

3.3

Research Publication and Awards

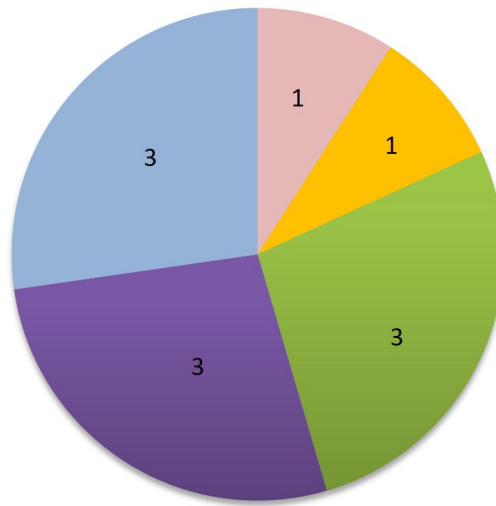
3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years

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Summary of Book Publication

2022-23	2021-22	2020-21	2019-20	2018-19
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■ 2022-23 ■ 2021-22 ■ 2020-21 ■ 2019-20 ■ 2018-19

Total number of books and chapters in edited volumes/books published and papers in national/ international conference proceedings year wise during last five years

Sr. No.	Authors	Title of the book/chapters published	Year of publication	Name of the publisher	ISBN/ISSN number	Page No.
Academic Year 2022-2023						
1	Dr. Santosh V. Gandhi, Dr. Savita Sonawane	Advanced Instrumentation Techniques	2023	Technical Publications	978-93-91567-20-0	06
Academic Year 2021-2022						
1	Dr. Padmanabh B. Deshpande Dr. Santosh V. Gandhi Dr. Ram S. Sakhare	Instrumental Methods of Analysis	2021	Technical Publications	978-93-90770-32-8	13
Academic Year 2020-2021						
1	Dr. Sachin Tembhone Dr Ashwini Madgulkar	Pharmacy Practice	2020	Nirali Prakashan	978-93-90225-14-9	25
2	Mrinalini Damle, Vandana Gawande	Pharmaceutical Analysis-VI	2020	Nirali Prakashan	978-93-90506-78-1	35
3	Mrs. Amruta Avalaskar	Pharmacognosy and Phytochemistry I	2020	Technical Publications	978-93-89420-80-7	43
Academic Year 2019-2020						
1	Dr. Sachin Tembhone	Pharmacology – II (As per PCI Syllabus) for Third Year B.Pharm.(Sem V)	2019	NiraliPrakashan, Pune	978-93-89406-62-7	53
2	Dr. Sachin Tembhone	Pharmacology – III (As per PCI Syllabus) for Third Year B.Pharm. (Sem VI)	2020	NiraliPrakashan, Pune	978-93-89686-72-2	63
3	Mangesh Bhalekar Dr Ashwini Madgulkar	Pharmaceutics I	2020	Tech-Max Publications	978-93-5077-332-1	73
Academic Year 2018-2019						
1	Dr. S.V. Tembhone	Pharmacology – I	2019	Nirali Prakashan, Pune. Published in January 2019.	978-93-88706-18-6	81

2	Dr. S.V. Tembhone	A Text Book of Pharmacology – I	2018	NiraliPrakashan	978-93-87686-40-3	93
3	Dr. Padmanabh B. Deshpande, Dr. Vitthal V. Chopade, Mrs. Shital M. Patil	Pharmaceutical Inorganic Chemistry	2018	Technical Publications	978-93-332-1862-7	103



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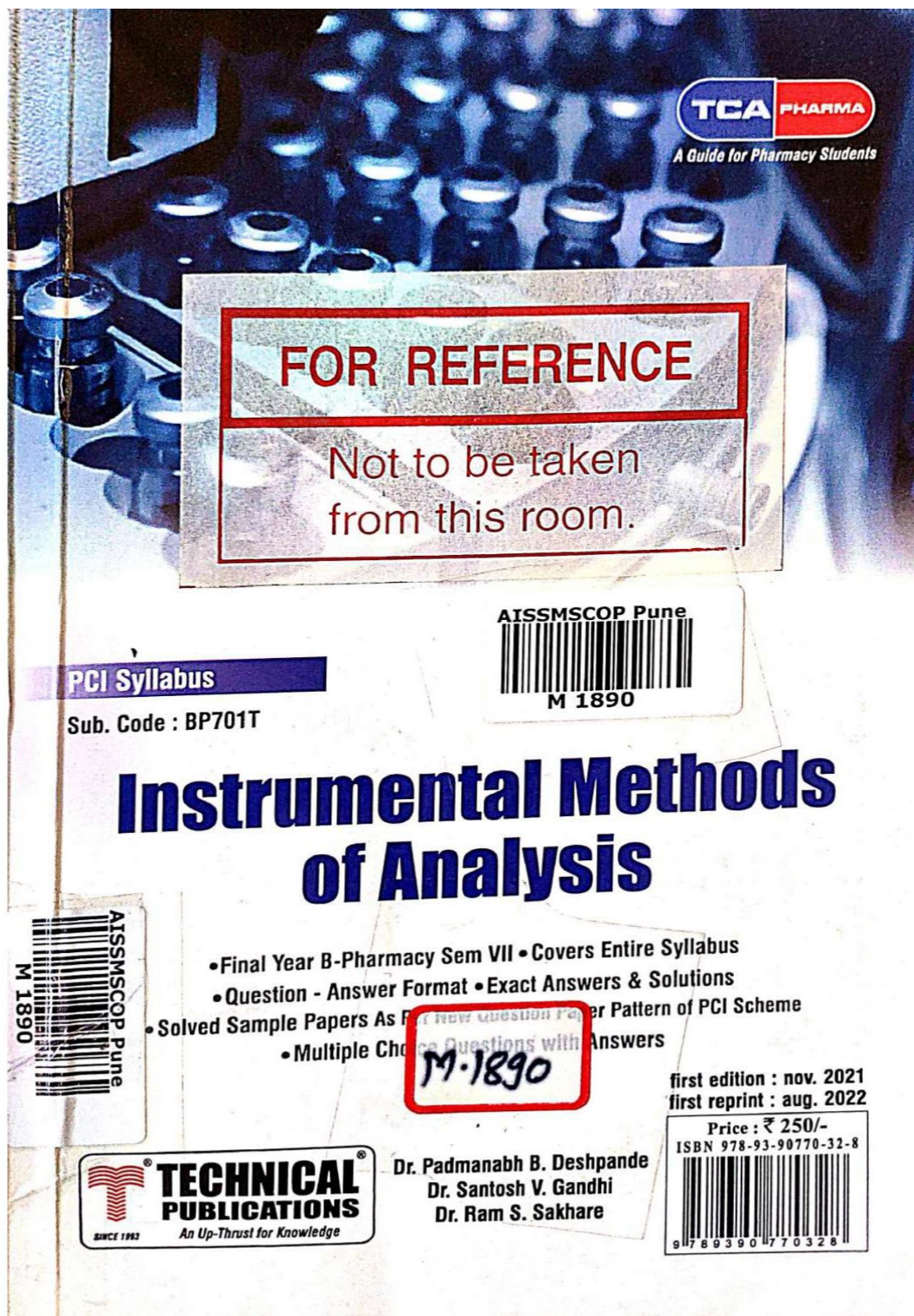
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SYLLABUS

Instrumental Methods of Analysis (BP 7017)

UNIT - I

UV Visible spectroscopy

Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra, Beer and Lambert's law, Derivation and deviations.

Instrumentation - Sources of radiation, wavelength selectors, sample cell detectors- Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode.

Applications - Spectrophotometric titrations, Single component and multi component analysis (Chapter - 1)

Fluorimetry

Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications (Chapter - 2)

UNIT - II

IR spectroscopy

Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations

Instrumentation - Sources of radiation, wavelength selectors, detectors - Gol cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector and applications (Chapter - 3)

Flame Photometry-Principle, interferences, instrumentation and applications (Chapter - 4)

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Electrophoresis - Introduction, factors affecting electrophoretic mobility, techniques of paper, gel, capillary electrophoresis, applications (Chapter - 11)

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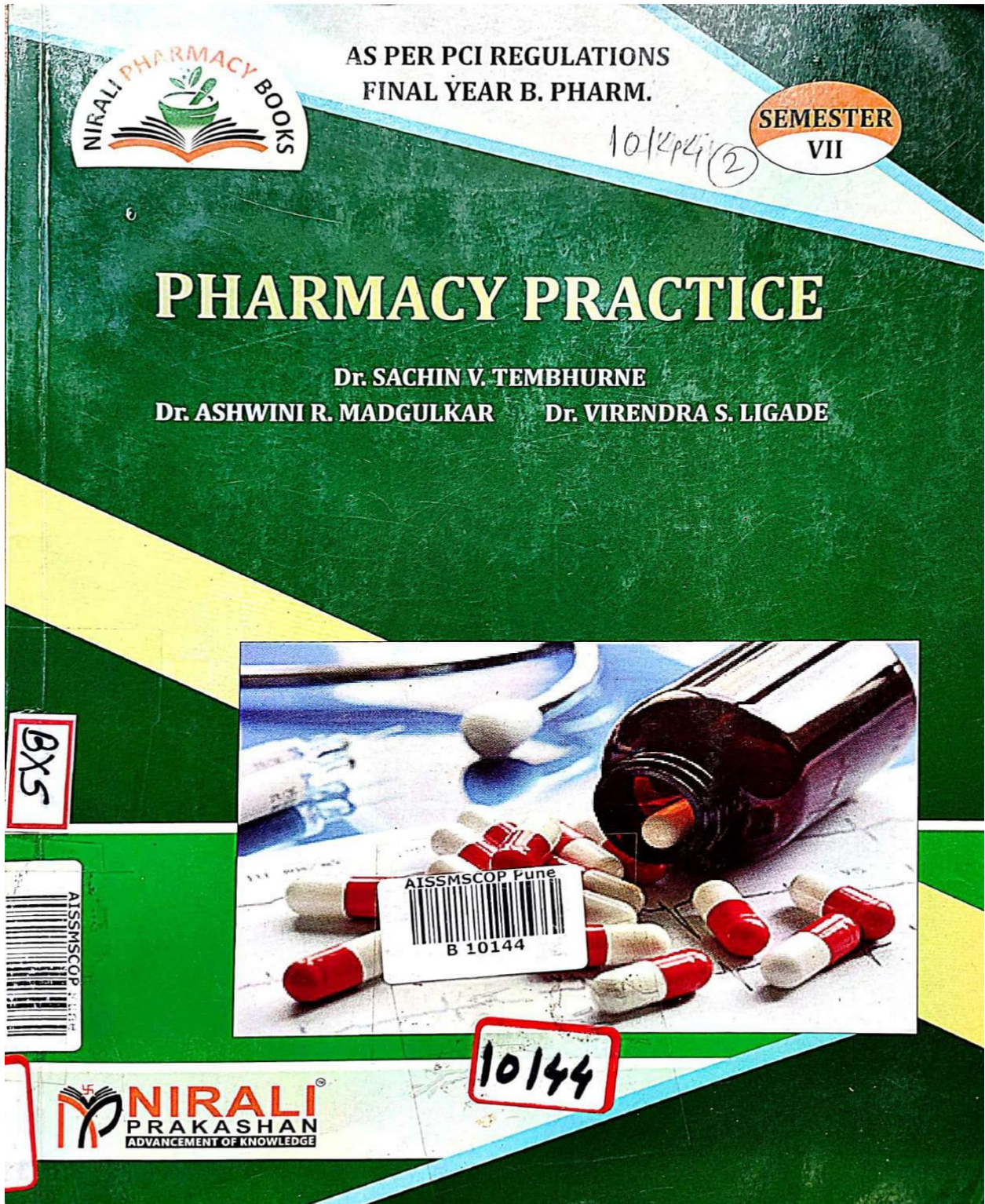
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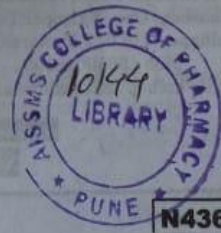
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Syllabus

UNIT I:

10 HOURS

- (a) **Hospital and its Organization:** Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.
- (b) **Hospital Pharmacy and its Organization:** Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.
- (c) **Adverse Drug Reaction Classifications:** Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.
- (d) **Community Pharmacy:** Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store:

UNIT II:

10 HOURS

- (a) **Drug Distribution System in a Hospital:** Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs.
- (b) **Hospital Formulary:** Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.
- (c) **Therapeutic Drug Monitoring:** Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.
- (d) **Medication Adherence:** Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence.
- (e) **Patient Medication History Interview:** Need for the patient medication history interview, medication interview forms.
- (f) **Community Pharmacy Management:** Financial, materials, staff, and infrastructure requirements.

UNIT III:**10 HOURS**

- (a) **Pharmacy and Therapeutic Committee:** Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.
- (b) **Drug Information Services:** Drug and Poison information centre, Sources of drug information, Computerised services, and storage and retrieval of information.
- (c) **Patient Counseling:** Definition of patient counseling; steps involved in patient counseling, and Special cases that require the pharmacist
- (d) **Education and Training Program in the Hospital:** Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.
- (e) **Prescribed Medication Order and Communication Skills** Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.

UNIT IV:**8 HOURS**

- (a) **Budget Preparation and Implementation:** Budget preparation and implementation
- (b) **Clinical Pharmacy:** Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care. Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.
- (c) **Over the Counter (OTC) sales:** Introduction and sale of over the counter, and rational use of common over the counter medications.

UNIT V:**7 HOURS**

- (a) **Drug Store Management and Inventory Control:** Organization of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure
- (b) **Investigational Use of Drugs:** Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.
- (c) **Interpretation of Clinical Laboratory Tests:** Blood chemistry, hematology, and urinalysis.

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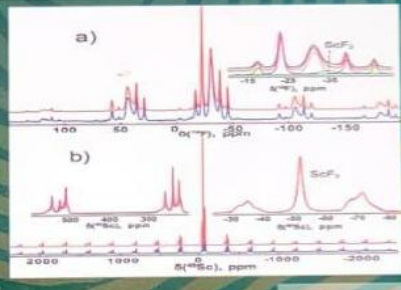
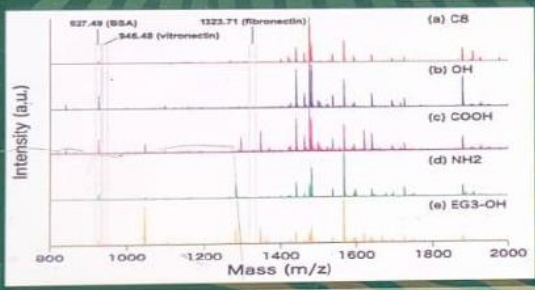
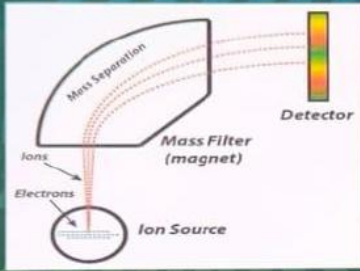
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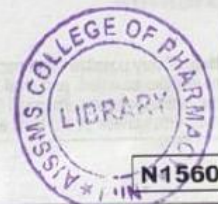
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Syllabus

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1. Nuclear Magnetic Resonance (NMR) Spectroscopy: (15 Hrs.)

Theory, Chemical shift, Shielding-deshielding, Spin-Spin Coupling (Splitting), Coupling Constant, Chemical and Magnetic Equivalence, Double Resonance, Shift Reagents, Solvents, Factors, Affecting Chemical Shift, Anisotropy, Instrumentation, Application and Simple Structure Determination. Introduction to C13 NMR.

2. Electron Spin Resonance (ESR): (02 Hrs.)

Introduction, Principle and Instrumentation.

3. Ion Exchange Chromatography: (04 Hrs.)

Theory, Instrumentation and Applications.

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4. Introduction, Principle, and Applications of Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) (12 Hrs.)

5. Mass Spectrometry: (12 Hrs.)

Introduction, Theory, Instrumentation, Resolution, Different Methods/Techniques of Ionization (EI, CI, FAB, ESI and MALDI) and their Applications. Introduction to GC-MS, LC-MS and MS-MS.



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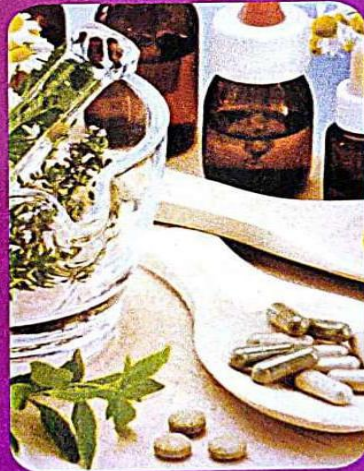
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SYLLABUS

PHARMACOGNOSY & PHYTOCHEMISTRY - I (BP - 405T)

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, leaf constants, camera lucida and diagrams of microscopic objects to scale with camera lucida. (Chapter - 1)

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 (Chapter - 2)

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 (Chapter - 3)

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.

Introduction to secondary metabolites :

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins (Chapter - 4)

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 Primary metabolites :

Carbohydrates : Acacia, Agar, Tragacanth, Honey

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

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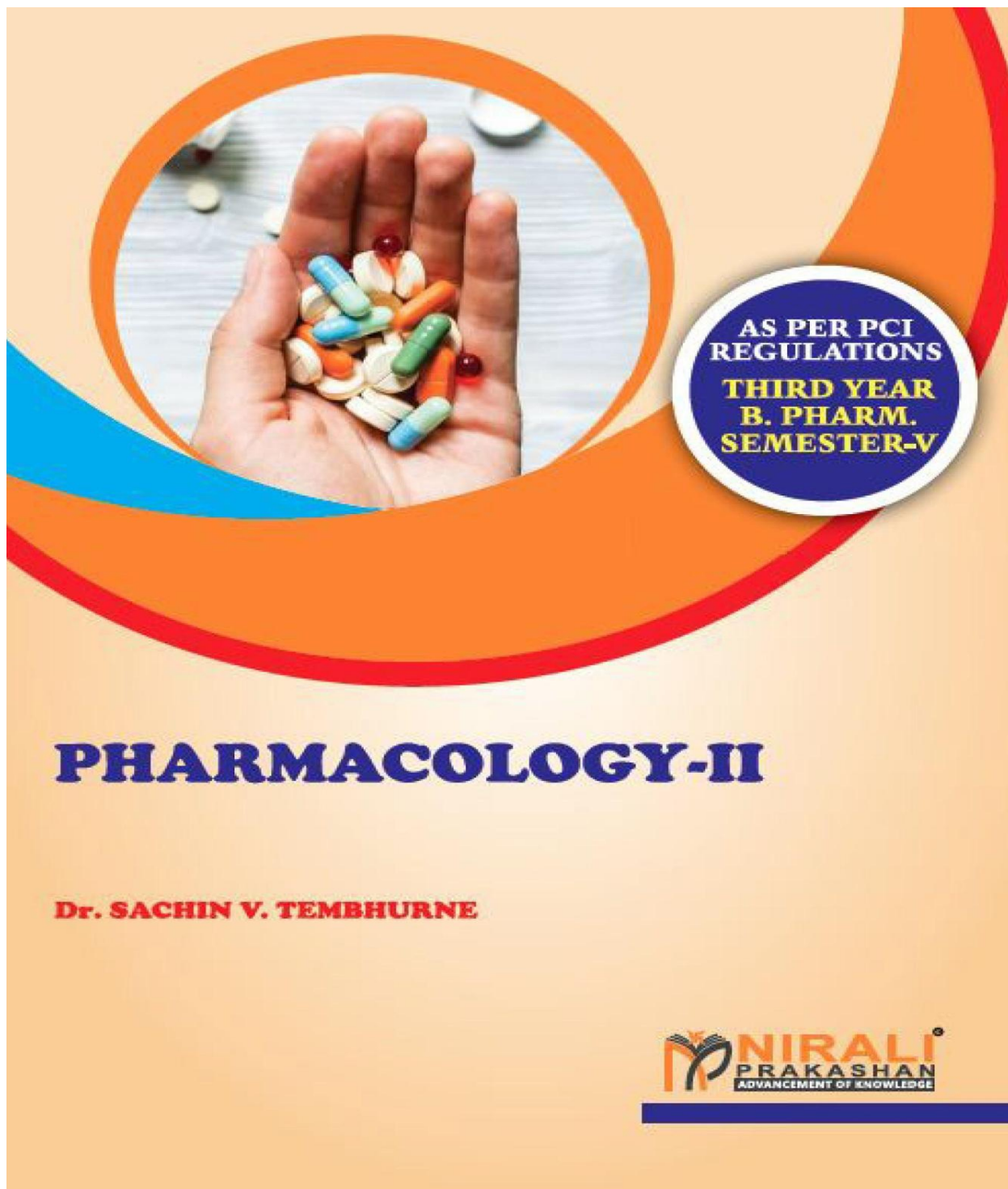
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A Text Book of
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As Per PCI Regulations
THIRD YEAR B. PHARM.
Semester V

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Syllabus

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Syllabus

UNIT-I

[10 HOURS]

1. **Pharmacology of Drugs Acting on Respiratory System**
 - a. Anti-asthmatic drugs
 - b. Drugs used in the management of COPD
 - c. Expectorants and antitussives
 - d. Nasal decongestants
 - e. Respiratory stimulants
2. **Pharmacology of Drugs Acting on the Gastrointestinal Tract**
 - a. Antiulcer agents.
 - b. Drugs for constipation and diarrhoea.
 - c. Appetite stimulants and suppressants.
 - d. Digestants and carminatives.
 - e. Emetics and anti-emetics.

UNIT-II

[10 HOURS]

3. **Chemotherapy**
 - a. General principles of chemotherapy.
 - b. Sulfonamides and cotrimoxazole.
 - c. Antibiotics- Penicillins, cephalosporins, chloramphenicol, macrolides, quinolones and fluoroquinolins, tetracycline and aminoglycosides

UNIT-III

[10 HOURS]

3. **Chemotherapy**
 - a. Antitubercular agents
 - b. Antileprotic agents
 - c. Antifungal agents
 - d. Antiviral drugs
 - e. Anthelmintics
 - f. Antimalarial drugs
 - g. Antiamoebic agents

UNIT-IV

[08 HOURS]

3. **Chemotherapy**
 - a. Urinary tract infections and sexually transmitted diseases.
 - b. Chemotherapy of malignancy.
4. **Immunopharmacology**
 - a. Immunostimulants
 - b. Immunosuppressant
Protein drugs, monoclonal antibodies, target drugs to antigen, biosimilars

UNIT-V

[07 HOURS]

5. **Principles of Toxicology**
 - a. Definition and basic knowledge of acute, subacute and chronic toxicity.
 - b. Definition and basic knowledge of genotoxicity, carcinogenicity, teratogenicity and mutagenicity
 - c. General principles of treatment of poisoning
 - d. Clinical symptoms and management of barbiturates, morphine, organophosphorus compound and lead, mercury and arsenic poisoning.
6. **Chronopharmacology**
 - a. Definition of rhythm and cycles.
 - b. Biological clock and their significance leading to chronotherapy.

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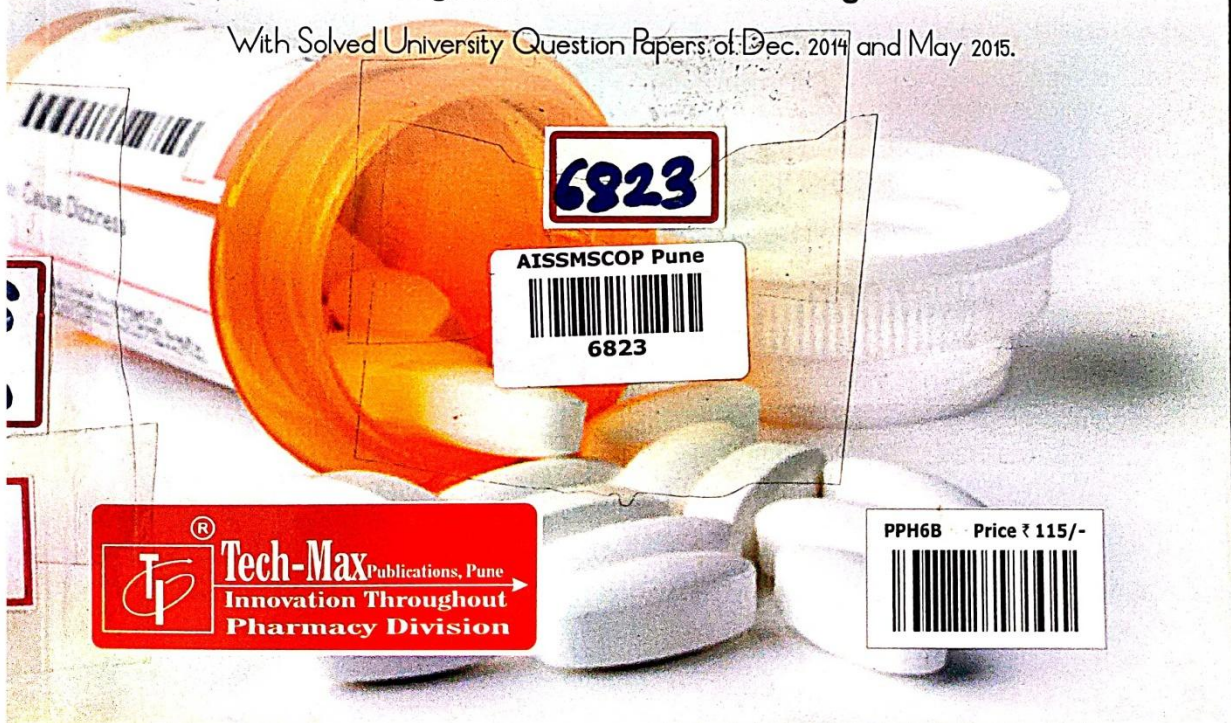
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Syllabus

1. Introduction to pharmaceutics

Introduction to pharmaceutics and its various branches like physical pharmacy, dispensing practices, formulation development, pharmaceutical engineering etc and scope of each. History of pharmacy profession and industry in India. Pharmacy code of ethics and pharmacy as career (Refer chapter 1)

2. Pharmacopoeia and other compendia

Special emphasis on IP, BP, USP including history, development and latest edition. Introduction to European Pharmacopoeia, Martindale, Merck Index, Martindale, BPC and Ayurvedic Pharmacopoeia, Materia medica. (Refer chapter 2)

3. Alternative systems of medicines

Introduction to history and general principles of ayurveda, homeopathy, siddha and unani. (Refer chapter 3)

4. Introduction to drug and dosage forms

Definition of drug and new drug as per regulatory aspects, sources of drugs. Concept of dosage form, rationale for development of dosage form, classification of the basis of nature, routes of administration. (Refer chapter 4)

5. Excipients

Concept of excipients. Definitions and classification with examples. Special emphasis on colours, flavours and preservatives used in formulations. (Refer chapter 5)

6. Pre-formulation

Concept of pre-formulation, aspects of bulk drug characterization, solubility and stability studies. Importance of each aspect in formulation development. (Refer chapter 6)

7. Solutions

Definition and types. Formulation ingredients. Types of water used in pharmaceutical solutions, Evaluation, in process control and finished Product controls. Formulation - syrups, elixirs, aromatic water, linctuses, ENT preparations and paints, mouth washes, enema. (Refer chapter 7)

8. Concept of quality control and quality assurance

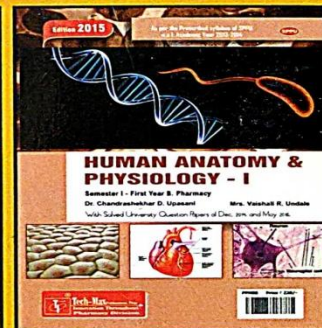
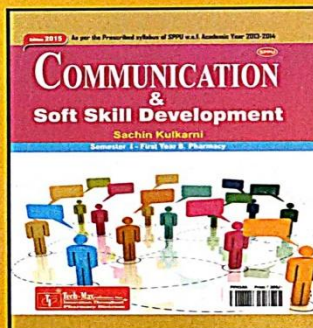
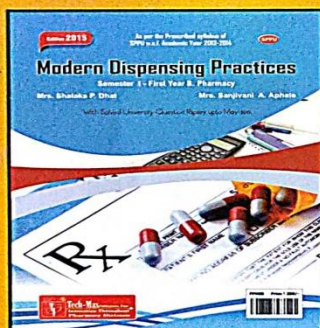
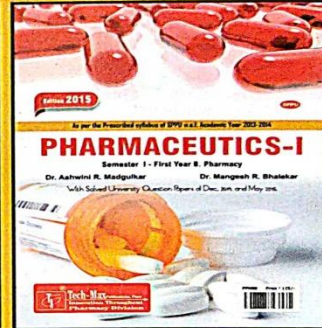
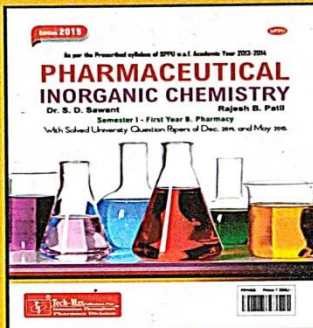
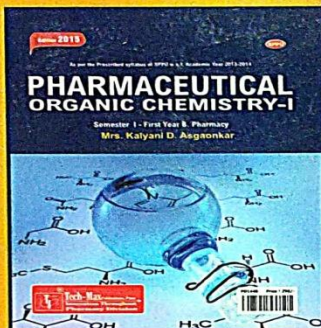
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SECOND YEAR B. PHARM. | SEMESTER-IV**

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**Dr. SACHIN V. TEMBHURNE
Dr. RAO V. S. V. VADLAMUDI**



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A Text Book of
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As Per PCI Regulations
SECOND YEAR B. PHARM.
Semester IV

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Syllabus

Unit I

[08 Hours]

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

[12 Hours]

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, trans-membrane enzyme linked receptors, trans-membrane 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 and 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

[10 Hours]

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

[08 Hours]

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

[07 Hours]

4. Pharmacology of drugs acting on central nervous system

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

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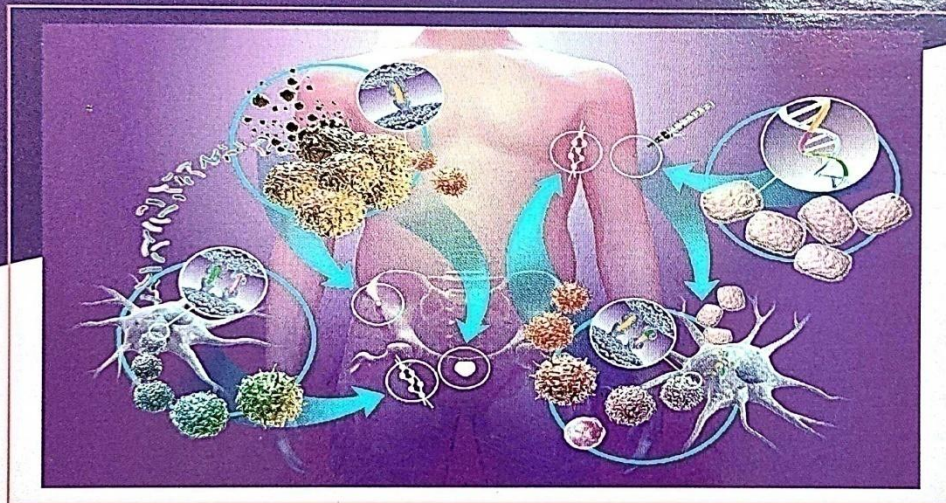
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Syllabus

1. General Pharmacology

- (a) Introduction, definitions and scope of pharmacology
- (b) Routes of administration of drugs
- (c) Pharmacokinetics (absorption, distribution, metabolism and excretion)
- (d) Pharmacodynamics
- (e) Factors modifying drug effects
- (f) Drug toxicity - Acute, sub-acute and chronic toxicity.
- (g) Pre-clinical evaluations
- (h) Drug interactions

Note: The term Pharmacology used here refers to the classification, mechanism of action, pharmacokinetics, pharmacodynamics, adverse effects, contraindications, Therapeutic uses, interactions and dose and route of administration.

2. Pharmacology of Drugs Acting on ANS

- (a) Adrenergic and antiadrenergic drugs
- (b) Cholinergic and anticholinergic drugs
- (c) Neuromuscular blockers
- (d) Mydriatics and miotics
- (e) Drugs used in myasthenia gravis
- (f) Drugs used in Parkinsonism

3. Pharmacology of Drugs acting on Cardiovascular System

- (a) Antihypertensives
- (b) Anti-anginal drugs
- (c) Anti-arrhythmic drugs
- (d) Drugs used for therapy of Congestive Heart Failure
- (e) Drugs used for hyperlipidaemias

4. Pharmacology of drugs acting on Central Nervous System

- (a) General anesthetics
- (b) Sedatives and hypnotics
- (c) Anticonvulsants
- (d) Analgesic and anti-inflammatory agents
- (e) Psychotropic drugs
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- (g) CNS stimulants and cognition enhancers
- (h) Pharmacology of local anaesthetics

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- (b) Mucolytics
- (c) Expectorants
- (d) Antitussives
- (e) Nasal Decongestants

6. Pharmacology of Hormones and Hormone Antagonists

- (a) Thyroid and Antithyroid drugs
- (b) Insulin, Insulin analogues and oral hypoglycemic agents
- (c) Sex hormones and oral contraceptives
- (d) Oxytocin and other stimulants and relaxants

7. Pharmacology of Autocoids and their Antagonists

- (a) Histamines and Antihistaminics
- (b) 5-Hydroxytryptamine and its antagonists
- (c) Lipid derived autocoids and platelet activating factor

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PHARMACEUTICAL INORGANIC CHEMISTRY

PCI SYLLABUS

Na
Sodium

Ca
Calcium

Zn
Zinc

1 H
2 He
3 Li
4 Be
5 B
6 C
7 N
8 O
9 F
10 Ne
11 Na
12 Mg
13 Al
14 Si
15 P
16 S
17 Cl
18 Ar
19 K
20 Ca
21 Sc
22 Ti
23 V
24 Cr
25 Mn
26 Fe
27 Co
28 Ni
29 Cu
30 Zn
31 Ga
32 Ge
33 As
34 Se
35 Br
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37 Rb
38 Sr
39 Y
40 Zr
41 Nb
42 Mo
43 Tc
44 Ru
45 Rh
46 Pd
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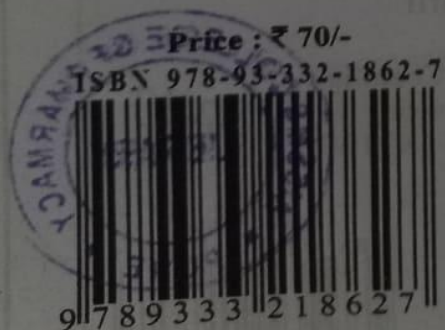


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PCI -17

SYLLABUS

PHARMACEUTICAL INORGANIC CHEMISTRY (BP104T)

UNIT I

- **Impurities in pharmaceutical substances** : History of Pharmacopoeia, Sources and types of impurities, principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate.
- **General methods of preparation, assay for the compounds superscripted with asterisk (*)**, properties and medicinal uses of inorganic compounds belonging to the following classes. (Chapter - 1)

UNIT II

- **Acids, Bases and Buffers** : Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity.
- **Major extra and intracellular electrolytes** : Functions of major physiological ions, Electrolytes used in the replacement therapy : Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid base balance.
- **Dental products** : Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride and Zinc eugenol cement. (Chapter - 2)

UNIT III

- **Gastrointestinal agents**

Acidifiers : Ammonium chloride* and Dil. HCl

Antacid : Ideal properties of antacids, combinations of antacids, Sodium Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture

Cathartics : Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite

Antimicrobials : Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations (Chapter - 3)

UNIT IV

- **Miscellaneous compounds**

Expectorants : Potassium iodide, Ammonium chloride*.

Emetics : Copper sulphate*, Sodium potassium tartarate

Haematinics : Ferrous sulphate*, Ferrous gluconate

Poison and Antidote : Sodium thiosulphate*, Activated charcoal,
Sodium nitrite³³³

Astringents : Zinc Sulphate, Potash Alum (Chapter - 4)

UNIT V

- **Radiopharmaceuticals** : Radio activity, Measurement of radioactivity, Properties of α , β , γ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide I^{131} , Storage conditions, precautions & pharmaceutical application of radioactive substances. (Chapter - 5)

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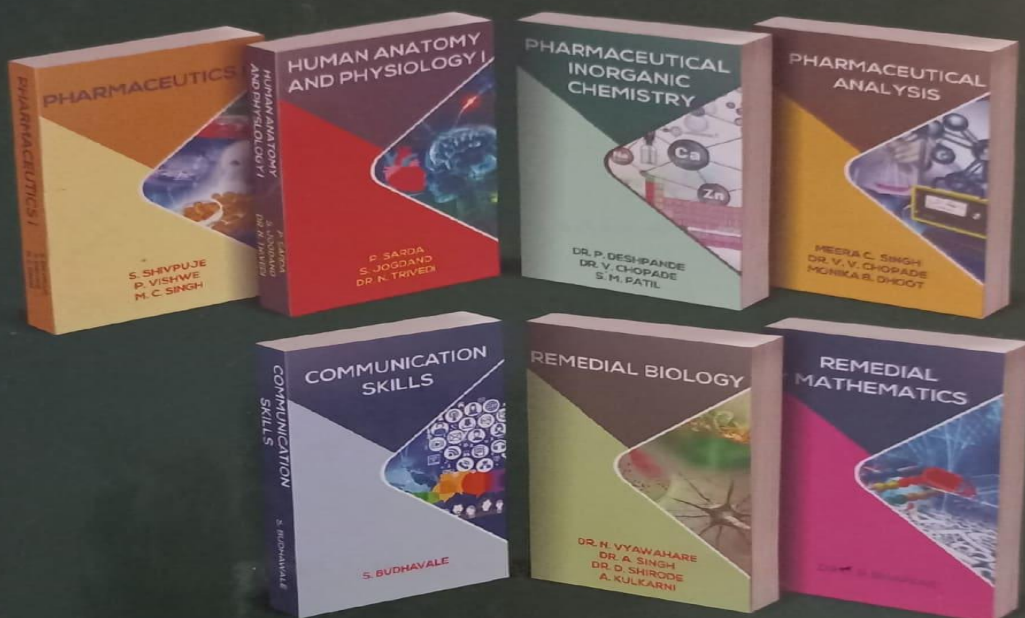
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