VEER NARMAD SOUTH GUJARAT UNIVERSITY
B. Pharmacy
(2005-06)

THIRD YEAR

Paper No.	Subject	Maximum Marks for					
		Theory			Practical		
		Ex	Se	Total	Ex.	Se	Total
301	Pharmacy Practice-I (Hospital-Pharmacy)	60	40	100	-	-	-
302	Industrial Pharmacy-I	60	40	100	70	30	100
303	Pharmaceutical Biotechnology	60	40	100	70	30	100
304	Medicinal Chemistry-I	60	40	100	70	30	100
305	Pharmacognosy-II	60	40	100	70	30	100
306	Pharmacology-II	60	40	100	70	30	100
307	Pathology	60	40	100	70	30	100
308	Pharmaceutical Jurisprudence	60	40	100	-	-	-

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B. PHARM THIRD YEAR

(2005-06)

PH-301 PHARMACY PRACTICE-I (HOSPITAL PHARMACY)

THEORY (50 hours)

1. **Hospital Pharmacy:** Objectives and functions, organization, planning and administration of modern hospital pharmacy services, location, layout, personnel, qualifications, requirements, abilities and evaluation of hospital pharmacist, workload and remuneration of hospital pharmacist.

2. **Hospital Drug Policy-** General considerations.
   Pharmacy and therapeutic committee- Purpose, organization and functions.
   Hospital formulary- Organization, formulary content, preparation and distribution. Pharmacy procedure manual preparation and publication.
   Hospital committee- Infection control committee, antibiotic policy committee and research and ethics committee.
   Role of hospital pharmacist in hospital committees and practice of Rational Drug Therapy. Drug exchange programme.

3. **Hospital Manufacturing:** Economical considerations and estimation of demand, layout, raw material, production planning, requirements, manpower, requirements and quality assurance, manufacturing of (including re-packing and pre-packing) sterile products (small and large volume parenteral), non-sterile products, total parenteral nutrition and intravenous additives.

4. **Drug distribution:** Outpatient and inpatient services, unit dose drug distribution systems, floor ward stock systems, satellite pharmacy services, central sterile services and bedside pharmacy.

5. **Radio Pharmaceuticals:** Radioisotope committee, role of hospital pharmacist in isotope and non-isotope pharmacy.

6. **Controlled drugs dispensing (Narcotic Drugs):** Procedures for dispensing and maintenance of records and disposal of expiry drugs.

7. Sterilization techniques, procedure, application of sterilization of surgical dressings used in OT and other equipment used in hospital (Cotton, bandage, adhesive tapes, IV sets, B.G. set, ryles tubes, catheters and syringes).

8. **Surgical products:** Primary wound dressing, absorbents, surgical cotton, surgical gauzes, bandages, adhesive tape, protective cellulosics, hemostastics, official dressings, absorbable and non-absorbable sutures, ligatures and catgut’s. Medical prosthetic and organ replacement materials.

9. Application of computers in hospital pharmacy.

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PH-302 INDUSTRIAL PHARMACY -I
THEORY (50 hours)

1. Pre-formulation studies and formulation concepts

2. Drug Regulatory affairs.

3. **Liquid dosage forms:** Introduction, types of additives used in formulation, vehicles, stabilizers, preservatives, suspending agents, emulsifying agents, solubilizers, colors and flavors. Manufacturing, packaging and evaluation of clear liquids, suspension, and emulsion.

4. **Semisolid dosage forms:** Types, mechanism of drug penetration, factors influencing penetration, semisolid bases and their selection, general formulations of semisolids and gels. Manufacturing procedure, evaluation and packaging.

5. **Pharmaceutical Aerosols:** Various propellants and valves, general formulations, manufacturing, packaging and evaluation methods. Pharmaceutical applications.

6. **Blood products and Glandular products:** Collection, processing and storage of – Whole human blood, concentrated human RBCs, dried human plasma, human fibrinogen, human thrombin, human normal immunoglobulin, human fibrin-foam, plasma substitutes, ideal requirements, PVP and dextrans. Glandular products like insulin, pancreatin, thyroid and adrenal products.

7. **Cosmetology and cosmetic preparations:** Fundamental of cosmetic science, structure and functions of skin and hair, formulation, packing and evaluation of the following class of cosmetics for:
   Skin: Powders, creams, lotions, deodorants, bath and cleansing preparations.
   Hair: Shampoos, tonics, hairdressings, brilliantines, depilatories, shaving media.
   Nails: Nail polish, Nail polish remover, manicure preparations.
   Teeth and mouth: Dentifrices, mouth washes.
   Make-up: Rouges, mascara, eye shadows, eyebrow pencil and lipsticks.

PRACTICAL (50 Hours)

1. **Preparation, evaluation and packaging of solutions, suspensions, emulsions, ointments, suppositories, eye drops, eye ointments etc.**

2. Collection, processing, storage and fractionation of blood.

3. **Formulation of various types of cosmetics for skin, hair, dental and manicure preparations.**

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PH-303 PHARMACEUTICAL BIOTECHNOLOGY
THEORY (75 hours)

1. Introduction to Biotechnology.
2. **Cell culture methods:** Comprehensive study of cell and organ culture methods, single cell protein and pharmaceutical application of animal tissues.
3. **Replication of DNA:** Semi conservative replication, Meselson & Stahl's Experiments, replication initiation, elongation and termination, enzymes and proteins involved in prokaryotic and eukaryotic replication.
4. **Transcription:** Initiation, elongation and termination, structure and role of RNA Polymerase in eukaryotes and prokaryotes.
5. **Translation:** Genetic code and it's significance, process of translation, initiation, elongation and termination, role of RNA and proteins involved in the process.
6. Mutation and its significance.
7. **Immunology and Immunological preparations:** Principles, antigens and haptens, immunological tolerance, antigen-antibody reactions and their applications, immunogenetics. Preparation of vaccines and monoclonal antibodies-their preparation, standardization, storage and therapeutic applications
8. **Comprehensive study** of recombinant DNA technology. Gene therapy: viral and nonviral mediated gene delivery system. Development of drugs produced by biotechnology- insulin and interferones.
9. **Antibiotics and other fermented products:** Historical development of antibiotics. Anti-microbial spectrum and methods used for their standardization. Screening of soil for organisms producing antibiotics. Design of fermentation process. Isolation of fermentation products with special reference to penicillin, streptomycin, tetracycline and vitamin B12
10. **Microbial Transformation:** Introduction, types of reactions mediated by micro organisms, design of biotransformation processes, selection of organisms, biotransformation process and its improvements with special reference to steroids.
11. **Enzyme immobilization:** Techniques of immobilization of enzymes, Study of enzymes such as hyaluronidase, penicillinase, streptokinase and streptodornase, amylases and proteases etc. Immobilization of bacteria and plant cells.

PRACTICAL (75 Hours)

1. Preparation of a bacterial vaccine.
2. Demonstration of an experiment to illustrate the production of an antibiotic by fermentation.
3. Immobilization of enzymes and study of it's activity.
4. Immobilization of whole cell and evaluation of their metabolic activity.
5. Experiments to illustrate microbial bio-transformation (Demonstration).

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PH-304 MEDICINAL CHEMISTRY-I
THEORY (75 hours)

1. **Basic Principles of medicinal chemistry:** Physico-chemical aspects (optical, geometric and bioisosterism) of drug molecules and biological action. Drug-receptor interaction including transduction mechanism.

2. **Drug metabolism:** Phase I and Phase II reactions, biological factors affecting drug metabolism, inducers and inhibitors of drug metabolism, significance of drug metabolism in medicinal chemistry and principles of prodrug design.

3. **Principles of drug design:** Traditional analog (QSAR) and mechanism based approaches, introduction to graph theory, application of quantum mechanics, computer aided drug designing (CADD) and molecular modeling
   Synthetic procedures of selected drugs, uses and mode of action (biochemical and molecular basis wherever applicable), structure activity relationship including physicochemical properties of the following classes of drugs:
   Sympathomimetic agents including biosynthesis and metabolism of adrenergic neurotransmitters, adrenoreceptor blockers, cholinergic agents, cholinesterase inhibitors, anticholinergic agents including antispasmodics, ganglionic stimulants and blockers, neuromuscular blockers. General anaesthetics, sedatives-hypnotics, local anaesthetics, Antiepileptic, Antipsychotic, antianxiety agents, central nervous system stimulants and psychodelics.

PRACTICAL (75 Hours)

1. Synthesis of selected drugs from the course content.

2. Spectral analysis of the drugs synthesized.

3. Establishing the Pharmacopoeial standards of the drugs synthesized.

4. Identification and estimation of drug metabolite(s) from biological fluids (Two experiments)

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PH-305 PHARMACOGNOSY –II
THEORY (75 hours)

1. **Glycosides:** Definition, properties, classification, chemistry, extraction and isolation, identification tests and therapeutic uses.
   Study of biological sources, cultivation, collection, commercial varieties, chemical constituents, substitutes, adulterants, uses, diagnostic macroscopic and microscopic features and specific chemical tests of following groups of drugs containing glycosides:

   Cardioactive sterols: Digitalis, squill, stropanthus, and thevetia.
   Anthraquinone Glycosides: Aloe, senna, rhubarb and cascara, psoralea, ammimajus, gentian, saffron, chirata, Quassia and Ashwagandha
   Saponins- Liquorice, ginseng, dioscorea, sarsaparilla and senega.
   Bitter Glycosides: Wild cherry bark, bitter almond.

2. **Alkaloids:** Definition, properties, classification, chemistry, extraction and isolation, identification tests and therapeutic uses.
   Study of biological sources, cultivation, collection, commercial varieties, chemical constituents, substitutes, adulterants, uses, diagnostic macroscopic and microscopic features and specific chemical tests of following groups of drugs containing alkaloids.

   Tropane: belladonna, hyoscyamus, Datura, dubisia, coca and withania.
   Quinoline and isoquinoline: Cinchona, ipecac, opium.
   Indole: Ergot, Rauwolfia, catharanthus, nux vomica and physostigma.
   Imidazole: Pterocarpus.
   Alkaloidal amines: Ephedra and colchicum.
   Glycoalkaloid: Solanum species.
   Pyridine and Piperidine: Tobacco, Areca and Lobelia.

3. **Essential oils**: Introduction, definition, general properties, classification, chemical nature, extraction and isolation, chemical tests and therapeutic uses.
   Biological source, macroscopic and microscopic characters, chemical constituents, uses and adulterants of oils of –Mentha, coriander, cinnamon, cassia, lemon peel, orange peel, lemon grass, citronella, caraway, dill, spearmint, clove, fennel, nutmeg, eucalyptus, chenopodium, cardamom, valerian, musk palmarosa, gaultheria and sandalwood.

4. **Terpenoids:** Definition, properties, classification, chemistry, extraction and isolation, identification tests and therapeutic uses of mono, di and sesqui and poly terpenes.

5. **Traditional system of medicine**. Studies of traditional drugs, common vernacular names, botanical sources, morphology, chemical nature, chief constituents, therapeutic uses of indigenous drugs and their marketed formulations - amla, kantkari, satavari, tylophora, bhilawa, kalijiri, bach, rasna, punarnava, chitrak, apamarg, gokhru, shankpushpi, brahmi, adusa, arjuna, ashoka, methi, lahsun, palash, guggul, gymnema, shilajit, nagarmotha and neem. Uses of essential oils in aromatherapy.

6. **Phytochemical screening of Natural products:** General methods used for the

isolation and purification of natural products. Study of chromatographic techniques as applied to natural products. Evaluation of natural products. Physical, microscopic, chemical, spectroscopic and other newer techniques.

PRACTICAL (75 Hours)

1. **Quantitative microscopy:**
   Ratio values: Stomatal number and stomatal index.
   Linear measurements: Dimension of starch grains and calcium oxalate crystals.
   Determination of length of phloem fibres.
   Determination of discrete particles using lycopodium spore method.
   Determination of vein islet, vein termination and palisade ratio

2. Chemical tests for drugs studied in theory (General tests and test for specific unorganized drugs).

3. **Morphological and microscopic study of drugs:** Stropanthus, squill, senna, rhubarb, cascara, ginseng, liquorice, senega, wildcherry bark, cinchona, ipecac, Rauwolfia, ergot, nuxvomica, vinca, aconite, kurchi, Ephedra, colchicum corm,

4. fennel, clove, cinnamon, coriander, eucalyptus, mentha, ginger, capsicum and mentioned in theory.

5. **Study of powder microscopy (including analysis of mixture):** Digitalis, squill, senna, rhubarb, cascara, liquorice, wild cherry bark, lobelia, cinchona, ipecac, rauwolfia, kurchi, ephedra, clove, cinnamon, coriander, fennel, ginger.
   Paper, Column and Thin layer chromatographic study of natural products.

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PH-306 PHARMACOLOGY–II
THEORY (75 hours)

1. **Drug acting on cardiovascular system:** Cardiac glycosides and drug for congestive cardiac failure, coronary insufficiency and antianginal, antihypertensive drugs and antiarrhythmic drugs. Nitric oxide and its clinical implications.

2. **Drugs acting on haemopoietic system:** Anti anemic agents, drugs for coagulation disorders, fibrinolytic agents, antiplatelet drugs, drugs used in bleeding disorders and agents used in hyperlipidemia, plasma volume expanders.

3. **Drugs acting on kidney:** Diuretics, drugs affecting acid-base balance.

4. **Drugs acing on gastrointestinal tract:** Drugs for treatment of peptic ulcer, emetics, antiemetics, prokinetic agents, purgatives and anti diarrhoeal agents, oral re-hydration therapy.

5. **Chemotherapy:** Basic principles of chemotherapy, sulfonamides and trimethoprim, quinolones, urinary antiseptics, Beta-lactam antibiotics, aminoglycosides, tetracyclines and chloramphenicol, antibacterial agents with special indications, chemotherapy of tuberculosis and leprosy, antiviral drugs, pharmacology of AIDS, antifungal drugs, antiprotozoal agents, anthelmintics and cancer chemotherapy.

6. **Immunopharmacology:** Basic principles of immune response, targets of immunosupression, immunosuppressive agents, antibody reagents and immunostimulants.

7. **Bioassays and other assay designs involving biological systems:** Basic principles of bioassays, experimental models and statistical design employed in biological standardization of oxytocin, heparin and ACTH.
   Radio-immuno-assay: Principles of radioimmunoassay with special reference to insulin and digoxin.
   Enzyme linked immunoassay (ELISA): Principles and applications of ELISA.

8. **Toxicology:** Definition, scope, development and sub-disciplines of toxicology, spectrum of toxic effects and modifying factors of toxic effects, toxicity of pesticides, toxicity of heavy metals and heavy metal antagonists, general principles of treatment of poisoning and selective antidotes of commonly occurring poisoning.

PRACTICAL (75 Hours)

1. **Pharmacological techniques:** Examination of rat vaginal smears, surgical procedures of ovariectomy, adrenalactomy and cannulation of jugular vein. Recording of ECG of an experimental animal, antiulcer activity of pylorus ligated rats. Experimental models to study the effect of diuretics and anti-inflammatory agents.
2. **Bioassays:** Bioassay designs using various isolated preparations (acetylcholine, histamine and oxytocin) and intact preparations (Vasopressin and insulin).
3. **Experimental toxicology:** Calculation of LD_{50} and therapeutic index using statistical approach.

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PH-307 PATHOLOGY
THEORY (50 hours)

1. Definition, scope and various branches of pathology.

2. **Cell injury, death and adaptation:** Definition, causes of cell injury, mechanism of cell injury, forms and morphology of cell injury. Cellular adaptations of growth and differentiation and cellular aging.

3. **Inflammation:** Acute inflammation and chronic inflammation. Role of lymphatics and lymph nodes in inflammation, morphologic patterns in acute and chronic inflammation and systemic effects of inflammation.

4. **Repair:** Regeneration, repair by connective tissue, wound healing and pathologic aspects of repair.

5. **Haemodynamic disorders, thrombosis and shock:** Edema, hyperemia, and congestion, hemorrhage, haemostasis, thrombosis, disseminated intravascular coagulation, infarction and shock.

6. **Disorders of immune system:** Cells of immune system, cytokines, histocompatibility genes, immune mechanism of tissue injury, autoimmune diseases, immunodeficiency diseases such as Brutons disease, thymic hypoplasia, severe combined immunodeficiency, acquired immunodeficiency syndrome and amyloidosis.

7. **Neoplasia:** Definitions and nomenclature, characteristic of benign and malignant neoplasms, the molecular basis of carcinogenesis, biology of tumor growth, carcinogenic agents, tumor immunity and clinical features of neoplasm.

8. **Genetic diseases:** Basis of heredity and mutations, molecular pathophysiology of genetic diseases, laboratory investigation of genetic disorders. Diseases caused by single gene defects such as Marfan syndrome, familial hypercholestrolemia, cystic fibrosis, phenylketonuria, glycogenosis, neurofibromatosis. Disorders with nultifactorial inheritance, cytogenetic disorders (Down syndrome, klinefelter syndrome, turner syndrome) and single gene disorders with a typical patterns of inheritance.

9. **Environmental diseases:** Pneumoconiosis, injury by chemical agents such as acetaminophen, lead, carbon monoxide and alcohol. Nutritional diseases such as obesity.

10. **General pathology of infectious diseases:** Infectious agents, host barriers to infection, mechanism of microorganisms induced injury, immune evasion by microbes and inflammatory response to infectious agents.

11. **Disorders of cardiovascular system:**
    Disorders of blood vessels: Arterial disorder i.e. arteriosclerosis, hypertension, vasculitis, aneurysms. Venous disorders i.e. varicose veins, phlebothrombosis and thrombophlebitis. Lymphatic disorders i.e. lymphangitis and lymphedema. Vascular tumours i.e. haemangiomas, glomangioma kaposis sarcoma.

12. **Disorders of haematopoetic and lymphoid systems:**
Red cell disorders: Anaemias, polyerythemia and erythroblastosis fetalis.
White cell disorders: Non-neoplastic disorders of white cells such as leukopenia, reactive leukocytosis and reactive lymphadenitis. Neoplastic proliferations of white cells such as malignant lymphomas (Non-hodgkins lymphomas and hodgkins disease), leukemias and mycloproliferative diseases, plasma cells dyscrasias and related disorders and histiocytoses.
Bleeding disorders: Disseminated intravascular coagulation, thrombocytopenia and coagulation disorders.
Disorders that affect the spleen and thymus: Splenomegaly, hyperplasia of thymus and thymoma.

13. **Disorders of lungs and upper respiratory tract:** Atelectasis. Obstructive lung disease i.e. asthma, emphysema, chronic bronchitis and bronchiectasis. Restrictive ling disease i.e. respiratory distress syndrome, idiopathic pulmonary fibrosis, sarcoidosis, hypersensitivity pneumonitis, diffuse pulmonary haemorrhage syndrome. Vascular lung diseases i.e. pulmonary thromboembolism, pulmonary hypertension. Pulmonary infections i.e. pneumonias, tuberculosis and fungal infections. Lung tumors i.e. bronchogenic carcinoma and bronchial carcinoid. Pleural lesions i.e. pleural effusions and pleuritis, malignant mesothelioma, pneumothorax, hemothorax and chylothorax. Lesions of upper respiratory tract i.e. acute infections, nasopharyngeal carcinoma, laryngeal tumors.

14. **Disorders of kidney and its collecting system:** Pathogenesis of glomerular diseases, glomerular syndromes. Tubulointerstitial nephritis and acute tubular necrosis. Nephrosclorosis and thrombotic microangiopathies. Cystic diseases of kidney, renal stones and hydronephrosis. Renal cell carcinoma and Wilms tumour.

15. **Disorders of oral cavity and gastrointestinal tract:**
Disorders of oral cavity: Ulcerative and inflammatory lesions, leukopenia, sialadenitis.
Disorders of oesophagus: Hiatal hernia, achalasia, Mallory-Weiss syndrome, varices, oesophagitis, Barrett's oesophagus, oesophageal carcinoma.
Disorders of stomach: Gastritis, gastric ulceration and tumours.
Disorders of small and large intestine and appendix: Hirschsprung disease, ischaemic bowel disease, angiodysplasia, haemorrhoids, diarrhoeal diseases including malabsorption syndrome, idiopathic inflammatory bowel disease, colonic diverticularis, bowel obstruction and appendicitis.

16. **Disorders of liver, pancreas and biliary tract:**
Disorders of liver: Hepatic injury, jaundice and cholestasis, hepatic failure, cirrhosis. Hepatitis and liver abcesses, alcoholic liver disease. Haemochromatosis,Wilson's disease on antitrypsin deficiency, Reye's syndrome. Intrahepatic biliary tract disease, circulatory disorders of liver. Tumor and tumour like condition of liver.
Disorders of biliary tract: Cholelithiasis, cholecystitis, choledocholithiasis and ascending cholangitis, extrahepatic biliary afresia. Tumors of gall bladder and gastrinbomas.
Disorders of pancreas: Pancreatitis, diabetes mellitus. Islet cell tumors such as insulinomas and gastrinomas.

17. **Disorders of male genital system:** Cryptorchidism and testicular atropy, nodular hyperplasia and carcinoma of prostrate. Sexually transmitted diseases such as syphilis, gonorrhea, chancroid. Male infertility. Gynaecomastia and carcinoma of male breast.

18. **Disorders of female genital system and breast:** Vulvitis, vaginitis cervicitis and

cervical neoplasia. Endometritis, adenomyosis, endometriosis, dysfuction uterine bleeding and endometrial hyperplasia. Tumors of endometrium and mymotrium. Polycystic ovaries, tumors of ovary. Ectopic pregnancy, gestational trophoblastic diseases, toxemia of pregnancy. Fibrocystic changes and tumors of female breast. Female infertility.

19. **Disorders of endocrine system:** Hyperpituitarism, pituitary adenomas, hypopituitarism and posterior pituitary syndromes. Hyperthyroidism, hypothyroidism. Graves disease, diffuse non-toxic goiter, multinodular goiter, thyroiditis, and neoplasms of thyroid. Hyperparathyroidism. Cushing's syndrome and Addison's diseases, adrenocortical neoplasm and pheochromocytoma.

20. **Disorders of musculoskeletal system:** Diseases of bone i.e. osteoporosis and acquired metabolic disease, osteomyelitis. Paget's disease and bone tumour. Diseases of joints i.e. osteoarthritis, gout and infectious arthritis. Diseases of skeletal muscle i.e. muscle atrophy, myasthenia gravis, inflammatory myopathies, and muscular dystrophies. Soft tissue tumors i.e. tumors of adipose tissue, tumors and tumor like lesions of fibrous tissue, fibrohistocytic tumors, neoplasm of skeletal muscle and smooth muscle tumors.

21. **Disorders of skin:** Acute inflammatory dermatoses i.e. urticaria, acute eczematitis, dermatitis and erythema multiforme. Chronic inflammatory dermatoses i.e. psoriasis and lichen. Blistering diseases i.e. pemphigus, bullous pemphigoid and dermatitis, herpetiformis. Benign and premalignant epithelial lesions, malignant epidermal tumor like lesions of melanocytes.

22. **Disorders of nervous system:** Edema, herniation and hydrocephalus. Global hypoxia-ischaemic encephalopathy, infaret, intracranial haemorrhage. Hematoma and traumatic parenchymal injuries. Congenital malformations and perinatal brain injury. Epidural and subdural infections, leptomeningitis, parenchymal infection including encephalitis. Brief description of neoplasms of central nervous system, primary diseases of myelin, acquired metabolic and toxic diseases. Degenerative diseases such as Alzheimer's disease, Parkinsonism, Huntington's, disease of motor neurons. Peripheral neuropathics and neoplasms of peripheral nervous system.

23. AIDS

PRACTICAL (50 Hours)

1. **Pathological specimens:** Exercises based on naked eye appearance of various human pathological specimens.

2. **Histopathology:** Preparation of histological slides. Identification and histopathological characteristics of various organs affected by major diseases.

3. **Clinical Pathology:** Exercises based on clinical pathology including haematology.

4. **Autopsy Studies:** Exercises based on the toxic effects of various substances on different organs.

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PH-308 PHARMACEUTICAL JURISPRUDENCE
THEORY (50 hours)

1. **History of Pharmacy legislation in India:** Origin and nature of pharmaceutical legislation in India, its scope and objectives, reports of commissions, new drug policy and future trends.

2. **Study of following with latest amendments:**
   Pharmaceutical ethics- Principles and significance of professional ethics, critical study of code of pharmaceutical ethics to pharmacist in relation to his job, to his trade and to medical profession.
   Pharmacy Act, 1948- As amended to date.
   Drug and Cosmetic Act, 1940 and Rules, 1945- As amended to date.
   Medicinal and Toilet preparations (Excise duties) Act, 1955- As amended to date.
   Narcotic drugs and Psychotropic substances Act, 1985 and Rules- As amended to date.
   Drug Price Control Order_ As amended to date.
   Patent Act- As amended to date.

3. **A brief study with special reference to the main provisions:** Poison Act, 1919, Drug and Magic Remedies (Objectionable Advertisements) Act, 1954. Medical Termination of Pregnancy Act, 1970 and Rules, 1975. Prevention of cruelty to Animal Act, 1960, Shops and Establishments Act and Rules. AICTE Act, 1987, Factories Act, 1948, Minimum Wages Act, 1948, Consumer protection Act with respect to Pharmaceutical services.

   Note: The teaching of all the above Acts should cover the latest amendments.