies, Sedatives and Hypnotics, Psychopharmacological agents, anti convulsants, analeptics.
 - (c) Centrally acting muscle relaxants and antiparkinsonism agents.
 - (ii) Drugs acting on autonomic nervous system.
 - (a) Cholinergic drug, Anticholinergic drugs, anticholinesterase drugs.
 - (b) Adrenergic drugs and adrenergic receptor blockers.
 - (c) Neurone blockers and ganglion blockers.
 - (d) Neuromuscular blockers, drugs used in myasthenia gravis.
 - (iii) Drugs acting on respiratory system-Respiratory stimulants, Bronchodilators, Nasal decongestants, Expectorants and Antitussive agents.
 - (iv) Cardio Vascular drugs, Cardiotonics, Antiarrhythmic agents, Antianginal agents, Antihypertensive agents, Peripheral Vasodilators and drugs used in atherosclerosis.
 - (v) Drugs affecting renal function-Diuretics and antidiuretics.
 - (vi) Hormones and hormone antagonists-hypoglycemic agents, Antithyroid drugs, sex hormones and oral contraceptives, corticosteroids.
6. Chemotherapy of microbial disease: Urinary antiseptics, Sulphonamides, Penicillins, Streptomycin, Tetracyclines and other antibiotics, Antitubercular agents, Antifungal agents, antiviral drugs, antileprotic drugs.
7. Chemotherapy of protozoal diseases. Anthelminthic drugs.
8. Chemotherapy of cancer.
9. Disinfectants and antiseptics.

UNIT-II : PHARMACEUTICAL JURISPRUDENCE**20 marks**

1. Pharmacy Act, 1948 - The general study of the pharmacy Act with special reference to education regulations, working of state and central councils, constitution of these councils and function, registration procedure under the act.
2. The Drugs and cosmetic Act 1940 - General study of the Drugs and cosmetic Act and the rules there under. Definitions and salient features related to retail and wholesale distribution of drugs. The powers of inspectors, The sampling procedures and the procedure and formalities in obtaining licence under the rules. Facilities to be provided for running a Pharmacy effectively. General study of the schedule with special reference of schedule C, C₁, F, G, J, H, P & X. and salient features of labeling and storage condition of drugs.

UNIT -III : HOSPITAL & CLINICAL PHARMACY**50 marks**

1. Nomenclature and uses of surgical instruments and Hospital Equipments and health accessories.
2. P.T.C. (Pharmacy Therapeutic Committee), Hospital Formulary System and their organisation, functioning, composition.
3. Surgical dressing like cotton, gauze, bandages, and adhesive tapes including their pharmacopoeial tests for quality. Other hospital supply e.g. I.V. sets B.G. sets, Ryals tubes, Catheters, Syringes etc.
4. Disease, manifestation and pathophysiology including salient symptoms to understand the disease like Tuberculosis, Hepatitis, Rheumatoid Arthritis, Cardiovascular diseases, Epilepsy, Diabetes, Peptic Ulcer, Hypertension.
5. Drugs in Clinical Toxicity- Introduction, general treatment of poisoning, systematic antidotes. Treatment of insecticide poisoning, heavy metal poison, Narcotic drugs, Barbiturate, Organophosphorus poisons.
6. Bio-availability of drugs, including factors affecting it.
7. Drug Interactions:
 - (a) Definition and introduction.
 - (b) Mechanism of Drug Interaction.
 - (c) Drug-drug interaction with reference to analgesics, diuretics, cardiovascular drugs, Gastro-intestinal agents, Vitamins and Hypoglycemic agents.
 - (d) Drug-food interaction.
8. Adverse Drug Reactions:
 - (a) Definition and significance.
 - (b) Drug-induced diseases and Teratogenicity

UNIT -IV: PHARMACOGNOSY 10 marks

Occurrence, distribution, organoleptic evaluation, chemical constituents including tests wherever applicable and therapeutic efficacy of following categories of drugs.

- (a) Laxatives : Aloes, Rhubarb, Castor oil, Ispaghula, Senna.
- (b) Cardiotonics-Digitalis, Arjuna.

- (c) Carminatives & G.I. regulators - Umbelliferous fruits, Coriander, Fennel, Ajowan, Carda-mom, Ginger, Black pepper, Asafoetida, Nut-meg, Cinnamon, Clove.
- (d) Astringents - Catechu.
- (e) Drugs acting on nervous system - Hyoscyamus, Belladonna, Aconite, Ashwagandha, Ephedra, Opium, Cannabis, Nux vomica.
- (f) Antihypertensives - Rauwolfia.
- (g) Antitussives - Vasaka, Tolu balsam, Tulsi.
- (h) Antirheumatics - Guggul, Colchicum.
- (i) Antitumour - Vinca.
- (j) Antileptotics - Chaulmoogra Oil
- (k) Antidiabetics - Pterocarpus, Gymnema, Sylvestro.
- (l) Diuretics - Gokhru, Punarnava.
- (m) Antidysentrics - Ipecacuanha.
- (n) Antiseptics and disinfectants - Benzoin, Myrrh, Neem, curcuma.
- (o) Antimalarials - Cinchona.
- (p) Oxytocics - Ergot.
- (q) Vitamines - Shark liver Oil and Amla
- (r) Enzymes - Papaya, Diastase, Yeast.

Unit – VI : APTITUDE TEST 20 Marks

(a) Numerical And Figurework Tests: (4 Marks)

These tests are reflections of fluency with numbers and calculations. It shows how easily a person can think with numbers. The subject will be given a series of numbers. His/Her task is to see how the numbers go together to form a relationship with each other. He/She has to choose a number which would go next in the series.

(b) Verbal Analysis And Vocabulary Tests: (6 Marks)

These tests measure the degree of comfort and fluency with the English language. These tests will measure how a person will reason with words. The subject will be given questions with alternative answers, that will reflect his/her command of the rule and use of English language.

(c) Visual And Spatial/3-D Ability Tests: (4 Marks)

These tests are used to measure perceptual speed and acuity. The subject will be shown pictures where he/she is asked to identify the odd one out; or which comes next in the sequence or explores how easily he/she can see and turn around objects in space.

(d) Abstract Reasoning Tests: (6 Marks)

This test measures the ability to analyse information and solve problems on a complex, thought based level. It measures a person's ability to quickly identify patterns, logical rules and trends in new data, integrate this information, and apply it to solve problems.
