As Per Pharmacy Council of India

New Syllabus

for

Bachelor of Pharmacy

IInd Year

(IIIrd & IVth Semester)

Our Publications

(for Bachelor of Pharmacy)

IIIrd Semester

1. **Pharmaceutical Organic Chemistry II**
   - Ashish Srivastava & Abhinav Prasoon Mishra
2. **Physical Pharmaceutics - I**
   - Shubham Verma & Bhanu Priya
3. **Pharmaceutical Microbiology** *- Chandra Shekhar*
4. **Pharmaceutical Engineering**
   - Shubham Verma, Bhanu Priya & Yatendra Kumar

IVth Semester

1. **Pharmaceutical Organic Chemistry - III**
   - Ashish Srivastava & Abhinav Prasoon Mishra
2. **A Prologue to Medicinal Chemistry - I**
   - Yogendra Pal & Rashmi Saxena Pal
3. **Physical Pharmaceutics - II**
   - Dr. Sukhbir Singh, Dr. Neelam Singh, Atul Pratap Singh & Shubham Verma
4. **Pharmacology - I**
   - Suresh Chandra & Abhinav Prasoon Mishra
5. **Pharmacognosy & Phytochemistry - I**
   - Dr. Nitin Agarwal & Nidhi Sharma

R. NARAIN PUBLISHERS & DISTRIBUTORS (NPD)

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Note: Please compare this syllabus with original syllabus of University. Publisher & Printer will not be responsible for any mistake.

IIIrd SEMESTER

BP 301 T Pharmaceutical Organic Chemistry II

UNIT I: ● Benzene and its derivatives

a) Analytical, synthetic and other evidences in the derivation of structure of benzene, Orbital picture, resonance in benzene, aromatic characters, Huckel's rule
b) Reactions of benzene - nitration, sulphonation, halogenation- reactivity, Friedelcrafts alkylation- reactivity, limitations, Friedelcrafts acylation.
c) Substituents, effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic substitution reaction
d) Structure and uses of DDT, Saccharin, BHC and Chloramine

UNIT II:

- **Phenols*** - Acidity of phenols, effect of substituents on acidity, qualitative tests, Structure and uses of phenol, cresols, resorcinol, naphthols
- **Aromatic Amines* -** Basicity of amines, effect of substituents on basicity, and synthetic uses of aryl diazonium salts
- **Aromatic Acids*** –Acidity, effect of substituents on acidity and important reactions of benzoic acid.

UNIT III : ● Fats and Oils

a) Fatty acids – reactions.
b) Hydrolysis, Hydrogenation, Saponification and Rancidity of oils, Drying oils.
c) Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in their determination.

UNIT IV: ● Polynuclear hydrocarbons:

a) Synthesis, reactions
b) Structure and medicinal uses of Naphthalene, Phenanthrene, Anthracene, Diphenylmethane, Triphenylmethane and their derivatives.

UNIT V: ● Cyclo alkanes*

Stabilities – Baeyer's strain theory, limitation of Baeyer's strain theory, Coulson and Moffitt's modification, Sachse Mohr's theory (Theory of strainless rings), reactions of cyclopropane and cyclobutane only.

R. MAN PUBLISHERS & DISTRIBUTORS (INDIA)

Text Book Based On PCI Syllabus -
Pharmaceutical Organic Chemistry II
- Ashish Srivastava, Abhinav Prasoon Mishra (PSIT, Kanpur)
ISBN: 978-93-88756-48-8 **Price: 160.00**

BP 305 P Pharmaceutical Organic Chemistry - II (Practical)

I Experiments involving laboratory techniques

- Recrystallization
- Steam distillation

II Determination of following oil values (including standardization of reagents)

- Acid value
- Saponification value
- Iodine value

III **Preparation of compounds**

- Benzanilide/Phenyl benzoate/Acetanilide from Aniline/ Phenol/Aniline by acylation reaction.
- 2,4,6-Tribromo aniline/Para bromo acetanilide from Aniline/
- Acetanilide by halogenation (Bromination) reaction.
- 5-Nitro salicylic acid/Meta di nitro benzene from Salicylic acid / Nitro benzene by nitration reaction.
- Benzoic acid from Benzyl chloride by oxidation reaction.
- Benzoic acid/ Salicylic acid from alkyl benzoate/ alkyl salicylate by hydrolysis reaction.
- 1-Phenyl azo-2-napthol from Aniline by diazotization and coupling reactions.
- Benzil from Benzoin by oxidation reaction.
- Dibenzal acetone from Benzaldehyde by Claison Schmidt reaction
- Cinnammic acid from Benzaldehyde by Perkin reaction
- *P*-Iodo benzoic acid from *P*-amino benzoic acid.

Practical Book Based On PCI Syllabus -
Pharmaceutical Organic Chemistry - II
- Dr. Abhay Bhardwaj
(KIET Ghaziabad)
ISBN: 978-93-88756-33-4 **Price: 100.00**

R. NARAIN PUBLISHERS & DISTRIBUTORS (RNPD)

BP 302 T Physical Pharmaceutics I

UNIT-I:

- **Solubility of drugs:** Solubility expressions, mechanisms of solute solvent interactions, ideal solubility parameters, solvation & association, quantitative approach to the factors influencing solubility of drugs, diffusion principles in biological systems. Solubility of gas in liquids, solubility of liquids in liquids, (Binary solutions, ideal solutions)
- Raoult's law, real solutions. Partially miscible liquids, Critical solution temperature and applications. Distribution law, its limitations and applications

UNIT-II:

- **States of Matter and properties of matter:** State of matter, changes in the state of matter, latent heats, vapour pressure, sublimation critical point, eutectic mixtures, gases, aerosols – inhalers, relative humidity, liquid complexes, liquid crystals, glassy states, solid-crystalline, amorphous & polymorphism.
- **Physicochemical properties of drug molecules:** Refractive index, optical rotation, dielectric constant, dipole moment, dissociation constant, determinations and applications

UNIT-III:

- **Surface and interfacial phenomenon:** Liquid interface, surface & interfacial tensions, surface free energy, measurement of surface & interfacial tensions, spreading coefficient, adsorption at liquid interfaces, surface active agents, HLB Scale, solubilisation, detergency, adsorption at solid interface.

UNIT-IV:

- **Complexation and protein binding:** Introduction, Classification of Complexation, Applications, methods of analysis, protein binding, Complexation and drug action, crystalline structures of complexes and thermodynamic treatment of stability constants.

UNIT-V:

- **pH, buffers and Isotonic solutions:** Sorensen's pH scale, pH determination (electrometric and calorimetric), applications of buffers, buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonic solutions.

Text Book Based On PCI Syllabus -
Physical Pharmaceutics I
- Shubham Verma, Bhanu Priya
(R.V. Northland Inst. & IIMT, G. Noida)
ISBN: 978-93-88756-49-5 **Price: 160.00**

R. NARAIN PUBLISHERS & DISTRIBUTORS (RNPD)

BP 306 P Physical Pharmaceutics - I (Practical)

1. To determine the solubility of an inorganic salt at different temperature.
2 To determine the pKa value of a weak acid by titrating it against strong base potentiometrically.
3 To determine the partition co-efficient of benzoic acid in benzene and water.
4 To establish the partition co-efficient of iodine in distilled water and carbon tetrachloride.
5 To determine the critical solution temperature or upper consolute temperature of phenol-water system.
6 To determine the surface tension of given liquid by drop count method using stalagmometer.
7 To determine the surface tension of a given liquid by drop weight method using stalagmometer.
8 To determine the HLB value of a given surfactant.
9 To find out the monolayer capacity and specific surface area (area per gram) of given powder (activated charcoal) by adsorption method.
10 To determine critical micellar concentration (CMC) of a surfactant using stagmometer.
11 To find out the stability constant and donor acceptor ratio of PABA-Caffeine complex by solubility method.

Practical Book Based On PCI Syllabus -
Physical Pharmaceutics - I ***- Prashant Pandey***
(CSJM University, Kanpur)
ISBN: 978-93-88756-27-3 **Price: 50.00**

BP 303 T Pharmaceutical Microbiology

UNIT-I:

- Introduction, history of microbiology, its branches, scope and its importance.
- Introduction to Prokaryotes and Eukaryotes
- Study of ultra-structure and morphological classification of bacteria, nutritional requirements, raw materials used for culture media and physical parameters for growth, growth curve, isolation and preservation methods for pure cultures, cultivation of anaerobes, quantitative measurement of bacterial growth (total & viable count).

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- Study of different types of phase constrast microscopy, dark field microscopy and electron microscopy.

Unit II:

- Identification of bacteria using staining techniques (simple, Gram's &Acid fast staining) and biochemical tests (IMViC).
- Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous,radiation and mechanical method of sterilization.
- Evaluation of the efficiency of sterilization methods.
- Equipments employed in large scale sterilization.
- Sterility indicators.

Unit III:

- Study of morphology, classification, reproduction/replication and cultivation of Fungi and Viruses.
- Classification and mode of action of disinfectants
- Factors influencing disinfection, antiseptics and their evaluation. For bacteriostatic and bactericidal actions
- Evaluation of bactericidal & Bacteriostatic.
- Sterility testing of products (solids, liquids, ophthalmic and other sterile products) according to IP, BP and USP.

Unit IV:

- Designing of aseptic area, laminar flow equipments; study of different sources of contamination in an aseptic area and methods of prevention, clean area classification.
- Principles and methods of different microbiological assay. Methods for standardization of antibiotics, vitamins and amino acids.
- Assessment of a new antibiotic.

Unit V:

- Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage.
- Preservation of pharmaceutical products using antimicrobial agents, evaluation of microbial stability of formulations.
- Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures.
- Application of cell cultures in pharmaceutical industry and research.

Text Book Based On PCI Syllabus -
Pharmaceutical Microbiology
- Chandra Shekhar (RBS College of Pharmacy, Agra)
ISBN: 978-93-88756-50-1 **Price: 180.00**

R. NARAIN PUBLISHERS & DISTRIBUTORS (RNPD)

BP 307 P Pharmaceutical Microbiology (Practical)

1. Introduction and study of different equipments and processing, e.g., B.O.D. incubator, laminar flow, aseptic hood, autoclave, hot air sterilizer, deep freezer, refrigerator, microscopes used in experimental microbiology.
2. Sterilization of glassware, preparation and sterilization of media.
3. Sub culturing of bacteria and fungus. Nutrient stabs and slants preparations.
4. Staining methods- Simple, Grams staining and acid fast staining (Demonstration with practical).
5. Isolation of pure culture of micro-organisms by multiple streak plate technique and other techniques.
6. Microbiological assay of antibiotics by cup plate method and other methods.
7. Motility determination by Hanging drop method.
8. Sterility testing of pharmaceuticals.
9. Bacteriological analysis of water
10. Biochemical test.

Practical Book Based On PCI Syllabus -
Pharmaceutical Microbiology
- Kiran Sharma (KIET, Ghaziabad)
ISBN: 978-93-88756-18-1 **Price: 100.00**

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BP 304 T Pharmaceutical Engineering

UNIT-I:

- **Flow of fluids:** Types of manometers, Reynolds number and its significance, Bernoulli's theorem and its applications, Energy losses, Orifice meter, Venturimeter, Pitot tube and Rotometer.
- **Size Reduction:** Objectives, Mechanisms & Laws governing size reduction, factors affecting size reduction, principles, construction, working, uses, merits and demerits of Hammer mill, ball mill, fluid energy mill, Edge runner mill & end runner mill.
- **Size Separation:** Objectives, applications & mechanism of size separation, official standards of powders, sieves, size separation Principles, construction, working, uses, merits and demerits of Sieve shaker, cyclone separator, Air separator, Bag filter & elutriation tank.

UNIT-II:

- **Heat Transfer:** Objectives, applications & Heat transfer mechanisms. Fourier's law, Heat transfer by conduction, convection & radiation. Heat interchangers & heat exchangers.
- **Evaporation:** Objectives, applications and factors influencing evaporation, differences between evaporation and other heat process. principles, construction, working, uses, merits and demerits of Steam jacketed kettle, horizontal tube evaporator, climbing film evaporator, forced circulation evaporator, multiple effect evaporator& Economy of multiple effect evaporator.
- **Distillation:** Basic Principles and methodology of simple distillation, flash distillation, fractional distillation, distillation under reduced pressure, steam distillation & molecular distillation

UNIT- III:

- **Drying:** Objectives, applications & mechanism of drying process, measurements & applications of Equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of Tray dryer, drum dryer spray dryer, fluidized bed dryer, vacuum dryer, freeze dryer.
- **Mixing:** Objectives, applications & factors affecting mixing, Difference between solid and liquid mixing, mechanism of solid mixing, liquids mixing and semisolids mixing. Principles, Construction, Working, uses, Merits and Demerits of Double cone blender, twin shell blender, ribbon blender, Sigma blade mixer, planetary mixers, Propellers, Turbines, Paddles & Silverson Emulsifier,

UNIT-IV:

- **Filtration:** Objectives, applications, Theories & Factors influencing filtration, filter aids, filter medias. Principle, Construction, Working, Uses, Merits and demerits of plate & frame filter, filter leaf, rotary drum filter, Meta filter & Cartridge filter, membrane filters and Seidtz filter.
- **Centrifugation:** Objectives, principle & applications of Centrifugation, principles, construction, working, uses, merits and demerits of Perforated basket centrifuge, Non-perforated basket centrifuge, semi continuous centrifuge & super centrifuge.

UNIT- V:

- **Materials of pharmaceutical plant construction, Corrosion and its prevention:** Factors affecting during materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention. Ferrous and nonferrous metals, inorganic and organic non metals, basic of material handling systems.

R. NARAIN PUBLISHERS & DISTRIBUTORS (RNPD)

Text Book Based On PCI Syllabus -
Pharmaceutical Engineering
- Shubham Verma, Bhanu Priya, Yatendra Kumar
(R.V. Northland Inst. & IIMT, G. Noida)
ISBN: 978-93-88756-51-8 **Price: 200.00**

BP 308 P Pharmaceutical Engineering (Practical)

I. Determination of radiation constant of brass, iron, unpainted and painted glass.
II. Steam distillation – To calculate the efficiency of steam distillation.
III. To determine the overall heat transfer coefficient by heat exchanger.
IV. Construction of drying curves (for calcium carbonate and starch).
V. Determination of moisture content and loss on drying.
VI. Determination of humidity of air – i) From wet and dry bulb temperatures –use of Dew point method.
VII. Description of Construction working and application of Pharmaceutical Machinery such as rotary tablet machine, fluidized bed coater, fluid energy mill, de humidifier.
VIII. Size analysis by sieving – To evaluate size distribution of tablet granulations – Construction of various size frequency curves including arithmetic and logarithmic probability plots.
IX. Size reduction: To verify the laws of size reduction using ball mill and determining Kicks, Rittinger's, Bond's coefficients, power requirement and critical speed of Ball Mill.
X. Demonstration of colloid mill, planetary mixer, fluidized bed dryer, freeze dryer and such othermajor equipment.
XI. Factors affecting Rate of Filtration and Evaporation (Surface area, Concentration and Thickness/ viscosity
XII. To study the effect of time on the Rate of Crystallization.
XIII. To calculate the uniformity Index for given sample by using Double Cone Blender.

Practical Book Based On PCI Syllabus -
Pharmaceutical Engineering
- Dr. Niraj Gupta
(College of Pharmacy, Agra)
ISBN: 978-93-88756-31-0 **Price: 100.00**

R. K. PUBLISHERS & DISTRIBUTORS (REGD.)

IVth SEMESTER

BP 401 T
Pharmaceutical Organic Chemistry III

UNIT-I

Stereo isomerism

Optical isomerism – Optical activity, enantiomerism, diastereoisomerism, meso compounds Elements of symmetry, chiral and achiral molecules

DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers

Reactions of chiral molecules

Racemic modification and resolution of racemic mixture.

Asymmetric synthesis: partial and absolute

UNIT-II

Geometrical isomerism

Nomenclature of geometrical isomers (Cis Trans, EZ, Syn Anti systems)

Methods of determination of configuration of geometrical isomers.

Conformational isomerism in Ethane, n-Butane and Cyclohexane.

Stereo isomerism in biphenyl compounds (Atropisomerism) and conditions for optical activity.

Stereospecific and stereoselective reactions

UNIT-III

Heterocyclic compounds:

Nomenclature and classification

Synthesis, reactions and medicinal uses of following compounds/ derivatives Pyrrole, Furan, and Thiophene

Relative aromaticity and reactivity of Pyrrole, Furan and Thiophene

UNIT-IV

Synthesis, reactions and medicinal uses of following compounds/ derivatives

Pyrazole, Imidazole, Oxazole and Thiazole.

Pyridine, Quinoline, Isoquinoline, Acridine and Indole. Basicity of pyridine

Synthesis and medicinal uses of Pyrimidine, Purine, azepines and their derivatives.

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UNIT-V

Reactions of synthetic importance

Metal hydride reduction (NaBH4 and LiAlH4), Clemmensen reduction, Birch reduction, Wolff Kishner reduction.

Oppenauer-oxidation and Dakin reaction.

Beckmanns rearrangement and Schmidt rearrangement.

Claisen-Schmidt condensation.

Text Book Based On PCI Syllabus -
Pharmaceutical Organic Chemistry - III
- Ashish Shrivastava & Abhinav Prasoon Mishra
(PSIT, Kanpur)
ISBN: 978-93-88756-52-5 **Price: 240.00**

BP 402 T Medicinal Chemistry - I

UNIT- I

Introduction to Medicinal Chemistry

History and development of medicinal chemistry

Physicochemical properties in relation to biological action

Ionization, Solubility, Partition Coefficient, Hydrogen bonding, Protein binding, Chelation, Bioisosterism, Optical and Geometrical isomerism.

Drug metabolism

Drug metabolism principles- Phase I and Phase II.

Factors affecting drug metabolism including stereo chemical aspects.

UNIT- II

Drugs acting on Autonomic Nervous System

Adrenergic Neurotransmitters:

Biosynthesis and catabolism of catecholamine.

Adrenergic receptors (Alpha & Beta) and their distribution.

Sympathomimetic agents: SAR of Sympathomimetic agents

Direct acting: Nor-epinephrine, Epinephrine, Phenylephrine*, Dopamine,

Methyldopa, Clonidine, Dobutamine, Isoproterenol, Terbutaline, Salbutamol*, Bitolterol, Naphazoline, Oxymetazoline and Xylometazoline.

- **Indirect acting agents:** Hydroxyamphetamine, Pseudoephedrine, Propylhexedrine.
- **Agents with mixed mechanism:** Ephedrine, Metaraminol.

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Adrenergic Antagonists:

Alpha adrenergic blockers: Tolazoline*, Phentolamine, Phenoxybenzamine, Prazosin, Dihydroergotamine, Methysergide.

Beta adrenergic blockers: SAR of beta blockers, Propranolol*, Metibranolol, Atenolol, Betazolol, Bisoprolol, Esmolol, Metoprolol, Labetolol, Carvedilol.

UNIT-III

Cholinergic neurotransmitters:

Biosynthesis and catabolism of acetylcholine.

Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.

Parasympathomimetic agents: SAR of Parasympathomimetic agents

Direct acting agents: Acetylcholine, Carbachol*, Bethanechol, Methacholine, Pilocarpine.

Indirect acting/ Cholinesterase inhibitors (Reversible & Irreversible):

Physostigmine, Neostigmine*, Pyridostigmine, Edrophonium chloride, Tacrine hydrochloride, Ambenonium chloride, Isofluorphate, Echothiophate iodide, Parathione, Malathion.

Cholinesterase reactivator: Pralidoxime chloride.

Cholinergic Blocking agents: SAR of cholinolytic agents

Solanaceous alkaloids and analogues: Atropine sulphate, Hyoscyamine sulphate, Scopolamine hydrobromide, Homatropine hydrobromide, Ipratropium bromide*.

Synthetic cholinergic blocking agents: Tropicamide, Cyclopentolate hydrochloride, Clidinium bromide, Dicyclomine hydrochloride*, Glycopyrrolate, Methantheline bromide, Propantheline bromide,

Benztropine mesylate, Orphenadrine citrate, Biperidine hydrochloride,

Procyclidine hydrochloride*, Tridihexethyl chloride, Isopropamide iodide, Ethopropazine hydrochloride.

UNIT- IV

Drugs acting on Central Nervous System

A. Sedatives and Hypnotics:

Benzodiazepines: SAR of Benzodiazepines, Chlordiazepoxide, Diazepam*, Oxazepam, Chlorazepate, Lorazepam, Alprazolam, Zolpidem

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Barbiturtes: SAR of barbiturates, Barbital*, Phenobarbital, Mephobarbital, Amobarbital, Butabarbital, Pentobarbital, Secobarbital

Miscelleneous:

Amides & imides: Glutethmide.

Alcohol & their carbamate derivatives: Meprobomate, Ethchlorvynol.

Aldehyde & their derivatives: Triclofos sodium, Paraldehyde.

B. Antipsychotics

Phenothiazeines: SAR of Phenothiazeines - Promazine hydrochloride, Chlorpromazine hydrochloride*, Triflupromazine, Thioridazine hydrochloride, Piperacetazine hydrochloride, Prochlorperazine maleate, Trifluoperazine hydrochloride.

Ring Analogues of Phenothiazeines: Chlorprothixene, Thiothixene, Loxapine succinate, Clozapine.

Fluro buterophenones: Haloperidol, Droperidol, Risperidone.

Beta amino ketones: Molindone hydrochloride.

Benzamides: Sulpieride.

C. Anticonvulsants: SAR of Anticonvulsants**,** mechanism of anticonvulsant action

Barbiturates: Phenobarbitone, Methabarbital.

Hydantoins: Phenytoin*, Mephenytoin, Ethotoin

Oxazolidine diones: Trimethadione, Paramethadione

Succinimides: Phensuximide, Methsuximide, Ethosuximide*

Urea and monoacylureas: Phenacemide, Carbamazepine*

Benzodiazepines: Clonazepam

Miscellaneous: Primidone, Valproic acid , Gabapentin, Felbamate.

UNIT – V

Drugs acting on Central Nervous System

General anesthetics:

Inhalation anesthetics: Halothane*, Methoxyflurane, Enflurane, Sevoflurane, Isoflurane, Desflurane.

Ultra short acting barbitutrates: Methohexital sodium*, Thiamylal sodium, Thiopental sodium.

Dissociative anesthetics: Ketamine hydrochloride.*

Narcotic and non-narcotic analgesics

Morphine and related drugs: SAR of Morphine analogues, Morphine sulphate, Codeine, Meperidine hydrochloride, Anilerdine hydrochloride, Diphenoxylate hydrochloride, Loperamide hydrochloride, Fentanyl citrate*, Methadone hydrochloride*, Propoxyphene hydrochloride, Pentazocine, Levorphanol tartarate.

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Narcotic antagonists: Nalorphine hydrochloride, Levallorphan tartarate, Naloxone hydrochloride.

Anti-inflammatory agents: Sodium salicylate, Aspirin, Mefenamic acid*, Meclofenamate, Indomethacin, Sulindac, Tolmetin, Zomepriac, Diclofenac, Ketorolac, Ibuprofen*, Naproxen, Piroxicam, Phenacetin, Acetaminophen, Antipyrine, Phenylbutazone.

Text Book Based On PCI Syllabus -
A Prologue to Medicinal Chemistry - I
- Yogendra Pal & Rashmi Saxena Pal
(PSIT, Kanpur)
ISBN: 978-93-88756-53-2 **Price: 170.00**

BP 406 P Medicinal Chemistry - I (Practical)

I Preparation of drugs/ intermediates

1	1,3-pyrazole	2	1,3-oxazole
3	Benzimidazole	4	Benztriazole
5	2,3- diphenyl quinoxaline	6	Benzocaine
7	Phenytoin	8	Phenothiazine
9	Barbiturate		

II Assay of drugs

1	Chlorpromazine	2	Phenobarbitone
3	Atropine	4	Ibuprofen
5	Aspirin	6	Furosemide

III Determination of Partition coefficient for any two drugs

Practical Book Based On PCI Syllabus -
Medicinal Chemistry - I
- Sameer Rastogi, Yogesh Murti & Nidhi Srivastava
(Metro Institute, GLA University & IEC Institute)
ISBN: 978-93-88756-28-0 **Price: 70.00**

BP 403 T Physical Pharmaceutics - II

UNIT-I

Colloidal dispersions: Classification of dispersed systems & their general characteristics, size & shapes of colloidal particles, classification of colloids & comparative account of their general properties. Optical, kinetic & electrical properties. Effect of electrolytes, coacervation, peptization& protective action.

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UNIT-II

Rheology: Newtonian systems, law of flow, kinematic viscosity, effect of temperature, non-Newtonian systems, pseudoplastic, dilatant, plastic, thixotropy, thixotropy in formulation, determination of viscosity, capillary, falling Sphere, rotational viscometers

Deformation of solids: Plastic and elastic deformation, Heckel equation, Stress, Strain, Elastic Modulus

UNIT-III

Coarse dispersion: Suspension, interfacial properties of suspended particles, settling in suspensions, formulation of flocculated and deflocculated suspensions. Emulsions and theories of emulsification, microemulsion and multiple emulsions; Stability of emulsions, preservation of emulsions, rheological properties of emulsions and emulsion formulation by HLB method.

UNIT-IV

Micromeretics: Particle size and distribution, mean particle size, number and weight distribution, particle number, methods for determining particle size by different methods, counting and separation method, particle shape, specific surface, methods for determining surface area, permeability, adsorption, derived properties of powders, porosity, packing arrangement, densities, bulkiness & flow properties.

UNIT-V

Drug stability: Reaction kinetics: zero, pseudo-zero, first & second order, units of basic rate constants, determination of reaction order. Physical and chemical factors influencing the chemical degradation of pharmaceutical product: temperature, solvent, ionic strength, dielectric constant, specific & general acid base catalysis, Simple numerical problems. Stabilization of medicinal agents against common reactions like hydrolysis & oxidation. Accelerated stability testing in expiration dating of pharmaceutical dosage forms. Photolytic degradation and its prevention.

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Text Book Based On PCI Syllabus -
Physical Pharmaceutics - II
- Dr. Sukhbir Singh, Dr. Neelam Singh,
Atul Pratap Singh & Shubham Verma
(Chitkara University, Punjab,
IIMT University, Meerut & R.V. Northland Inst. Ghaz.)
ISBN: 978-93-88756-54-9 **Price: 190.00**

BP 407 P Physical Pharmaceutics - II (Practical)

1. Determination of particle size, particle size distribution using sieving method.
2. Determination of particle size, particle size distribution using Microscopic method.
3. Determination of bulk density, true density and porosity.
4. Determine the angle of repose and influence of lubricant on angle of repose.
5. Determination of viscosity of liquid using Ostwald's viscometer.
6. Determination sedimentation volume with effect of different suspending agent.
7. Determination sedimentation volume with effect of different concentration of single suspending agent.
8. Determination of viscosity of semisolid by using Brookfield viscometer.
9. Determination of reaction rate constant first order.
10. Determination of reaction rate constant second order.
11. Accelerated stability studies.

Practical Book Based On PCI Syllabus -
Physical Pharmaceutics - II
- Dr. Nitin Gupta (College of Pharmacy, Agra)
ISBN: 978-93-88756-22-8 **Price: 50.00**

R.NARAIN PUBLISHERS & DISTRIBUTORS (NNPD)

BP 404 T Pharmacology - I

UNIT-I

1. General Pharmacology

a. Introduction to Pharmacology- Definition, historical landmarks and scope of pharmacology, nature and source of drugs, essential drugs concept and routes of drug administration, Agonists, antagonists(competitive and non competitive), spare receptors, addiction, tolerance, dependence, tachyphylaxis, idiosyncrasy, allergy.

b. Pharmacokinetics- Membrane transport, absorption, distribution, metabolism and excretion of drugs .Enzyme induction, enzyme inhibition, kinetics of elimination

UNIT-II

General Pharmacology

a. Pharmacodynamics- Principles and mechanisms of drug action. Receptor theories and classification of receptors, regulation of receptors. drug receptors interactions signal transduction mechanisms, G-protein–coupled receptors, ion channel receptor, transmembrane enzyme linked receptors, transmembrane JAK-STAT binding receptor and receptors that regulate transcription factors, dose response relationship, therapeutic index, combined effects of drugs and factors modifying drug action.

b. Adverse drug reactions.

c. Drug interactions (pharmacokinetic & pharmacodynamic)

d. Drug discovery and clinical evaluation of new drugs -Drug discovery phase, preclinical evaluation phase, clinical trial phase, phases of clinical trials and pharmacovigilance.

UNIT-III

2. Pharmacology of drugs acting on peripheral nervous system

a. Organization and function of ANS.
b. Neurohumoral transmission,co-transmission and classification of neurotransmitters.
c. Parasympathomimetics, Parasympatholytics, Sympathomimetics, sympatholytics.
d. Neuromuscular blocking agents and skeletal muscle relaxants (peripheral).
e. Local anesthetic agents.
f. Drugs used in myasthenia gravis and glaucoma

UNIT-IV

3. Pharmacology of drugs acting on central nervous system

a. Neurohumoral transmission in the C.N.S.special emphasis on importance of various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine.
b. General anesthetics and pre-anesthetics**.**
c. Sedatives, hypnotics and centrally acting muscle relaxants.
d. Anti-epileptics
e. Alcohols and disulfiram

UNIT-V

3. Pharmacology of drugs acting on central nervous system

a. Psychopharmacological agents: Antipsychotics, antidepressants, anti-anxiety agents, anti-manics and hallucinogens.

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b. Drugs used in Parkinsons disease and Alzheimer's disease.
c. CNS stimulants and nootropics.
d. Opioid analgesics and antagonists
e. Drug addiction, drug abuse, tolerance and dependence.

Text Book Based On PCI Syllabus -
Pharmacology - I
- Suresh Chandra & Abhinav Prasoon Mishra
(PSIT, Kanpur)
ISBN: 978-93-88756-55-6 **Price: 240.00**

BP 408 P Pharmacology - I (Practical)

1. Introduction to experimental pharmacology.
2. Commonly used instruments in experimental pharmacology.
3. Study of common laboratory animals.
4. Maintenance of laboratory animals as per CPCSEA guidelines.
5. Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies.
6. Study of different routes of drugs administration in mice/rats.
7. Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
8. Effect of drugs on ciliary motility of frog oesophagus
9. Effect of drugs on rabbit eye.
10. Effects of skeletal muscle relaxants using rota-rod apparatus.
11. Effect of drugs on locomotor activity using actophotometer.
12. Anticonvulsant effect of drugs byMES and PTZ method.
13. Study of stereotype and anti-catatonic activity of drugs on rats/ mice.
14. Study of anxiolytic activity of drugs using rats/mice.
15. Study of local anesthetics by different methods.

Practical Book Based On PCI Syllabus -
Pharmacology - I
- Ajit Kumar Varma, Sapna Sachan & Dr. Shaily Chaudhary
ISBN: 978-93-88756-32-7 **Price: 100.00**

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BP 405 T Pharmacognosy & Phytochemistry - I

UNIT-I

Introduction to Pharmacognosy:

(a) Definition, history, scope and development of Pharmacognosy

(b) Sources of Drugs – Plants, Animals, Marine & Tissue culture

(c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).

Classification of drugs:

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

Quality control of Drugs of Natural Origin:

Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.

Quantitative microscopy of crude drugs including lycopodium spore method, leafconstants, camera lucida and diagrams of microscopic objects to scale with camera lucida.

UNIT-II

Cultivation, Collection, Processing and storage of drugs of natural origin:

Cultivation and Collection of drugs of natural origin

Factors influencing cultivation of medicinal plants.

Plant hormones and their applications.

Polyploidy, mutation and hybridization with reference to medicinal plants

Conservation of medicinal plants

UNIT-III

Plant tissue culture:

Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance.

Applications of plant tissue culture in pharmacognosy.

Edible vaccines

UNIT IV

Pharmacognosy in various systems of medicine:

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

B. NARAN PUBLISHERS & DISTRIBUTORS (NPD)

Introduction to secondary metabolites:

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

UNIT V

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites:

General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primarymetabolites:

Carbohydrates: Acacia, Agar, Tragacanth, Honey

Proteins and Enzymes : Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).

Lipids (Waxes, fats, fixed oils) : Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax

Marine Drugs:

Novel medicinal agents from marine sources.

Text Book Based On PCI Syllabus -
Pharmacognosy & Phytochemistry - I
- Dr. Nitin Agarwal & Nidhi Sharma
(R.B.S., Agra & MIET, Meerut)
ISBN: 978-93-88756-56-3 **Price: 160.00**

BP 409 P Pharmacognosy & Phytochemistry - I (Practical)

1. Analysis of crude drugs by chemical tests: (i)Tragaccanth (ii) Acacia (iii)Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil
2. Determination of stomatal number and index
3. Determination of vein islet number, vein islet termination and paliside ratio.
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer

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5. Determination of Fiber length and width
6. Determination of number of starch grains by Lycopodium spore method
7. Determination of Ash value
8. Determination of Extractive values of crude drugs
9. Determination of moisture content of crude drugs
10. Determination of swelling index and foaming.

Practical Book Based On PCI Syllabus - Pharmacognosy & Phytochemistry - I

- Nitin Kumar
(RBS, Agra & MIET, Meerut)

ISBN: 978-93-88756-23-5 **Price: 70.00**

R. NARAIN PUBLISHERS & DISTRIBUTORS (RNPD)

Our Pharmacy Publications

Bachelor of Pharmacy

Ist Semester

1. **Human Anatomy & Physiology I**
   - Praveen Kumar Dixit, Suchita Dixit & Monika Bhardwaj
2. **Pharmaceutical Analysis I**
   - Shom Prakash Kushwah & Dr. Sujeet Kumar Gupta
3. **Pharmaceutics - I** *- Dr. Raghvendra*
4. **Pharmaceutical Inorganic Chemistry**
   - Udit Kumar Jain & Parul Srivastava
5. **Communication Skills**
   - Dr. Ashok Agarwal & Nilisha Chaturvedi
6. **Remedial Biology**
   - Praveen Kumar Dixit, Monika Bhardwaj & Akansha Jain
7. **Remedial Mathematics** *- Manish Kumar*

IInd Semester

1. **Human Anatomy & Physiology - II**
   - Praveen Kumar Dixit, Suchita Dixit & Monika Bhardwaj
2. **Pharmaceutical Organic Chemistry - I**
   - Dr. Sandeep Kumar & Ashish Srivastava
3. **Biochemistry** *- Chandra Shekhar & Deshvir Singh*
4. **Pathophysiology**
   - Manish Kr. Shakya, Sheetal Singh & Pranjal Kr. Singh
5. **Computer Application In Pharmacy** *- Pawan Kumar*
6. **Environmental Science** *- Manoj Katual*

IIIrd Semester

1. **Pharmaceutical Organic Chemistry II**
   - Ashish Srivastava & Abhinav Prasoon Mishra
2. **Physical Pharmaceutics - I**
   - Shubham Verma & Bhanu Priya
3. **Pharmaceutical Microbiology** *- Chandra Shekhar*
4. **Pharmaceutical Engineering**
   - Shubham Verma, Bhanu Priya & Yatendra Kumar

IVth Semester

1. **Pharmaceutical Organic Chemistry III**
   - Ashish Srivastava & Abhinav Prasoon Mishra
2. **A Prologue to Medicinal Chemistry - I**
   - Yogendra Pal & Rashmi Saxena Pal
3. **Physical Pharmaceutics - II**
   - Dr. Sukhbir Singh, Dr. Neelam Singh & Atul Pratap Singh
4. **Pharmacology - I**
   - Suresh Chandra & Abhinav Prasoon Mishra

P. NARAIN PUBLISHERS & DISTRIBUTORS (NPD)

5. **Pharmacognosy & Phytochemistry - I**
   - Dr. Nitin Agarwal & Nidhi Sharma

Vth Semester

1. **Medicinal Chemistry - II**
   - Sameer Rastogi, Yogesh Murti & Nidhi Srivastava
2. **Industrial Pharmacy - I**
   - Pranjal Kumar Singh & Dr. Sunil Kumar
3. **Pharmacology - II**
   - Praveen Kr. Dixit, Dr. Ritesh Kumar & K.K. Agarwal
4. **Pharmacognosy & Phytochemistry - II**
   - Dr. Reena Gupta & Dr. Daksh Bhatia
5. **Pharmaceutical Jurisprudence**
   - Manoj Katual

Diploma In Pharmacy

Ist Year

1. **Pharmaceutics - I**
   - Dr. Lokesh Kumar Bhardwaj & Aditya Pratap Singh
2. **Pharmaceutical Chemistry - I**
   - Dr. Lokesh Kumar Bhardwaj & Praveen Kumar
3. **Pharmacognosy**
   - Dr. Lokesh Kumar Bhardwaj
4. **Biochemistry & Clinical Pathology**
   Manish Kumar & Vishal Singh
5. **Human Anatomy & Physiology**
   - Dr. Sokindra Kumar, Sameer Rastogi & Nidhi Srivastava
6. **Health Education & Community Pharmacy**
   - Dr. Lokesh Kumar Bhardwaj & Vimal Kumar Iglasia

IInd Year

1. **Pharmaceutics - II**
   - Nisha Gupta & Prashant Pandey
2. **Pharmaceutical Chemistry - II**
   - Sameer Rastogi, Yogesh Murti & Nidhi Srivastava
3. **Pharmacology & Toxicology**
   - Dr. Saumya Das & Aditi Singhal
4. **Pharmaceutical Jurisprudence**
   - Sameer Rastogi & Nidhi Srivastava
5. **Drug Store & Business Management**
   - Dr. Pawan Kumar & Dr. Archana Agarwal
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   - Ashish Mishra & Shilpi Mishra
7. **Environmental Education & Disaster Management**
   (Compulsory Subject for All Diploma & Pharmacy Courses)
   - Sameer Rastogi, Maya Krishan Gupta & P.S. Yadav

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