



**BLDE**  
**(DEEMED TO BE UNIVERSITY)**  
Declared as Deemed to be University u/s 3 of UGC Act, 1956

**CURRICULUM FOR Ph.D.**  
**PROGRAMME**  
**ENTRANCE EXAMINATION 2019-20**  
**(FACULTY OF ALLIED HEALTH SCIENCE)**

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# PHARMACY

# PHARMACEUTICAL CHEMISTRY

## **1. Reaction intermediates in organic synthesis.**

**Carbocations:** Formation, structure and stereochemistry, stability and reactivity of carbocations. Reactions (addition and substitution) involving carbocations, study of rearrangement reactions like, Wagner-Meerwein, Pinacol-pinacolone & trans-annular rearrangements. **Carbanions:** Formation, structure and stereochemistry, stability and reactivity of carbanions. Reactions (addition and substitution) involving carbanions, study of Perkin, Claisen, Benzoin, Aldol condensation, Cannizzaro reactions and Favorskii rearrangement. **Aromatic Nucleophilic reactions:** Cyclohexadienyl anions and benzyne mechanism (cine substitution). **Free radicals:** Formation, structure and stereochemistry, stability and reactivity of free radicals. Reactions (addition and substitution) detection Study of reactions involving free radicals including biological, addition to carbon – carbon multiple bonds. **Carbenes:** Formation, structure and stereochemistry, stability and reactivity. Reactions (addition and substitution) reactions involving carbenes. Study of Reimer – Tiemen reaction, Wolff rearrangement, ring expansion reaction-conversion of pyrrole to pyridine. **Nitrenes:** Formation, structure and stereochemistry, stability and reactivity. Reactions (addition and substitution) Study of reactions involving nitrenes, Hofman, Curtius- Schmidt-Lossen rearrangement. **Catalysis:** Introduction, homogenous, heterogenous catalysis and their applications. Phase transfer catalysis in anhydride, epoxide, ester, nitrile and sulfide formation in ester hydrolysis and reduction reactions Stereospecific catalysis

## **2. Green Chemistry**

Principles and various techniques of green chemistry, green reagents, green catalysts, ionic solvents, phase transfer catalysts (PTC) in green synthesis, applications of PTC in synthesis of heterocyclic compounds. Microwave enhanced organic synthesis and ultrasound enhanced organic synthesis (sonochemistry), introduction, instrumentation, advantages, synthetic applications and limitations.

## **3. Combinatorial chemistry.**

Introduction to Combinatorial Libraries Concepts and Terms, Parallel Organic Synthesis Technology, Polymer-Supported Synthesis of Organic Compounds and Libraries, Macro Beads in Solid-Phase Synthesis, Combinatorial Libraries in Solution

## **4. Strategies in Organic Synthesis**

Introduction, Target Selection, disconnection approach, functional group interconversion (FGI), synthons, uses of synthon approaches in synthesis of Trimethoprim, Ibuprofen,

Nifedipine and Ciprofloxacin. Retrosynthesis, Chemoselectivity, Regioselectivity, linear synthesis and convergent synthesis Basic rules in disconnections, strategic bonds, disconnection of strategic bonds in carbocyclic and heterocyclic rings, biomimetic approach.

### **5. Protecting and deprotecting groups**

protection and deprotection of hydroxyl, carboxy, carbonyl, amino groups and carbon-carbon multiple bonds, chemo and regioselective protection and deprotection, illustration of protection and deprotection in synthesis. Study of polymorphism of few selected APIs like paracetamol, aspirin, barbiturates, chloramphenicol maleate.

### **6. Theoretical aspects of Drug Design**

Introduction to drug design and discovery Conventional methods of drug design Lead, discovery of lead, lead optimization, objectives of lead optimization, pharmacophore identification and analog approach of drug discovery

### **7. Targets in Drug Discovery and Development**

Introduction, Different biological targets for drug discovery: enzymes, nucleic acids, and polysaccharides. Cellular Communication, Receptor Nomenclature, Receptor Classes- G-Protein-Coupled Receptors, Ligand-Gated Ion Channels, Steroid Receptors, Orphan Receptors, Defining the Receptor-Ligand Interaction, Receptor Binding Assays, Functional Assays, Receptor Sources.

### **8. History and development of QSAR.**

Theoretical compartment model for relationship between physical properties and biological activity(Hammet, Taft), Mathematical methods for the analysis of QSAR, Diagnosis mechanism, Prediction of activity, Optimization, Refinement of synthetic Targets, Application of Hansh Analysis, Application of Free-Wilson Analysis

### **9. In-silico and Computer Aided Drug design**

Molecular Mechanics, force fields (Potential energy function), Energy Minimization Methods, Conformational Analysis Concepts of Virtual Screening, Drug likeness, Screening-Counting Schemes, Functional Group Filters, Topological Drug Classification-Pharmacophore Point Filter-Focused Screening Libraries for Lead Identification, Pharmacophore Screening, Structure-Based Virtual Screening, Protein Structures, Computational Protein-Ligand Docking Techniques, Rigid Docking, Flexible or induced fit Docking, *in silico* De Novo design.

## **10. Designing and applications of Prodrugs**

Basic concept, Prodrugs of functional group, Prodrug design to improve Patient acceptability, Drug solubility, Drug absorption and distribution, site specific drug delivery, and sustained drug action. Rationale of prodrug design and practical consideration of prodrug design

## **11. Rational design of enzyme inhibitors**

Enzyme inhibitors- Reversible, irreversible, Kcat inhibitors, transition state analogs and their application with respect to drug design. Enzyme inhibitors of ACE, leukotrienes Lipoxygenase, Cyclooxygenase, Aromatase, Xanthine oxidase, Cytochrome P-450 Inhibitors, DHFR Inhibitors, and Gastric proton pump Inhibitors. HIV-Protease / Reverse Transcriptase, Integrase and DNA polymerase Inhibitors,

## **12. General chemical methods of structural elucidation of natural products.**

Structure elucidation of the following compounds based on chemistry, chemical degradation and synthesis of the compounds; Morphine alkaloids: Morphine, Papavarine, Cardiac glycosides: Lanatoside C, Ouabain, Rauwolfia alkaloid: Reserpine, Vinca alkaloids: Vinblastine and vincristine, Ipecacuanha alkaloid: Emetine

## **13. Microbial conversions as tools in the preparation of drugs**

Introduction Practical aspects of microbial transformation Some theoretical aspects of microbial transformation, Conversion by microorganism

## **14. Principles, instrumentation and applications of the following Instruments and Chromatography techniques**

UV-Visible spectrophotometry, Infrared spectroscopy, Spectrofluorimetry, NMR spectroscopy, Electron Spin Resonance spectroscopy, Atomic Emission spectroscopy, HPLC, HPTLC, TLC, Paper, Column and Exclusion chromatography, Super critical fluid chromatography, Mass Spectroscopy including LCMS & GCMS, GLC, Phase Emission spectroscopy, X-Ray diffractometry, Optical Rotatory Diffusion, Vapour phase chromatography, Affinity chromatography, Ion-exchange chromatography Polarography, Flame emission spectroscopy and atomic absorption spectroscopy. Principle, Instrumentation and applications in Pharmacy

## **15. Thermal methods of analysis**

Theory of Thermo gravimetric analysis(TGA), Differential Thermal analysis (DTA) Differential Scanning Calorimetry(DSC) and Thermo Mechanical Analysis (TMA). An advanced study of non - aqueous titrations involving the following: a) Primary, Secondary and Tertiary amines b) Halogenated salts and bases c) Acidic substances d) Assays of official drugs in IP 1996 by non - aqueous titrimetry e) Aquametry: Determination of water by

titration with Karl Fischer Reagent (KFR). Principles and pharmaceutical applications of redox titrations involving: a) Potassium iodate / bromate titrations h) Ceric ammonium sulphate titrations c) Tanus Chloride titration d) Examples of assays of official drugs in IP 1996

### Reference Books:

1. Modern Methods of Plant Analysis- Peech and M.V. Tracey
2. Phytochemistry Vol-I and II by Miller, Jan Nostrand Rein Hold.
3. Recent Advances in Phytochemistry-Vol-I-IV Scikel Runeckles
4. Chemistry of Natural Products Vol-I onwards IWPAC
5. Natural Products Chemistry Nakanishi Golo
6. Natural Products Chemistry "A Laboratory Guide"-Raphael Ikan, IInd Edition, Academic Press New York.
7. The Alkaloid Chemistry and Physiology- Volumes RHF Manske
8. Introduction to Molecular Phytochemistry-CHJ Wells, Chapmanstall.
9. Comparative Phytochemistry edited by T.Swain
10. Organic Chemistry of Natural Products- Vol-I & II – Gurdeep Chatwal, Himalaya publishing house, Mumbai..
11. Organic Chemistry Vol-I & II by I.L. Finar, ELBS Longman, 5th Edition , London
12. Elements of biotechnology by P.K. Gupta
13. Pharmaceutical Biotechnology by S.P.Vyas and V.K.Dixit, CBS publisher, New Delhi.
14. Biotechnology by Purohit and Mathur , Agro Botanical publishers, Bikaner.
15. Phytochemistry method by Harborne
16. Burger's Medicinal Chemistry, 5th Edition, Vol.I, II. John Wiley and Sons, New York.
17. Burger's Medicinal Chemistry, 4th Edition, Vol. II, Part-II, John Wiley and Sons, New York.
18. Comprehensive Medicinal Chemistry, Vol.II by Corwin Hansch, Pergamon Press, New York
19. A Guide Book to Mechanisms in Organic Chemistry- Peter Sykes (Orient Longman, New Delhi)
20. Advanced Organic Chemistry- Reactions, Mechanism and Structure- Jerry March (Wiley Interscience Publication; 4th Edition, New York)
21. Advanced Practical Organic Chemistry-O.P. Agarwal

22. Combinatorial Chemistry- Synthesis and Applications S.R. Wilson & Anthony W. Czarnik (John Wiley and Sons, USA)
23. Designing Organic Syntheses: A Programmed Introduction to the Synthons Approach. Stuart Warren. John Wiley & Sons.
24. Elemental Practical Organic Chemistry Part I & II A. I. Vogel
25. Experimental Organic Chemistry Vol-I & II –P. R. Singh *etal.*
26. F. A. Cary and R. I. Sundberg, Advanced Organic Chemistry, Part A and B, 5th Edition, Springer, 2009.
27. Green solvents for chemistry; perspective and practice, Oxford University Press, William M Nelson.
28. H G Brittain. Polymorphism in Pharmaceutical Solids. Marcel Dekker Inc. NY,1999
29. Handbook of green chemistry and technology, Blackwell Science Ltd. James Clarke & Duncan Macquarrie, 2002
30. M. B. Smith, Organic Synthesis, 2nd Edition, 2005
31. Microwaves in organic and medicinal Chemistry, C.O. Kappe, A. Stadler, (Wiley-Vch) June 2005



# PHARMACEUTICS

## **1. PREFORMULATION STUDIES**

Introduction, Consideration of physico-chemical properties of new drug molecules for different dosage forms. Aqueous solubility, organic solubility, intrinsic solubility, methods of enhancement of solubility-surfactants, pH, co-solvency, solid dispersion, complexation. Techniques for the study of crystal properties and polymorphism - DSC, TGA, PXRD, Optical microscopy, hot stage microscopy. Excipient compatibility studies, Pre-formulation stability studies.

## **2. STABILITY TESTING - DRUGS AND DOSAGE FORMS**

Solid state drug stability, dosage form stability, accelerated stability testing, shelf life calculations, strategies for prolonging shelf life. Effect of packaging materials on dosage form stability. Basic principles of ICH, stability testing of new drug substance and formulations, photostability testing and oxidative stability, role of containers in stability testing. WHO stability guidelines.

## **3. DISSOLUTION**

BCS Classification, Noyes-Whitney's dissolutions rate law, Study of various approaches to improve dissolution of poorly soluble drug, *In-vitro* dissolution testing models, *In-vitro* release kinetic models, similarity and dissimilarity factors, biowaivers, *In-vitro- In -vivo* correlation.

## **4. DOSAGE REGIMEN**

Multiple dosing with respect to I.V and oral route, concept of loading dose, maintenance dose, accumulation index, adjustment of dosage in renal and hepatic impairment, individualization of therapy, Therapeutic Drug Monitoring.

## **5. CONCEPTS OF CONTROLLED RELEASE DRUG DELIVERY SYSTEMS**

Introduction, concept, advantages & disadvantages. Factors to be considered for designing controlled release dosage forms. Dissolution, Diffusion, Combination of dissolution and diffusion controlled drug delivery systems. Evaluation of CRDF.

## **6. POLYMER SCIENCE**

Polymer: Introduction, classification, general synthesis and evaluation techniques. Application of polymers in drug delivery.

## **7. APPROACHES TO CONTROLLED DRUG DELIVERY SYSTEM**

Classification of rate-controlled drug delivery systems. Rate-programmed release, activation-modulated and feedback regulated drug delivery systems. Effect of system parameters on controlled drug delivery. Hydrodynamically balanced systems, Osmotic pressure controlled, pH controlled, ion exchange controlled systems

## **8. NANO DRUG DELIVERY SYSTEMS**

Formulation, development and evaluation of Nanoparticles- Polymeric nano particles, Nano crystals, Solid Lipid Nanoparticles (SLN), Metal Nanoparticles. Vesicular Systems-Liposomes, Transferosomes, Ethosomes, Niosomes, Virosomes. Carbon Nano Tubes (CNT) and Dendrimers. Safety issues related to nano drug delivery systems.

## **9. TARGETED DRUG DELIVERY**

Concept, advantages and disadvantages, types of targeting and applications. Monoclonal antibodies- hybridoma cell production, diagnostic and therapeutic applications – cancer and autoimmune diseases. Problems related to monoclonal antibodies.

## PHARMACOGNOSY

- 1. Drug discovery and development:** History of herbs as source of drugs and drug discovery, selection and optimization of lead compounds with suitable examples, clinical studies emphasizing on phases of clinical trials.
- 2. Extraction and Phytochemical studies:** Recent advances in extractions with emphasis on selection of method and choice of solvent for extraction, separation of phytoconstituents by latest CCCET, SCFE techniques including preparative HPLC and Flash column chromatography.
- 3. Structure elucidation and finger printing of phytoconstituents:** Structure elucidation of natural products by spectroscopic techniques likes MS, NMR ( $^1\text{H}$ ,  $^{13}\text{C}$ ). HPTLC and LCMS/GCMS applications in the characterization of herbal extracts.
- 4. Biological screening of herbal drugs:** *In vitro* evaluation techniques for Antioxidants, Antimicrobial and Anticancer drugs. *In vivo* evaluation techniques for Anti-inflammatory, Antiulcer, Anticancer, Antidiabetic, Hepatoprotective, and Antifertility, Toxicity studies as per OECD guidelines.
- 5. WHO Guidelines for assessment of crude drugs:** Evaluation of identity, purity, and quality of crude drugs, Standardization of herbal drugs using modern techniques (Role of genetic markers, RAPD, DNA fingerprinting techniques etc).

### References:

- Trease and Evans Pharmacognosy by W C Evans, 15<sup>th</sup> edition W.B Saunders Edinburgh New York
- Text Book of Pharmacognosy and Phytochemistry by Biren Shah and A K Seth, Elsevir 2010.
- Extraction Technologies for Medicinal and Aromatic Plants by Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo, Dev Dutt Rakesh International Centre for Science and High Technology Trieste, 2008
- Drug Discovery and Development, Traditional Medicinal and Ethano pharmacology, by Bhushan Patwardhan, NIPA (New India publishing agency). 2007.
- The Process of New Drug Discovery and Development 2<sup>nd</sup> Edition Edited by Charles G. Smith James T. O'Donnell. Informa Healthcare USA 2006
- Phytochemical methods-A guide to modern techniques of plant analysis by J B Harborne, 3<sup>rd</sup> Edn. Springer, 2005.

- Natural Products from Plants, 1<sup>st</sup> edition, by Peter B. Kaufman, CRC press, New York,1998
- General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine WHO/EDM/TRM/2000.1
- WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems WHO 2004

## PHARMACOLOGY

### **Common laboratory animals:**

Description, handling and applications of different species and strains of animals.

Transgenic animals: Production, maintenance and applications Anaesthesia and euthanasia of experimental animals.

Maintenance and breeding of laboratory animals.

CPCSEA guidelines to conduct experiments on animals, Good laboratory practice.

IAEC Constitution and powers and functions.

### **Preclinical screening of new substances for the Pharmacological activity using in vivo, in vitro, and other possible animal alternative models.**

General principles of preclinical screening.

CNS Pharmacology: behavioral and muscle coordination,

CNS stimulants and depressants, anxiolytics, anti-psychotics, anti epileptics and nootropics.

Drugs for neurodegenerative diseases like Parkinsonism, Alzheimers and multiple sclerosis.

Drugs acting on Autonomic Nervous System.

Cardiovascular Pharmacology: antihypertensives, antiarrhythmics, antianginal.

Drugs for metabolic disorders like anti-diabetic, antidyslipidemic agents.

Anti cancer agents. Hepatoprotective screening methods.

Respiratory Pharmacology: anti-asthmatics, drugs for COPD and anti allergies.

Reproductive Pharmacology: Aphrodisiacs and antifertility agents

Analgesics, antiinflammatory and antipyretic agents.

Gastrointestinal drugs: anti ulcer, anti -emetic, antidiarrheal and laxatives.

Immunomodulators, Immunosuppressants and immunostimulants.

Limitations of animal experimentation and alternate animal experiments.

Extrapolation of in vitro data to preclinical and preclinical to humans

### **Basic definition and types of toxicology:**

Regulatory guidelines for conducting toxicity studies OECD, ICH, EPA and Schedule Y

OECD principles of Good laboratory practice (GLP) History, concept and its importance in drug development

## **Regulatory Perspectives of Clinical Trials:**

Origin and Principles of International Conference on Harmonization - Good Clinical Practice (ICH-GCP) guidelines

Ethical Committee: Institutional Review Board, Ethical Guidelines for Biomedical Research and Human Participant-

Schedule Y, ICMR Informed Consent Process: Structure and content of an Informed Consent Process Ethical principles governing informed consent process

**IND enabling studies** (IND studies)- Definition of IND, importance of IND, industry perspective, list of studies needed for IND submission.

## **PHARMACY PRACTICE**

1. Clinical Pharmacy Services: Patient medication history interview, Basic concept of medicine and poison information services, Basic concept of pharmacovigilance, Hemovigilance, Materiovigilance and AEFI, Patient medication counselling, Drug utilisation evaluation, Documentation of clinical pharmacy services, Quality assurance of clinical pharmacy services.
2. Etiopathogenesis and pharmacotherapy of diseases associated with following systems, Cardiovascular system: Hypertension, Congestive cardiac failure, acute coronary syndrome, Arrhythmias, Hyperlipidemias.
3. Hospital Formulary Guidelines and its development, Developing Therapeutic guidelines, Drug procurement process, and methods of Inventory control, Methods of Drug distribution, Intravenous admixtures, Hospital Waste Management.
4. Investigational Product: Procurement and Storage of investigation product Filing procedures: Essential documents for clinical trial, Trial Master File preparation and maintenance, Investigator Site File, Pharmacy File, Site initiation visit, Conduct, Report and Follow up Clinical Trial Monitoring and Close out: Preparation and conduct of monitoring visit: Review of source documents, CRF, ICF, IP storage, accountability and reconciliation, Study Procedure, EC communications, Safety reporting, Monitoring visit reporting and follow-up Close-Out visit: Study related documents collection, Archival requirement, Investigational Product reconciliation and destruction, Close-Out visit report.
5. Quality use of medicine in various settings: Hospital settings, Ambulatory care/Residential care, Role of health care professionals in promoting the QUM, Strategies to promote the QUM, Impact of QUM on E-health, integrative medicine and multidisciplinary care. QUM in special population: Pediatric prescribing, Geriatric prescribing, prescribing in pregnancy and lactation, Prescribing in immune compromised and organ failure patients.
6. Introduction to Clinical pharmacokinetics: Compartmental and Non compartmental models, Renal and non-renal clearance, Organ extraction and models of hepatic clearance, Estimation and determinants of bioavailability, Multiple dosing, Calculation of loading and maintenance doses Designing of dosage regimens: Determination of dose and dosing intervals, Conversion from intravenous to oral dosing, Nomograms and Tabulations in designing dosage regimen.
7. Pharmacoepidemiological Methods: Qualitative models: Drug Utilization Review; Quantitative models: case reports, case series, Cross sectional studies, Cohort and case control studies, Calculation of Odds' ratio, Meta analysis models, Drug effects study in populations: Spontaneous reporting, Prescription event monitoring, Post

marketing surveillance, Record linkage systems, Applications of Pharmacoepidemiology.

## REFERENCES

1. A Textbook of Clinical Pharmacy Practice – Essential concepts and skills – Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata.
2. Roger and Walker. Clinical Pharmacy and Therapeutics – Churchill Livingstone publication
3. Joseph T. Dipiro et al. Pharmacotherapy: A Pathophysiologic Approach- Appleton & Lange
4. Robins SL. Pathologic basis of disease -W.B. Saunders publication
5. Hospital Pharmacy - Hassan WE. Lea and Febiger publication.
6. Textbook of hospital pharmacy - Allwood MC and Blackwell.
7. Avery's Drug Treatment, Adis International Limited.
8. Community Pharmacy Practice – Ramesh Adepu, BSP Publishers, Hyderabad.
9. Principles and practice of pharmaceutical medicine, Second edition. Authors:Lionel. D. Edward, Aadrew.J.Flether Anthony W Fos , Peter D Sloaier Publisher:Wiley;
10. Handbook of clinical research. Julia Lloyd and Ann Raven Ed. Churchill Livingstone
11. A Textbook of Clinical Pharmacy Practice – Essential concepts and skills –
12. Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
13. Andrews EB, Moore N. Mann's Pharmacovigilance
14. Rascati K L. Essentials of Pharmacoeconomics, Woulters Kluwer Lippincott Williams & Wilkins, Philadelphia.
15. Thomas E Getzen. Health economics. Fundamentals and Flow of Funds. John Wiley & Sons, USA.



## PHARMACEUTICAL QUALITY ASSURANCE

1. **Introduction to Quality:** Evolution of Quality, Definition of Quality, Dimensions of Quality.
2. **Quality as a Strategic Decision:** Meaning of strategy and strategic quality management, mission and vision statements, quality policy, Quality objectives, strategic planning and implementation, McKinsey 7s model, Competitive analysis, Management commitment to quality.
3. **Pharmaceutical quality Management:** Basics of Quality Management, Total Quality Management (TQM), Principles of Six sigma, ISO 9001:2008, 9001:2015, ISO 14001:2004, Pharmaceutical Quality Management, Quality Metrics, Operational Excellence and Quality Management Review. OSHAS guidelines, NABL certification and accreditation, CFR-21 part 11.
4. **Pharmaceutical industry developments:** Legal requirements and Licenses for API and formulation industry, Plant location.
5. **Production planning:** General principles, production systems, calculation of standard cost, process planning, routing, loading, scheduling, dispatching of records, production control.
6. **Quality by design (QbD) and process analytical technology (PAT):** Current approach and its limitations. Why QbD is required, Advantages, Elements of QbD, PAT guidance, standards and regulatory requirements.
7. **UV-Visible spectroscopy, IR spectroscopy, NMR spectroscopy, Mass Spectroscopy, X ray Crystallography, Chromatography:** Introduction, general principles and applications
8. **Guidelines GLP and GMP:** cGMP guidelines according to schedule M, USFDA (inclusive of CDER and CBER) Pharmaceutical Inspection Convention(PIC), WHO and EMEA Good Laboratory Practice, GMP, Overview of ICH Guidelines - QSEM, with special emphasis on Q-series guidelines. Good Laboratory Practices: Scope of

GLP, Definitions, Quality assurance unit, protocol for conduct of non clinical testing, control on animal house, report preparation and documentation. CPCSEA guidelines:

9. **Hazard and risk management:** Self-protective measures against workplace hazards such as chemical, fire, electrical and radioactive hazards. Critical training for risk management, Process of hazard management, ICH guidelines on risk assessment and Risk management methods.
10. **Auditing of Microbiological laboratory:** Auditing the manufacturing process, Product and process information, General areas of interest in the building raw materials, Water, Packaging materials.

# **NURSING**

# **CHILD HEALTH (PAEDIATRIC) NURSING**

## **UNIT I: Assessment of pediatric clients**

- History taking
- Developmental assessment
- Physical assessment
- Nutritional assessment
- Family assessment

## **UNIT II: Hospitalized child**

- Meaning of hospitalization of the child, preparation for hospitalization, effects of hospitalization on the child and family
- Stressors and reactions related to developmental stages, play activities for ill hospitalized child.
- Nursing care of hospitalized child and family -principles and practices

## **UNIT III: Growth and Development of children**

- Principles of growth and development,
- Concepts and theories of growth and development,
- Developmental tasks and special needs from infancy to adolescence, developmental milestones,
- Assessment of growth and development of pediatric clients, Factors affecting growth and development.  
neonatal intensive care unit, organization and management of nursing services in NICU.

## **UNIT IV: Neonatal Nursing**

- New born baby- profile and characteristics of the newborn,
- Assessment of the new born,
- Nursing care of the new born at birth, care of the new born and family,
- High risk newborn- pre term and term neonate and growth retarded babies,

- Identification and classification of neonates with infections, HIV & AIDS, Ophthalmia neonatorum, congenital syphilis.
- High risk new born-Identification, classification and nursing management
- Organization of neonatal care, services (Levels), transport

# **COMMUNITY HEALTH NURSING**

## **UNIT I: Health**

- Concepts, issues
- Determinants
- Measurements
- Alternate systems for health promotion and management of health problems
- Health economics
- Health technology
- Genetics and health
- Waste disposal
- Eco system

## **UNIT II: Community health Nursing**

- Philosophy, Aims, Objectives, Concepts, Scope, Principles, Functions
- Community health Nursing theories and models
- Quality assurance: Community health Nursing standards, competencies, Monitoring community health nursing, nursing audits
- Family nursing and Family centered nursing approach
- Family health nursing process
  - Family health assessment
  - Diagnosis
  - Planning
  - Intervention
  - Evaluation
- Nursing care for special groups: children, adolescents, adults, women, elderly, physically and mentally challenged- Urban and rural population at large
- Community nutrition  
Concept, role and responsibilities of community health Nurse practitioners/nurse midwifery practitioners-decision making skills, professionalism, legal issues

### **UNIT III: Health care delivery system: Urban, rural, tribal and difficult areas**

- Health organization: National, State, District, CHC, PHC, Sub Centre, Village - Functions, Staffing, pattern of assistance, layout, drugs, equipments and supplies, Roles and Responsibilities of DPHNO
  - Critical review of functioning of various levels, evaluation studies, recommendations and nursing perspectives
  - Alternative systems of medicine
  - Training and supervision of health workers
  - Health agencies: NGO's, Roles and functions
  - Inter-sectoral coordination
  - Public private partnership
- Challenges of health care delivery system.

# **MEDICAL SURGICAL NURSING**

## **Unit I Health Assessment of patients**

- History taking.
- Physical examination of various systems.
- Nutritional assessment.
- Related investigations and diagnostic assessment.

## **Unit II Management of patients with disorders of Gastro intestinal tract**

- Review of anatomy and physiology.
- Common Disorders-etiology, Patho physiology, Clinical manifestations, complications, prognosis.
- Health assessment-History taking, physical examination, investigation and diagnostic assessment.
- Treatment modalities and trends.
- Nursing management.
- Related research studies.
- Evidence based nursing practice.
- Rehabilitation and follow-up.
- Health assessment-History taking, physical examination, investigation and diagnostic assessment.
- Treatment modalities and trends.
- Nursing management.
- Related research studies.

## **Unit III Management of patients with disorders of endocrine system**

- Review of anatomy and physiology.
- Common Disorders-etiology, Patho physiology, Clinical manifestations, complications, prognosis.
- Health assessment-History taking, physical examination, investigation and diagnostic assessment.
- Treatment modalities and trends.
- Nursing management.
- Related research studies.
- Evidence based nursing practice.
- Rehabilitation and follow-up.



#### **Unit IV Management of patients with disorders of Eye and ENT**

- Review of anatomy and physiology.
- Common Disorders-etiology, Patho physiology, Clinical manifestations, complications, prognosis.
- Health assessment-History taking, physical examination, investigation and diagnostic assessment.
- Treatment modalities and trends.
- Nursing management.
- Related research studies.
- Evidence based nursing practice.
- Rehabilitation and follow-up Evidence based nursing practice.
- Rehabilitation and follow-up

#### **Unit V Geriatric nursing**

- Nursing Assessment-History and Physical assessment.
- Ageing;
- Demography; Myths and realities.
- Concepts and theories of ageing.
- Cognitive Aspects of Ageing.
- Normal biological ageing.
- Age related body systems changes.
- Psychosocial Aspects of Aging.
- Medications and elderly.
- Stress & coping in older adults.
- Common Health Problems & Nursing Management;
- Psychosocial and Sexual.
- Abuse of elderly.
- Role of nurse for care of elderly: ambulation, nutritional, communicational, psychosocial and spiritual.
- Role of nurse for caregivers of elderly.
- Role of family and formal and non formal caregivers.
- Use of aids and prosthesis (hearing aids, dentures,
- Legal & Ethical Issues.

- Provisions and Programmes for elderly; privileges, Community Programs and health services;
- Home and institutional care.
- Issues, problems and trends.

**Unit VI Management of patients with communicable and sexually transmitted diseases:**

- Review of immune system.
- Common Disorders of immune system-HIV/AIDS.
- Review of infectious disease process.
- Communicable Diseases-etiology, Patho physiology, Clinical manifestations, complications, prognosis.
- Health assessment-History taking, physical examination, investigation and diagnostic assessment.
- Treatment modalities and trends.

**Unit VII Emergency, trauma and multi-system organ failure**

- DIC (disseminated intravascular coagulation).
- Trauma, burns, poisoning.
- Etiology, Patho physiology, Clinical manifestations, complications, prognosis.
- Health assessment-History taking, physical examination, investigation and diagnostic assessment.
- Treatment modalities and trends.
- Nursing management.
- Related research studies.
- Evidence based nursing practice.
- Rehabilitation and follow-up.

# **MENTAL HEALTH (PSYCHIATRIC) NURSING**

## **UNIT I: Stress and its management**

- An introduction to the concepts of stress
- Psychological Adaptation to stress
- Stress as a Biological Response.
- Stress as an Environmental Event.
- Stress as Transaction between the Individual and the Environment.
- Stress management.

## **UNIT II: Therapeutic communication and interpersonal relationship**

- Review communication process, factors affecting communication
- Communication with individuals and in groups
- Techniques of therapeutic communication-touch therapy
- Barrier of communication with specific reference to psychopathology
- Therapeutic attitudes
- Dynamics of a therapeutic Nurse-client relationship; Therapeutic use of self Gaining self-awareness
- Therapeutic nurse-patient relationship its phases ; Conditions essential to development of a therapeutic relationship
- Therapeutic impasse and its management

## **UNIT III: Assertive Training**

- Assertive Communication
- Basic Human Rights
- Response Patterns
  - (Nonassertive Behavior
  - Assertive Behavior
  - Aggressive Behavior
  - Passive-Aggressive Behavior)
- Behavioral Components of Assertive Behavior
- Techniques that Promote Assertive Behavior
- Thought-Stopping Techniques Method
- Role of The Nurse

## **UNIT IV: Promoting Self-Esteem**

- Components of Self-Concept
- The Development of Self-Esteem
- The Manifestations of Low-Self-Esteem

- Boundaries
- Role of The Nurse

### **UNIT V: Psycho social and physical therapies**

- Individual therapy
- Behavioural Therapy- Relaxation therapy, cognitive therapy, positive- negative reinforcement, bio-feedback, guided imagery, ab-reactive therapy
- Group Therapy
- Family Therapy
- Milieu Therapy
- The Therapeutic Community
- Occupational therapy
- Recreational therapy
- Play therapy
- Music therapy
- Light therapy
- Color therapy
- Aroma therapy

### **UNIT VI: Electroconvulsive Therapy**

- Historical Perspectives
- Indications
- Contraindications
- Mechanisms of Action
- Side Effects
- Risks Associated with Electroconvulsive Therapy
- The Role of The Nurse in Electroconvulsive Therapy

### **UNIT VII: Psychopharmacology**

- Historical Perspectives
- Role of a Nurse in Psychopharmacological Therapy
  - Antianxiety Agents
  - Antidepressants Agents
  - Mood stabilizers
  - Antipsychotics
  - Sedative-Hypnotics
  - Central Nervous System Stimulants
  - Future developments

# **OBSTETRIC AND GYNAECOLOGICAL NURSING**

## **Unit I : Human reproduction**

- Review of anatomy and physiology of human reproductive system: male and female
- Hormonal cycles
- Embryology
- Genetics, teratology and counseling
- Clinical implications

## **Unit II : Normal Labour and nursing management:**

- Essential factors of labour
- Stages and onset

### **First stage: Physiology of normal labour**

- Use of partograph: Principles, use and critical analysis, evidence based studies
- Analgesia and anaesthesia in labour
- Nursing management

### **Second stage**

- Physiology , intrapartum monitoring
- Nursing management.
- Resuscitation , immediate newborn care and initiate breast feeding (Guidelines of National neonatology forum of India)

### **Third stage**

- Physiology and nursing management

### **Fourth stage - Observation, critical analysis and Nursing management.**

- Various child birth practice: water birth, position change etc
- Evidence based practice in relation to labour intervention

### **Role of nurse midwifery practitioner**

Alternative/complementary therapies

## **UNIT III Infertility**

- Primary and secondary causes
- Diagnostic procedures
- Counseling: ethical and legal aspects of assisted reproductive

technology (ART)

- Recent advancement in infertility management.
- Adoption procedures
- Role of nurses in infertility management.

#### **UNIT IV: Menopause**

- Physiological, psychological and social aspects
- Hormone Replacement Therapy
- Surgical menopause
- Counseling and guidance
- Role of midwifery nurse practitioner

#### **UNIT V: Abortion**

- Types, causes
- Legislations, Clinical rights and professional responsibility
- Abortion procedures
- Complications
- Nursing management
- Role of midwifery nurse practitioner

# **AYURVEDA**

## **AGADATANTRA**

1. Introduction to Agadatantra.
2. Examination of Poisons as per Contemporary and Ayurvedic methods.
3. Ancient and Contemporary classification of Visha.
4. Chaturvimshati Upakrama. ( 24 Management Procedures)
5. Madya, Visha and Oja Guna Difference.
6. Knowledge about Sthavara Visha, Jangama Visha and Kritrima Visha.
7. Introduction to Narcotic drugs.
8. Diagnosis and management about Garavisha, Dooshivisha and Viruddhahara.
9. Concept of Visha Utpatti, Vishagati and Vishavega.
10. Visha Sankata and Shanka Visha.
11. Fundamental principles for treatment of Poisoning.
12. Duty of Physician in Poisoning, in case of Suspected Poisoning.
13. Definition of Vyavahar Ayurveda.
14. Medicolegal aspects of Wounds and Injuries:- Abrasion, Lacerated, Incised, Chop, Stab Wounds and Fractures.
15. Personal Identity and its medicolegal aspects.
16. Medico-legal Autopsy:- Autopsy Procedure, Laboratory Investigations,Exhumation.
17. Courts and Legal Procedures:- Inquest, Witnesses and Procedure in Court.
18. Medical Thanatology:- Types, Modes and Manner of Death, Changes after Death, Postmortem Lividity, Decomposition, Skeletonization, Adipocere,Mummification.
19. Doctor-Patient relationship.
20. Asphyxial Death and its medicolegal Importance:- Types and Causes, Pathophysiology, Stages, Signs of Asphyxia, Hanging, Strangulation Throttling, Suffocation, Smothering, Gagging, Choking, Traumatic Asphyxia, and Drowning.



## **SAMHITA-SIDDHANTA**

1. Learning and Teaching methodology available in Samhita- Tantrayukti, Tantraguna, Tantradasha, Tachchilya, Vadamarga, Kalpana, Arthashraya, TrividhaGyanopaya, teaching of Pada, Paada, Shloka, Vakya, Vakyartha, meaning and scope of different Sthana and Chatushka of Brihatrayee.
2. Definition of Siddhanta, types and applied examples in Ayurveda.
3. Ayu and its components as described in Samhita. Pursue
4. Principles of Karana-Karyavada, its utility in advancement of research in Ayurveda.
5. Theory of Evolution of Universe (SrishtiUtpatti), its process according to Ayurveda and Darshana.
6. Importance and utility of Triskandha (Hetu, Linga, Aushadh) and their need in teaching, research and clinical practice.
7. Applied aspects of various fundamental principles: Tridosha, Triguna, Purusha and Atmanirupana, Shatpadartha, Ahara-Vihara. Scope and importance of Pariksha (Pramana).
8. Importance of knowledge of SharirPrakriti and ManasPrakriti.
9. Practical applicability principles of Samkhya- Yoga, Nyaya-Vaisheshika, Vedanta, Mimansa, Charvak, Jain & Bauddha Darshana.
10. Panchabhautik Siddhanta.
11. Manuscriptology
12. Introduction and Application of Nyaya (Maxims).
13. Concept of Bijachatustaya (Purush, Vyadhi, Kriyakaal, Aushadha according to Sushrut Samhita).
14. Importance and utility of Samhita in present era.
15. Manastatva and its ChikitsaSiddhant.
16. Charak Samhita complete with AyurvedDipika commentary by Chakrapani
17. Introductory information regarding all available commentaries on Sushrut Samhitaand Ashtang Hridaya.
18. Post independent Development of Ayurveda: Education, Research.
19. Globalisation of Ayurved.
20. Introduction of department of AYUSH, CCIM, CCRAS, RAV.

## **DRAVYAGUNA**

1. Applied aspects of Rasa, Guna, Veerya, Vipaka and Prabhava: Definition, characteristics, classification, pharmacological activities and importance.
2. Applied aspects of Bheshaja karma with special reference to Sharangadhara and Bhavapraksaha.
3. Profound knowledge on dravya vargeekarana in Brihatrayee and Agrya aushadha.
4. Methodology on studying Sandhigdha (controversial) dravya, pratidinhi (substitutes), apamishrana (adulterants), anukta (unidentified) dravyas.
5. Prashasta Bheshaja Lakshana : Dravya sangraha kala, vidhi, and shodhana.
6. Bhaishjya Prayog Siddhant [Principles of drug administration] - Bhaishajya Marga (routes of drug administration), Vividha Kalpana (Dosage forms), Principles of Yoga Vijnan (compounding), Matra (Dosage), Anupana (Vehicle), Aushadha grahankal (Time of drug administration), Sevankal avadhi (duration of drug administration), Pathyapathya (Dos'/Donts'/Contraindications), complete Prescription writing (Samagra Vyavastha patraka).
7. Pharmacognosy and its relevance in dravyaguna Vignana: Rupagyana in relation to Aushadhi. Sthula and Sukshma description (Macroscopic and Microscopic study) of different parts of the plant
8. Scientific method of drug evaluation with special reference to Quality, Safety, and Efficacy.
9. General principles of various Good Cultivation, Collection, Storage and Manufacturing Practices.
10. Knowledge of Pharmaco-vigilance in Ayurveda and conventional system of medicine.
11. Knowledge of Biodiversity, Endangered, Red Listed Medicinal Plants,
12. Fundamental principles of drug action in Ayurveda and conventional medicine.
13. Etymology of Nighantu, their relevance, utility and salient features.
14. Knowledge of TKDL, Introduction to relevant portions of drugs and cosmetic act, magic remedies act, Intellectual Property Right (IPR)
15. Review of important modern books on classical medicinal plants published by GOI, Dept of AYUSH and ICMR: API, AFI & International Pharmacopeia.

**KAUMARBHRITYA**  
**BALA ROGA (Pediatrics)**

1. Development of Kaumarbhritya tantra including ancient and modern literature. Strength of Ayurveda specific to child health care.
2. Vayobheda (Classification of age) according to different classics
3. Ayurvedic consideration of physiology and pathology of Dosha, Dhatu, Mala, Oja, Agni, Prakriti (sharirika-manasika), Kaya and Dhatuposhana in children.
4. Basic Concepts of growth and development, and its assessment.
5. Ayurvedic and modern clinical methods of examination of healthy and diseased newborn and children.
6. Fundamentals of Ayurvedic treatment for childhood disorders.
7. Applied pharmacological considerations: Ayurvedic and modern concepts of drug doses, administration, distribution, metabolism, excretion, and other important factors of consideration.
8. Childhood Samskara
9. Concept of Bala Rasayana and its application in physical and mental health of children.
10. Concept of Vyadhi-Kshamatva avam Vardhanopaya. Concept of immunity and immune enhancing measures including immunization.
11. Concept of Dhupana and Raksha karma and their clinical application in pediatric practice
12. Basic concepts of single drugs commonly used in pediatric practice with special reference to their karma like- Guduchi, Yastimadhu, Mandukaparni, Shankhapushpi, Ativisha, Pippali, Maricha, Shunti, Haritaki, Amalaki, Tulasi, Bhumyamalaki, Daruharidra, Haridra, Vidanga, Katuki, Dadima, Brahmi, Ashvagandha, Shatavari, Bala, Kampillaka, Trivrita, Jyotishmati, Vacha, Jeevanti, Rasna, Shatavari, Anantamula (Krishna Sariva), Durva, Khadir, Tankana, Tambula, Jatamansi, Sphatika.
13. Knowledge of their ingredients, indications, precautions and specific considerations including adverse drug reactions (ADR) of commonly used Ayurvedic formulations in pediatric practice e.g. Aravindasava, Baalachaturbhadra Churna, Kumarakalyana Rasa, Saraswatarista, Swarnaprashana (Kashyapa Samhita), Kumaryasava, Kushmanda Rasayana (Sharangdhar), Ashvagandha Rasayana (Ashtanga Hridaya), Brahmi Ghrita, Kalyanaka Ghrita, Talishadi Churna, Sitopaladi Churna, Haridra Khanda, Krimikuthara Rasa, Mugdha Rasa, Dantodbheda-Gadantaka Rasa, Rajanyadi Churna (Ashtanga Hridaya), Samvardhana Ghrita, Ashta Mangal Ghrita.

14. Common instruments and their application in new born care and general pediatric practice.
15. Garbha, Garbhawastha, sperm, ovum, spermatogenesis, oogenesis, structure of ovum.
16. Sperm in the male genital tract, sperm in the female genital tract, activation and capacitation of sperm.
17. Garbha Masanumasika Vriddhi evam Vikasa (Ayurvedic and modern concepts of Embryo and Fetal development)
  - a) First week of development
  - b) Second week of development
  - c) Third week of development
  - d) Fourth to eighth week of development.
  - e) Development from third month till birth.
18. Panchakarma: Principles of Panchakarma, and their application in pediatric practice.
19. Balagraha: Scientific study of Bala Graha and its management.
20. Disorders of Pranvaha Srotas (Respiratory disorders)- Kasa (Cough), Shwasa (Respiratory distress Syndrome), Tamaka Shwasa (Childhood Asthma), Bronchiolitis, Shvasanaka Jwara (Pneumonia- bacterial, viral etc) Rajyakshma (Tuberculosis), Vaksha-Puyata (Pyothorax), Vaksha Vata-Purnata (Pneumothorax).
21. Disorders of Annavaha Srotas (Gastrointestinal disorders): Jwara (Fever), Chhardi (Vomiting) Ajirna (Indigestion), Kshiralsaka, Atisara (Diarrhe Pravahika, Vibandha (Constipation, Udarshula (Pain in abdomen), Guda bhramsha (Rectal prolapse).
22. Disorders of Rasa evam Raktavaha Srotas (Hematological and circulatory disorders): Pandu (Anemia) and Raktapitta (Bleeding disorders), Vishishta Hridroga (Specific cardiac diseases), Hypertension, Leukemia.
23. Disorders of Mutravaha srotas (disorders of Urinary System): Vrikkshotha (Glomerulonephritis and nephrotic syndrome), Mutrakrichra (Dysuria), Mutraghata (Anuria).
24. Disorders of Manovaha Srotas : Breath holding spell, Shayya mutra (Bed wetting), Autism, ADHD (Attention Deficit and hyperactive disorders), Learning Disability, Mental retardation, Temper tantrum, Pica.
25. Pediatric disabilities and Rehabilitation: Cerebral palsy, Ardita (Facial paralysis), Pakshavadha (Hemiplegia), Ekangaghata (Monoplegia), Adharanga Vayu (diplegia),. Amavata (Juvenile Rheumatoid arthritis).
26. Kuposhanjanya Vyadhi (Nutritional disorders): Karshya-Phakka-Balshosha-Parigarbhika (PEM and allied disorders), Deficiency disorders of Vitamins, minerals and trace elements, Hypervitaminosis.
27. Tvak Vikara (Skin disorders): Ahiputana (Napkin Rashes), Shakuni (Impetigo),

Sidhma, Pama, Vicharchika, Charmadal (Infantile atopic dermatitis), Gudakutta.

28. Anya Vyadhi (Miscellaneous disorders): Jalodara (Ascites), Gandamala, Apachi (Cervical lymphadenitis), Kukunakadi Akshi Roga, Hodgkin & non-Hodgkin Lymphoma, Abnormal growth patterns, Short stature , Niruddha prakasha (Phimosis), Paridagdha Chhavi, Utpullika.
29. Krimi evam Aupsargika Vyadhi (Infestations and Infections):Krimi (Giardiasis and intestinal helminthiasis,Amoebiasis) Common bacterial, viral infections with special reference to vaccine-preventable diseases: Rohini (Diphtheria), Whooping cough, Aptanaka (Tetanus including neonatal tetanus), Romantika (Measles), Karnamula Shotha (Mumps), Rubella, Masurika (Chickenpox), Antrika Jwara (Typhoid and Paratyphoid), Viral Hepatitis, Vishama Jwara (Malaria), Kala-azar, Dengu fever, HIV (AIDS), Poliomyelitis, Chickengunia.
30. Significant contributions of Kashyapa samhita, Arogya raksha Kalpadrum and other texts /treatises of Ayurveda such as Harita Samhita in the field of Kaumarbhritya including relevant parts from Brihatrai
31. Drug and Doses in Pediatrics.
32. Stanya Janana and Vardhanopakrama (Methods to enhance breast milk).
33. Dhatri (Wet nurse): Dhatri Guna and Dosha (Characteristics of Wet nurse), Concept of Breast Milk Banking.Lehana (Elucturies).
34. Navajata Shishu Vyadhi (Early neonatal disorders): Hypothermia, Shwasavarodha (Asphyxia Neonatorum/Respiratory distress), Ulvaka (Aspiration pneumonia), Rakta Vishamayata (Neonatal septicemia), Kamala (Neonatal Jaundice), Akshepaka (Neonatal convulsion), Pandu (Anemia), Atisara (Diarrhea), Asamyak Nabhinala kartanajanya vyadhi.
35. Navjata Kshudra Vikara (Minor neonatal ailments): Chhardi (Vomiting), Vibandha (constipation), Udara shula (Infantile colic), Puya Sphota (Pyoderma), Shishu Netrabhishyanda (Ophthalmia neonatorum).

## KAYACHIKITSA

1. Understanding of fundamental concepts of Kayachikitsa like Vriddhi and Kshaya of Dosha, Dushya, Mala with Amshaamsha Kalpana. Srotodushti, Khavaigunya, Agni, Ama (Saama and Nirama Dosha, Dhatu & Mala). Aavarana, Rogamarga, Ashayapakarsha, Dosha Gati, Kriyakala, shadvidopakrama. Aushadha Sevana Kala, Anupana, Pathya-Apathya and their scientific relevance during health and disease.
2. Detailed knowledge of Rogi and Roga Pariksha including detailed history taking and systemic examination of patient.
3. Principles of Kayachikitsa in disease management, including Shodhana, Shamana and Naimittika Rasayana.
4. Pranavahasrotas: Shwasa, Hikka, Kasa, Rajyakshma, Hridroga, Parshwashoola, Urakhshata, Svarabheda.

Cardio-respiratory system: Bronchitis, Bronchiectasis, Bronchial asthma, COPD,

Cor-pulmonale, Pneumonias, Occupational lung diseases, Pulmonary tuberculosis, Congenital Heart disorders, IHD, RHD- Valvular diseases, Cardiac failures,

Cardiomyopathy, Pericarditis, Endocarditis, Hypertension.

5. Annavahasrotas: Agnimandya, Ajirna, Aruchi, Amadosha, Amlapitta, Chhardi, Shoola, Grahani.

Gastrointestinal disorders: GERD, APD, Malabsorption Syndrome.

6. Udakavahasrotas: Trishna, Shotha, Udararoga, water and electrolyte imbalance
7. Rasavaha srotas: Jwara, Amavata, Pandu, Madatyaya, Anaemias, Rheumatoid arthritis.
8. Raktavaha Srotas: Raktapitta, Kamala, Vatarakta, Kushtha, Kshudraroga, Sheetpitta, Udarda, Kotha, Visarpa, Shvitra. Haemopoietic disorders, Bleeding and Coagulation disorders, Leukaemias, Thrombocytopenia, Disorders of Bone Marrow, Hepatobiliary disorders, Hepatitis, Cirrhosis, Cholecystitis, Liver abscess, Jaundice, Dermatological disorders, Parasitic, Infective, Allergic, Autoimmune skin disorders such as Psoriasis, Eczemas.
9. Mamsa-Medovahasrotas: Medoroga, Sthaulya, Prameha, Galaganda, Gandamala, Urustambha, Diabetes mellitus, Obesity.
10. Asthi-Majja vahasrotas: Asthikshaya, Sandhigatavata, Osteoarthritis, Osteopenia, Osteoporesis.
11. Shukravahasrotas: Such as Klaivya, Dwajabhanga, Impotence.

12. Mutravahasrotas: Mutrakricchra, Mutraghata, Ashmari, Urinary disorders: UTI, Lithiasis, ARF, CRF, Uraemia, BPH.
13. Purishvaha srotas: Atisara, Pravahika, Anaha, Adhamana, Krimi, Udavarta, Diarrhoeas, Dysentery, Ulcerative colitis, IBS, Intestinal Worm infestations.
14. Vata-Vyadhi:- Pakshavadha, Ekangvata Ardhangata Vata, Sarvanga Vata, Ananta Vata, Gata Vata, Gridhrasi, Ardita, Akshepaka, Apatantraka, , Vishvachi, Avabahuka, Avarana, Urustambha.

Musculoskeletal disorders: Myopathies, Muscular dystrophies, Lumbago

Neurological disorders: Neurodegenerative disorders like Alzheimer's, Parkinsonism, CVA, Neuropathies, Facial palsy, G B Syndrome, Motor Neuron Diseases, Epilepsy, Sciatica.

15. Sankramakroga: Sheetala, Masoorika, Updansha, Phiranga, Gonorrhoea, Chancroids, Syphilis.
16. Manasa vyadhi:- Unmada, Apasmara, Atatvabhinivesha, Mada, Moorcha, Sanyasa.

Common psychiatric disorders: Classification of psychiatric ailments. Disorders of thought like Schizophrenia. Disorders of Mood like Mania, Depression. Neurosis, personality disorders, psychosexual disorders.

17. Metabolic disorders: Gout, Dyslipidaemia, Atherosclerosis, Metabolic Syndrome.
18. Endocrinal disorders: Disorders of Pituitary, Thyroid, Adrenal Medulla, Reproductive hormones.
19. Parasitic/Infective/Communicable disorders: Shlipada, Filariasis, Vishama Jvara, Malaria, Manthara Jwara, Enteric Fever, Dengue, Chickenpox, Measles, Influenza, Kalaazar, Mumps, Rabies, Poliomyelitis, Plague, Meningitis, Encephalitis, Chikungunya, HIV/AIDs, Common worm infestations.
20. Ashtanidhataya Prusha and their principles of treatment.
21. Concept of Rasayana and Vajikarana and its application of advances in therapies.
22. Clinical Research in Kayachikitsa and its application in clinical medicine as per new evidence base in different systemic disorders.
23. Role of Ayurveda in immune-protection, immuno-modulation and in management of other allergies and Autoimmune disorders.
24. Knowledge of Geriatric care and terminal care medicine.
25. Application of emerging trends in Panchakarma in medical management.

## **KRIYA SHAREERA**

1. General description of Tridosha theory.
2. Mutual relationships between Triguna, Tridosha, Panchamahabhuta and Indriya.
3. Biological Rythems of Tridosha on the basis of Day-Night-Age-Season and Food intake.
4. Role of Dosha in the formation of Prakriti of an individual and Ashtavidha Sara
5. Physiological importance of Agni, its classification and functions, Avasthapaka and Nishthapaka
6. Physiological classification of Koshta and characterstics of each kind of Koshta
7. Concept of Dhatu and Dhatupoashan Nyayas
8. Concept of Ashraya Asshrayee Bhava of Dosha, Dhatu and Mala.
9. Concept of Upadhatu
10. Concept of Ojas
11. Concept of Mala: Ahara Mala and Dhatu Mala
12. Concept of Srotas
13. Concept of Atma , Manas and Indriya
14. Concept of Nidra – Definition of Nidra, Classification of Nidra, Tandra, Physiologicaal and clinical significance of Nidra
15. Svapnotpatti and svapna bheda
16. Essentials of Cell physiology: Organization of cell
17. Hematology: Blood cells- RBCs, WBCs, Platelets, Plasma Proteins and Immunity.
18. Essentials of Cardiovascular physiology: Cardiac cycle, regulations of heart rate and blood pressure
19. Essentials of Respiratory physiology: Regulations of respiration – chemical and neural, gaseous exchange, transportation of gases.
20. Gastrointestinal physiology: Various digestive juices and their actions, gastrointestinal hormones, enteric nervous system.



21. Nervous system physiology: ANS, somatic nervous system, reflexes, general and special sensations, higher mental functions, functions of brain, brainstem and spinal cord.
22. Muscle physiology: Properties and mechanisms of contraction of skeletal, cardiac and smooth muscles.
23. Physiology of Excretion: Mechanisms of Urine formation, Micturation.
24. Endocrine Physiology: Classification of hormones, hormones secreted by pituitary, thyroid, Parathyroid, Adrenal glands, Pineal, Pancreas and their functions.
25. Study of Male and Female Reproductive System: Functions of reproductive hormones

## PANCHAKARMA

1. Panchakarma in Ashtanga Ayurved and Significance of Shodhana
2. Ama and Shodhana, benefits of Shodhana, Samikshya Bhavas in Shodhana,
3. Importance of Pachana prior to Snehana, methods, drugs, duration and dose for Pachana, samyak Lakshana of Pachana Snehana

### **Snehana:**

1. Etymology and definition of Sneha and Snehana
2. General considerations about Snehana
3. Classifications of Sneha, Sneha-Yoni, detailed knowledge of four types main SnehaGhrita, Taila, Vasa and Majja with their characteristics, importance and utility, various aspects of Uttama Sneha
4. Properties of Snehana Dravya and their interpretation
5. Effects of Snehana
6. Sneha Kalpana, various types of Sneha Paka with their utility
7. Indications and contraindications of Snehana
8. Classification of Snehana: Bahya and Abhyantara Snehana
9. Bahya Snehana and Bahir-Parimarjana, utility and importance of Bahya Snehana
10. Classification of Bahya Snehana Methods, indications, contraindications, specific utility of the followings Abhyanga, Mardana, unmardana, Padaghta, Samvahana, Udvartana/Utsadana, Udgharshana, Avagaha, Pariseka, Lepa, Pralepa, updeha, Gandusha, Kavala; Karana and Nasa Purna, Akshi Tarpana; Murdhni Taila: Shiro-abhyanga, Shirodhara, Siro Pichu and Siro Basti, Shiro Lepa (Talapotichil), Talam and Takradhara, etc.
11. Knowledge of digestion and metabolism of fat
12. Karmukata of Abhyantara and Bahya Snehan
13. Knowledge of different western massage techniques
14. Abhyantra Snehana: Brimhnartha, Shamanartha and Shodhanartha, definition, method and utility of Brimhanartha and shamanrtha Snehana; difference between Shamanartha and Shodhanartha Snehana
15. Methods of Abhyantar Snehana
16. Shodhanartha Snehana: Acchapana and Vicharana, Utility and various methods of Sadyasnehana, Avapidaka Sneha
17. Matra of Sneha : Hrasiyasi, Hrasva, Madhyama and Uttma Matra with their indications, specific utility of Ghrita, taila, Vasa and majja; Anupana of Sneha

18. Need and method of Rukshana before performing Snehana in specific conditions and Samyak Rukshana Lakshana
19. Shodhannga Snehana Vidhi and methods of fixation of dose
20. Diet and Pathya during Snehana
21. Observation of sneha Jiryamana, Jirna and Ajirna Lkashana
22. Samyak, Asnigdha and Ati Yoga Lakshana of Snehana
23. Snehs vyapta and their management
24. Pariharya vishaya and Parihara Kala

**Svedana:**

1. Etymology and definition of Svedana
2. General considerations about Svedana
3. Properties of Svedan and Svedopaga Dravya
4. Indications and contraindications of Svedana
5. Various Classifications of Sveda and Svedna
6. Detailed knowledge of four types of Sveda of Sushruta with their utility;
7. Hina, Mridu, Madhya and Mhana Sveda; Ekanga and Sarvanga sveda with their utility
8. Utility and method of each of 13 types of Sagni and 10 types of Niragni Sveda
9. Shodhannga and Samshamaniya Sveda
10. Methods to protect the vital organs (varjya anga) during Svedan Procedure
11. Detailed Knowledge about Utility of below mentioned Svedan procedures:- Patrapinda Sveda, Shashtika Shalipinda Sveda, Churna Pinda Sveda, Jambira Pinda Sveda, Dhanya Pinda Sveda, Kukkutanda Sveda, Anna lepa, Valuka Sveda, Ishtika Sveda, Nadi Sveda, Bashpa Sveda, Kshira bashpa Sveda, Avagaha Sveda, Parisheka Sveda, Pizichil, Dhanyamla Dhara, Kashaya Dhara, Kshira Dhara and Upanaha Sveda.
12. Avasthanusari Svedana in various disorders
13. Samyak, Ayoga and Atiyoga Lakshana, Sveda Vyapat and their management
14. Diet and regimens during and after Svedana
15. Karmukata of Svedana
16. Current sudation modalities like Sauna bath, Steam Bath, Infrared, etc.
17. Svedana with Kati Basti, Janu Basti and Griva Basti
18. Study of Snehana and Svedana related portions in classics with commentaries

## **Vamana Karma :**

1. Etymology, definition and general considerations of vamana
2. Properties of Vamaka and Vamanopaga drugs
3. Knowledge and utility of important Vamaka drugs and their preparations (Vamana Yoga)
4. Avasthanusara Vamana and its utility.
5. Indications of Vamana
6. Contraindications of Vamana with reasons
7. Pachana prior to Snehana
8. Detailed knowledge and method of preparation of patient with Snehana
9. Abhyanga and Svedana as Purvakarma of Vamana
10. Diet and management of gap day
11. Need of increasing of Kapha for proper Vamana, Kapha increasing diet
12. Management of Patients on the morning of Vamana
13. Administration of food articles prior to Vamana
14. Drug, time, Anupana, Sahapana, dose and method of administration of Vamana and Vamanopaga preparations
15. Method of Vamana Karma, waiting period for automatic Vamana Vega and manipulation in its absence
16. Observations prior to beginning of Vamana such as sweat on forehead, horripilation, fullness of stomach and nausea
17. Observation and assistance of the patient during Vamana
18. Vega and Upavega of Vamaana and its counting, observations and preservation of vomitus matter and its weighing
19. Samyak, Ayoga and Atiyoga of Vamana
20. Laingiki, Vaigiki, Manaki and Antiki Shuddhi,
21. Hina, Madhya and Pravara Shddhi and Samsajana Krama accordingly
22. Detail knowledge of methods of Samsarjana Krama and its importance
23. Kavala and Dhumapana after vamana
24. Management of Ayoga, Atiyog and Vyapat of Vamana with Ayurveda and modern drugs
25. Parihara Vishaya and Kala for Vamana
26. Vamana Karmukata with Pharmaco-dynamics of Vamana

## **Virechana Karma:**

1. Etymology, definition and general considerations of Virechana
2. Importance of Vamana and Virechana as shodhana, Virechana better than Vamana
3. Necessity of Vamana prior to Virechana
4. Preparation of patients for Virechana after Vamana
5. Preparation of patients directly for Virechana
6. Properties of main Virechaka and Virechanopaga drugs, Classifications of Virechana drugs with definition, example and utility of each type
7. Indications of Vamana Karma 8. Contraindications of Virechana with reasons
8. Utility of Virechana for the specific conditions and stages of the disease
9. Internal Snehana for Virechana with diet
10. Management of 3 gap day with diet and importance of low Kapha for proper Virechana
11. Abhyanga and Svednana as Purvakarma of Virechana
12. Management of Patients on the morning of Virechana
13. Virechana should be performed in empty stomach
14. Drug, dose, time, Anupana, sahapana and method of administration of Virechana and Virechanopaga preparations
15. Method of performing of Virechana Karma
16. Observations during Virechana, Vega and Upavega of Virechana and its counting, observations and preservation of feces and its weighing
17. Samyak, Ayoga and Atiyoga of Virechana
18. Laingiki, Vaigiki, Manaki and Antiki Shuddhi of Virechana
19. Hina, Madhya and Pravara Shddhi and Samsajana Krama accordingly
20. Detail knowledge of methods of Samsarjana Krama and its importance, and Tarpana krama and its importance
21. Management of Ayoga, Atiyog and Vyapat of Virechana with Ayurveda and modern drugs
22. Parihara Vishaya and Kala for Virechana
23. Virechana a Karmukata with Pharmaco-dynamics of Virechana
24. Applied anatomy and physiology of Gastrointestinal system related with Vamana and Virechana
25. Study of Vamana and Virechana related portions in classics with commentaries
26. Recent advances of researches on the effect of Vamana and Virechana

27. Scope of research for Vamana and Virechana
28. Role of Vamana and virechana in promotion of health prevention and treatment of diseases

### **Basti Karma:**

1. Etymology, definition and general considerations of Basti
2. Importance of Basti in Kayachikitsa and other branches of Ayurveda
3. Classifications of Basti
4. Drugs useful in Basti
5. Indications of Basti, its role at the various stages of diseases
6. Contraindications of Basti with reasons
7. Description of Basti yantras, Basti netra and Basti putaka and their Doshas.
8. Dose schedules of Niruha and Anuvasana basti

### **Niruha Basti:**

Etymology, synonyms, definition and classifications and subclassifications of Niruha Basti and detailed knowledge of each type of Niruha Basti along with indications and contraindications and benefits Contents of various types of Niruha Basti, their proportions, methods of mixing basti Dravya, Relation of Virechana, Shodhana, Anuvasana Basti with Niruha Basti Purvakarma for Niruha Basti; Pathya before, during and after Niruha Basti; all the aspects of administration of various Niruha Basti Observations during and after Niruha Basti Basti Pratyagamana, Samyakyoga, Ayoga and Atiyoga Lakshana and Various Vyapat of Niruha Basti and their management according to Ayurved and Modern Systems of Medicines Management during and after Niruha Basti Pariharya vishaya and pariharakala,

### **Anuvasana Basti:**

Etymology, synonyms, definition and classifications of Anuvasana Basti and detailed knowledge of each type of Anuvasana Basti along with indications and contraindications and benefits Various types of Ghrita and Taila useful in Anuvasana Basti; Anuvasana Basti with Vasa and Majja along with their merits and demerits Relation of Virechana, Shodhana, Niruha Basti, Snehana with Anuvasana Basti Purvakarma for Anuvasana Basti; Pathya before, during and after Anuvasana Basti; all the aspects of administration of Anuvasana Basti including Kala Observations during and after Anuvasana Basti Anuvasana Basti Pratyagamana, Samyakyoga, Ayoga and Atiyoga Lakshana and Various Vyapat of Anuvasana Basti and their management. Management during and after Anuvasana Basti Pariharya vishaya, Pathya and pariharakala for Anuvasana Various combined basti schedules such as Karma, Kala, yoga Basti etc. Detailed knowledge of Matra Basti Detailed Knowledge of different basti formulations like Piccha Basti, Kshira Basti, Yapana Bastis, Madhutailika Basti, Erandamuladi Niruha Basti, Panchaprasrutika Basti, Kshara Basti, Vaitarana Basti, Krimighna Basti, Lekhana Basti, Vrishya Bsti, Manjishtadi Niruha Basti, Dashamula Basti,

Ardhamatrika Basti, Sarva roghara Niruha Basti, Brimhana Basti, Vataghna Basti, Pittaghna Basti and Kaphaghna Basti etc, and their practical utility.

**Uttara Basti:**

1. Definition and Classification of Uttara Basti, its Netra and Putaka. Dose of Uttara Basti Sneha and Kashaya Basti. Different Uttara Basti Kalpanas in various diseases.
2. Detailed knowledge of Purvakarma and Administration of Uttara Basti in male and female, precautions, aseptic measures, complications and their management Karmukata of Basti. Applied anatomy and physiology of colon, Pharmacodynamics of Basti.
3. Concept of 'Gut Brain' and its relevance to Basti Therapy.
4. Study of relevant portions of Basti in classics with commentaries.

**Nasya Karma:**

1. Etymology, synonyms, importance and definition of Nasya
2. Nasya drugs according to various Samhita
3. Classifications and sub-classifications of Nasya with detailed knowledge of each type
4. Indications and contraindications of each type of Nasya with reasons
5. Drugs useful for Nasya with Dose and methods of preparations and their doses
6. Nasya Kala and Pathya before, during and after Nasya; Duration of different Nasyas
7. Purvakarma of each types of Nasya
8. Detailed knowledge of administration of each type of Nasya with management during and after Nasya.

# **PRASUTI AVUM STRI ROGA**

**(Gynecology & Obstetrics)**

## **Garbhagarbhini Vigyana:**

1. Embryology or development and Applied Anatomy of female Genito urinary system, Pelvis and Pelvic floor. Pelvic assesment and foetal skull.
2. Physiology, Neuro endocrinology and Pathology of puberty and Neuroendocrine control of menstrual cycle.. Artava, Rituchakra, Streebija, Pumbija.
3. Garbha sambhava samaagri, Garbhadharanam, Pre-conceptional counseling and care, Pumsavana, Garbhasya shad dhatvatmakata, Garbhavakranti, Matrijadi bhava, Garbha vridhhi, role of Panchamahabhutas in the formation and development of foetus. Garbhasya avayavotpatti, Fundamentals of reproduction-gamatogenesis, Fertilization, Implantation and early development of human embryo.
4. Apara, Garbhodaka Jarayu, Nabhinadi. Placenta, amniotic fluid, membranes and umbilical cord -their formation, structure, Functions and abnormalities. Garbha-poshana, Garbha shareerkriya vaishishtyam, Garbha lingotpatti, Garbha varnotpatti, Garbhasya masanumasika vridhhi. Foetal physiology, circulation, Foetal growth and development.
5. Bija-Bijabhaga-Bijabhagavayava janya garbhanga vikrithi. Genetics,Ayurgenomics Birth defects and other teratologic abnormalities
6. Garbhini nidana, sapekshanidana, Garbhakalina matrigata parivartana, lakshana, Dauhrida. Diagnosis and differential diagnosis of pregnancy, anatomical and physiological changes during pregnancy, Endocrinology related to pregnancy, Immunology of pregnancy.
7. Garbhiniparicharya, Masanumasika Pathya Apathya evum Garbha upaghatakara bhava. Ante Natal care, examination investigations and management,
8. Garbhasankhya nirnay, Bahu apatyata, Multiple pregnancy.
9. Garbhavyapada - causes, clinical features, complications, management and treatment of Garbhasrava and Garbhapata, Upavishtaka, Nagodara / Upashushka, Lina garbha, Goodagarbha, Jarayu Dosha, Antarmrita garbha,  
Garbha shosha, Garbha kshaya, Bhutahrta garbha, Raktagulma. Abortions, I.U.G.R, Intrauterine Foetal death, Ectopic pregnancy, Hydatidiform mole and gestational trophoblastic neoplasia,
10. Garbhini vyapada – nidana panchaka and chikitsa of garbhini vyapad. Early recognition, differential diagnosis and prompt management of pregnancy complications, Emesis and Hyperemesis gravidarium, Anaemia, Pregnancy.  
Induced Hypertension, Pre-eclampsia, Eclampsia, Antepartum hemorrhage, Rhincompatibility.



## 11. Panchakarma and Yoga in Prasuti tantra

### **Prasava-Vigyana:**

#### **Prakrit Prasava**

1. Prasava paribhasha, Prasava kaal, Prasava prarambha karana, Prasava kalia garbha sthiti, Aavi, Sutikagara with its modern concepts.
2. Prasava avastha evum paricharya with Mechanism and management of Normal Labour Prasava vyapad
3. Etiopathogenesis, clinical features, prevention and management of Garbhasanga, vilambita prasava, Mudhagarbha and Aparasanga with its modern concepts.
4. Complications of different stages of labour
5. Obstetric management of high risk Pregnancies- Pre eclampsia, Eclampsia, Diabetes, cardiac diseases, Asthma, Epilepsy, Ante partum haemorrhage, Preterm & Premature rupture of membranes, Preterm, Post term, Multiple pregnancy, IUGR & HIV –AIDS
6. Still birth - diagnosis, complications and management.
7. Foetal distress

Jatamatra/ Navajata shishu paricharya with its modern concepts.

### **Sutika Vigyana:**

1. Sutika Paribhasha, kala maryada, paricharya.
2. Sutika vyadhi and their chikitsa.
3. Stana sampat, Stanya utpatti, Stanya sampat, Stanya pariksha, Stanya vriddhi, kshaya and dusti karana, lakshan and its Chikitsa, stana shotha, stana vidhradhi.
4. Suppression of lactation
5. Normal and abnormal puerperium.

### **Obstetric shock and management**

1. Raktadhana: blood transfusion and replacement of blood constituents.
2. Management of fluid and electrolyte imbalance in obstetrics.

Drugs used in obstetric practice, indications/contra indications, doses and side effects. (Modern and Ayurvedic).

### **Stree Roga vigyana:**

1. Disorders of menstruation (with its Ayurvedic concepts)and Female reproductive system.
2. Detailed study of Yoni Vyapada mentioned by different Acharyas with their commentaries and all possible correlations with modern gynecological diseases.
3. Bandhyatva with its modern concepts

4. Stanaroga with its modern concepts
5. Measures of contraception
6. Sthanik chikitsa
7. Rajo Nirvritti
8. Study of modern diagnostic techniques and Investigations.
9. Important drugs used in Streeroga.(Modern & Ayurvedic)
10. Panchakarma & Yoga in streeroga

**Prasuti Tantra–Stree Roga-Shalya Karma:**

General principles of Gynecological and Obstetrical Surgeries. suturing, suture materials, sterilization, autoclaving etc, Analgesia and Anaesthesia in Obstetrical and Gynaecological operative procedures.

Common Operative Management of Obstetrical disorders

Common Operative Management of gynecological disorders

Surgical sterilization procedures.

Common Laparoscopic surgeries in Gynaecology

Shock and its management, Blood Transfusion, Fluid and electrolyte imbalance, Fluid therapy.

Record keeping, ethical and legal issues involved in Obstetrics and Gynaecology.

Medico-legal aspects – ethics, communication and counselling in Obstetrics and Gynecology

EMERGENCY care in Obstetrics and Gynecology.

## **RACHANA SHAREERA**

### **GARBHA SHAAREERA**

1. Etymology of Garbhavakranti Shaarira, features of Shukra and Shonita, description of Beeja, Beejbhaga, Beejbhagavyava and Garbhotpadakabhava, Garbha Poshana Krama, Garbhavridhdhikar Bhav, Masanumashiki Garbhavriddhi, Foetal circulation. Explanation of lakshana occurring in Ritumati, Sadhyah Grihita Garbha. Yamal garbha, Anasthi garbha.
2. Explanation of Basic Embryology, and Systemic embryology.
3. Knowledge of basic facts in advancement in Anuvanshiki (Genetics) and Garbhajavikara (Teratology). **KOSHTHANGA SIRA DHAMANI SROTAS SHAARIR**
  - 1) Koshthanga Shaarira: - Detail etymological derivation of 'Koshtha' and Koshthanga, including detail study of structure of each Koshthanga. Male and Female genital organs.
  - 2) Ashaya: - Definition, detail description.
  - 3) Kala Shaarira:-Etymology, Definition, description of Seven Kala with their Modern component and applied aspects.
  - 4) Paribhashika Shaarira: - Snayu, Kandara, Rajju, Sanghata, Jalaetc. and their general description.
  - 5) Sira, Dhamani and Srotas Shaarira: - Etymological derivation, definitions, synonyms, number and types of Sira, Dhamani and Srotas, anatomical differences among Sira, Dhamani and Srotas, description of Vedhya and Avedhya Sira (Puncturable and Non puncturable Veins) and clinical importance of Sira, Dhamani and Srotas including Modern Anatomical counterparts.

### **Marma Shaarira Evum Asthi Sandhi Peshee Shaarira:**

1. Marma Shaarira:- Derivation and definitions of the term Marma and their features, characteristics and number of Marma according to Sushruta Divisions of Marma on morphological basis (Rachana Bheda), Shadangatvam (Regional), Abhighataja (Prognostic) classification, Trimarma according to Charaka. Knowledge of 'Marmaabhighata', MarmaViddha, Detailed study of individual marma with their clinical and Surgical importance. Importance of Marma in Shalyatantra.
2. Asthi Shaarira :- General introduction and description of Asthi, differences among number of Asthi.Types of Asthi. Detail study of each bone with its ossification & Applied anatomy.
3. Sandhi Shaarira :- Etymological derivation, description, features, number, types and Applied anatomy of all Sandhi (joints).

4. Peshee Shaarira :- Etymological derivation, description, features, number, types and Applied anatomy of all Peshee (Muscles). Tantra Shaarira Evum Antah and Bahih Granthi Vigyaniya
  1. Description of Panchgyanendriya – Ayurved and Modern aspects. (Sensory organs (Eye, Ear, Nose, Tongue and Skin with their Applied anatomy).
  2. Shat Chakra - Location and significance in Yoga. Description of Ida, Pingala, Sushumna nadi.
  3. Anatomy of brain and spinal cord, Peripheral nervous system (explanation of Nerve Plexuses and peripheral nerves, Cranial nerves and Autonomic nervous system, Cerebro-spinal fluid, Venous sinuses of Brain, Ventricular system of Brain, Blood supply of Brain, Meninges with Applied Anatomy.
  4. AntahSravi Granthi and BahihSravi Granthi:-Detail study of Exocrine & Endocrine glands.

## RASA SHASTRA AND BHAISHAJYA KALPANA

### **Part-A**

1. History and Chronological evolution of Rasashastra, concept of Raseshwara darshan. Fundamental principles of Rasa Shastra and Bhaishajya Kalpana, introduction to Rasachikitsa, Ashuddha and Apakwa Bhasma- sevan Dosha and its management, introduction to Aushadha Sevan Kaal and Prayoga Marga (routes of administration). Technical terminologies (Paribhasha) used in Rasa shastra and Bhaishajya Kalpana
2. Detailed ancient and contemporary knowledge of Parada and its compounds with reference to source, occurrence, physico-chemical characterization, graahya agrahyatva, Parada dosha, Parada gati, Parada shodhan, Study of Ashta sanskara, ashtadasha sanskara etc., Hingulottha Parada. Concept of Parada jaran, moorचना, bandhan, pakshaccheda and marana etc. Therapeutic properties and uses of Parada.
3. Detailed ancient & contemporary knowledge with Geochemical / mineralogical / biological identification, source, occurrence, physico-chemical characterization, graahya-agraahyatva, Shodhan Maranadi vidhi and therapeutic properties and uses of dravyas etc. included in Maharasa, Uparasa, Sadharana rasa, Dhatu, Upadhatu, Ratna, Uparatna, Visha, Upavisha, Sudha varga, Lavana varga, Kshara varga, Sikata varga and other miscellaneous drugs used in Rasashastra.
4. Detailed knowledge of manufacturing, pharmacopeial standards, storage, shelf life, therapeutic efficacy, dose, anupana, vikarashanti upaya and development of technology with Standard Operating Procedures of processing, standardization, quality control of Bhasmas and Pishtis.  
  
Bhasma - Abhraka Bhasma, Svarnamakshika Bhasma, Kasis Bhasma, Svarna Bhasma, Rajata Bhasma, Tamra Bhasma, Loha Bhasma, Mandur Bhasma, Naga Bhasma, Vanga Bhasma, Yashad Bhasma, Trivanga Bhasma, Pittala, Kamsya and Varthaloha Bhasma, Shankha Bhasma, Shukti Bhasma, Kapardika Bhasma, Godanti Bhasma, Praval Bhasma, Mrigashringa Bhasma, Mayurpiccha Bhasma, Kukkutand Twak Bhasma, Trinakanta mani pishti etc.
5. Detailed knowledge of manufacturing, storage, shelf life, pharmacopeial standards, therapeutic efficacy, dose, anupana and development of technology with Standard Operating Procedures of processing, standardization and quality control of Kharaliya rasa, Parpati, Kupipakva rasa and Pottali rasa.
  - i. Kharaliya Rasa : Shwasa kuthara Rasa, Tribhuvana kirti Rasa, Higuleshwara Rasa, Ananda bhairava Rasa, Maha Lakshmvilasa Rasa, Vasnata kusumakara Rasa.
  - ii. Kupipakva Rasa: Rasa Sindura, Makaradhwaja, Sidha makaradhwaja, Samira pannaga Swarnavanga, Malla sindura, Rasa karpura, Rasa pushpa.
  - iii. Parpati Rasa : Rasa Parpati, Loha Parpati, Tamra Parpati, Suvarna Parpati, Gagana Parpati, Vijay Parpati, Panchamrit Parpati, Shwet Parpati, Bola Parpati.

- iv. Pottali Rasa: Rasagarbha pottali, Hemagarbha pottali, Mallagarbha pottali, Hiranyagarbha pottali, Shankagarbha pottali, Lokanatha rasa, Mriganka Pottali
6. Study of classical texts with respective commentaries and special emphasis on Rasarnava, Rasahridaya tantra, Rasa Ratna Samucchaya, Rasendra Chintamani, Rasendra Chudamani, Rasa Ratnakara, Rasadhyaya, Rasa Kamdhenu, Anandkanda, Siddha Bhashaja Manimala, Ayurveda Prakash, Rasatarangini, Bhaishajya Ratnavali, Rasamritam etc. and the books mentioned in the Schedule I of D & C Act – 1940. Relevant portions of Brihatrayi.
7. Detailed knowledge of routes of drug administration, Aushadha matra, Anupana, Sahapana, Aushadha Sevana Kala, Kala Avadhi, Pathya, Apathya (Posology).
8. Detailed knowledge of manufacturing, standardization, quality control, pharmacopeial standards, storage, shelf life and development of innovative technology with Standard manufacturing Operating Procedures of following dosage forms.
- Panchavidha Kashaya, Churna, Rasakriya, Ghana, Avaleha, Pramathya, Mantha, Panaka, Sarkara, Kshirapaka, Ushnodaka, Aushadha Siddha Udaka, Sadangodaka, Tandulodaka, Laksharasa, Arka, Satva, Kshara, Lavana, Masi, Gutika, Vatika, Modaka, Guggulu and Varti.
- Sneha Kalpana: Concept of accha sneha and sneha pravicharana and Murchhana. Sneha paka, types of sneha paka and sneha siddhi lakshana, Avartana. Sneha kalpa karmukata (Pharmacokinetics and dynamics of sneha kalpa). Role of Sneha in relation to absorption of drug.
- Kritanna and Bhashaja Siddha Anna Kalpana, Aharopayogi varga, concept of medicinal and functional food, dietary supplements and nutraceuticals etc.
- Sandhana kalpana: Madya varga and Shukta varga. Asava yoni. Alcoholic and acidic fermentation. Sandhana kalpa karmukata (Pharmacokinetics and dynamics). Advancements in fermentation technology. Knowledge of regulations in relation to alcoholic drug preparations.
- Bahya Prayogarthi Kalpana : Lepa, Upanaha, Udvardan, Avachurnana / Avadhulana, Abhyanga, Dhupana, Malahara.
- Mukha, Karna, Nasa, Netropacharartha Kalpana
- Basti Kalpana: Basti Yantra Nirmana, Types of basti. Anuvasana and Asthapana basti. Karma, kala and yoga basti etc. Basti Kalpa (Madhutailika, Piccha basti etc.), Comparison of Asthapana and Anuvasana basti with evacuation and retention enema.
9. Study of classical texts with special emphasis on Chakradatta, Sharangadhara Samhita, Bhaishajya Ratnavali, Bhava Prakasha, Yogaratnakara, relevant portions of Brihatrayi, Ayurvedic Pharmacopeia of India, Ayurvedic Formulary of India.

## Part-B

1. General Pharmacology, Principles of Pharmacology, Pharmacodynamics & Pharmacokinetics: Absorption, distribution, Metabolism & excretion, mechanism of action, dose determination and dose response, structure activity relationship.

Routes of drug administration.

Factors modifying drug effect, Bioavailability and Bioequivalence, drug interactions, adverse drug reaction and drug toxicity

Preclinical evaluation: experimental pharmacology [bioassay, in vitro, in vivo, cell line studies] animal ethics.

2. Clinical pharmacology: Evaluation of New Chemical Entity – phases and methods of clinical research. Ethics involved in human research.
3. Elemental constituents of human body and its physiological importance. Deficiencies and excess of various elements (micro-nutrients).
4. Toxicity of heavy metals and chelation therapy.
5. Knowledge of toxicity and pharmacological activities of herbo-mineral compounds.
6. Detailed Knowledge of Pharmacovigilance-National and International Scenario. Pharmacovigilance of Ayurvedic Drugs.
7. Management of pharmacy, store and inventory management, personnel management, Good Manufacturing Practices related to Ayurvedic drug industry.
8. Pharmaceutical Marketing, product release and withdrawals.
9. Hospital, Dispensing and Community pharmacy.

Patenting and Intellectual Property Rights.

Laws Governing Ayurvedic drugs

Relevant regulatory provisions of Ayurvedic drugs in Drug and Cosmetics Act - 1940 and Rules – 1945

Laws pertaining to Drugs and Magic remedies (Objectionable Advertisement) Act – 1954

Prevention of Food Adulteration (PFA) act.

Laws pertaining to Narcotics

Factory and Pharmacy Acts

Consumer Protection Act -1986

10. Regulatory Affairs related to International Trade and Practices of Ayurvedic Drugs

Introduction to Ayurvedic Pharmacopoeia of India, Ayurvedic Formulary of India.

Introduction to Indian Pharmacopoeia, British and United States Pharmacopoeia, Pharmacopoeial Codex

11. Introduction to Traditional Knowledge Digital Library
12. Introduction to advance instruments of analysis like XRD, XRF, SEM-E-Dax, ICP analysis, Chromatography: TLC, gas chromatography, HPTLC, concept of Nanotechnology and its relevance to Aushadha-Nirman.



## ROGANIDANA

1. Concept of Nidana Panchaka and its clinical approach.
2. Tridosha, as a causative factor in pathogenesis.
3. Concept of Rakta as a Chaturtha Dosha. Importance of Rakta in the manifestation of diseases.
4. Concept of Ashrayashrayabhava and its applied utility.
5. Different types of Dosha Gati.
6. Importance of Asayapakarsha gati in disease.
7. Concept of Rogamarga and its applicability.
8. Concept and classification of Avarana, Its role in pathogenesis, mode of diagnosis of
9. Avarana and its importance in chikitsa sutra,
10. Applied aspect of Dhatu poshana Krama and Dhatu Samvahana
11. Concept and applied aspects of Doshapaka and Dhatupaka.
12. Fundamental and applied aspect of Dhatu, upadhatua and Mala. Disease developed due to their vitiation (pradoshajanyvai kara).
13. Understanding the Concept of Srotas in detail and its clinical applicability.
14. Concept of Agni, Ama and its role in manifestatoin of health and disease,
15. Sama, Nirama stages of Dosha, Dhatu and Mala.
16. Understanding samprapti of Santarpanottha and ApatarpanotthVayadhi.
17. Detailed classification of diseases as described in Ayurveda, Knowledge o ICDD SM and other systems of classification of diseases.
18. Concept of Kriyakala and its importance in diagnosis.
19. Nidanakaratva of contemporaray food items and lifestyle.
20. Relation between Hetu & Lakshana and Samprapti & Lakshana'.
21. Importance of Upadrava, Arishta and Sadhyasadhyata and Udarka.
22. Natural History of the Diseases concept of vyadhisankara in Ayurveda.
23. Diseases of Pranavaha srotas- Kasa - Shwasa - Hikka – Urahkshata – Shosha – Rajayakshma and common clinical entities like Pneumonia, Pleural effusion, Bronchitis, Bronchiectasis, Pulmonary Tuberculosis, Bronchial Asthma.
24. Diseases of Annavaha- Pureeshavaha Srotas- Agnimandya - Ajirna - Aruchi- Chhardi, Amlapitta- Shoola, Grahani –Gulma- Udara Roga –Vibandha, Atisara – Pravahika along with various clinical presentations. Common clinical entities like

Peptic Ulcer, Irritable Bowel Syndrome, Diarrhoea, Dysentery,  
Constipation, ulcerative colitis. Nutritional disorders.

25. Diseases of Udakavaha Srotas- Trishna, Daha and knowledge of water and electrolyte imbalance disorders
26. Diseases of Rasavaha Srotas – Jwara. Common clinical entities like various types of Fever- Malaria, Typhoid, viral fevers. Pandu, Amavata, Hridroga, Shotha and common clinical entities like Anaemia & its Classification, Rheumatic fever, Rheumatoid Arthritis, Angina, Ischaemic Heart Disease, Hypertension, Myocardial Infarction, Congestive cardiac failure. Endocrinal disorders.
27. Diseases of Raktavaha Srotas- Kamala - Raktapitta - Vatarakta – Kroshtukaseersha - Shitapitta – Maha Kushta – Visarpa – Shwitra and Kshudra Kushta and common clinical entities like jaundice, hepatitis, bleeding disorders, Gout, Thrombo Angitis Obliterans (TAO), Deep Vein Thrombosis (DVT), Leukaemia, Thalessemia, Sickle cell Anaemia. Introduction to Urticaria, Psoriasis, Eczema, Pemphigus, Herpes.
28. Diseases of Mansavaha srotas- Introduction to Granthi, Arbuda, Galaganda and Arsha. All types neoplasia.
29. Diseases of Medovaha srotas- Sthoulya - Karshya – Prameha and common clinical entities like Obesity and Diabetes Mellitus.
30. Diseases of Asthi - Majjavaha srotas- Sandhigatavata, Introduction to Asthimajjaparipaka, Asthigata Vidradhi and common clinical entities like Osteo-Arthritis, Osteomyelitis, Osteoporosis. Vatavyadhi-Akshepaka - Apatanaka - Ardita - Pakshaghata – Gridhrasi – Viswachi, Avabahuka, Manyasthambha – Katigraha-Pangutwa- Khanja-Khalwee and common clinical entities like Hemiplagia, Parkinson's disease, Lumbago- Sciatica syndrome, Bell's Palsy, Ankylosing Spondylitis, Motor Neuron Disease and other commonly occurring neurological diseases.
31. Diseases of Sukravaha srotas-Klaibya and Vandhyatva and understanding of male and female Infertility, Impotence.
32. Diseases of Mutravahasrotas –Mutrakrichha, Mutraghata, Ashmari, common clinical entities like Urinary Tract Infection, Urolithiasis, Nephropathies & Renal failure.
33. Diseases of Swedavaha srotas-knowledge of khalitya, Palitya and Cosmetology.

34. Diseases of Manovaha Srotas - Vishada, Udvega, Bhaya, Bhrama, Anidra, Mada, Murchha, Sanyasa, Apasmara, Unmada, Atatwabhinivesha and common clinical entities like Depression, Anxiety neurosis, Phobia, Personality disorders.  
Indriya Pradoshaja Vikara.
35. Jara janya Vyadhi: Common Geriatric disorders.  
Concept and tools for the study of Anukta Vyadhi- Unexplained and newly emerging diseases such as AIDS, Dengue, Chickungunia, H1N1, Leptospirosis, Metabolic syndrome etc.  
Understanding the concept of karmaja vyadhi.

## **SHALAKYA TANTRA**

1. Netra Shareera and related Marmas.
2. Role of Panchakarma in Netra Chikitsa.
3. Enumeration and classification of Netra Rogas.
4. Descriptive knowledge of Etiology, Pathogenesis, Prodromal symptoms, Clinical features, Complications and Prognosis of Pooyalasa, Netra Srava, Krimigranthi, Parvani, Alaji, Anjananamika, Utsangini, Lagana, Vatahata Varthma, Pakshma Kopa, Sikata Varthma, Pothaki, Klinna Varthma, Krichronmeelana, Kukunaka, Arma, Arjuna, Shuktika, Sira Pidaka, Sira Jala, Pistaka, Balasagrathita, Savruna Shukra, Avruna Shukra, Sira Shukra, Akshipakatyaya, Ajakajata, Abhishyanda – 4 types, Adhimantha – 4 types, Hatadhimanta, Shushkakshipaka, Amloshita, Vata Paryaya, Anyato Vata, Sashopha Akshipaka, Ashopha Akshipaka, Sirotkata, Siraharsha, Timira, Kacha, Liganasha (Abhigataja Liganasha, Sanimittaja & Animittaja Liganasha), Doshandhya, Kaphavidagdha Dristi, Naktandhya, Ushna Vidagdha Dristi, Pitta Vidagdha Dristi, Dhumadarshi, Hruswajadya, Gambhirika, Nakulandya, Nayanabhigata.
5. Netra Kriya Kalpa procedures like Seka, Aschotana, Vidalaka, Pindi, Tarpana, Putapaka and Anjana and their practical application and analysis based on Ocular Pharmacology. Standard operative procedures for Kriya Kalpas including Aushadha Kalpanas.
6. Detailed knowledge of Classification, Etiology, Pathogenesis, Signs and Symptoms, Differential Diagnosis, Prognosis and Complications of Acute & Chronic Dacryocystitis, Epiphora, Blepharitis, Hordeolum, Ptosis, Trachoma, Trichiasis, Entropion, Ectropion, Pterygium, Scleritis, Episcleritis, Sub Conjunctival Hemorrhage, Corneal Ulcer, Corneal Opacity, Uveitis, Acute Iridocyclitis, Staphyloma, Conjunctivitis, Glaucoma, Dry Eye Syndrome, Refractive Errors like Myopia, Hypermetropia & Astigmatism, Cataract, Eale's Disease, Hypertensive & Diabetic Retinopathy, Age Related Macular Degeneration, Strabismus, Retinitis Pigmentosa, Night Blindness, Amblyopia, Central Serous Retinopathy, Optic Neuritis and Optic Atrophy.
7. Establishment of Superiority of Shiras among the organs. Determination and importance of verse Nasa Hi Shiraso Dwaram.
8. Descriptive knowledge of Etiology, Pathogenesis, Prodromal symptoms, Classification, Clinical features, Upashaya, Anupashaya, Sadhyasadyata of Shirashoola, Suryavarta, Ardhavabedaka, Khalitya & Palitya, Indralupta, Anantavata, Darunaka with modern correlation like Headache, Migraine.
9. Descriptive knowledge of Etiology, Pathogenesis, Prodromal symptoms, Classification, Clinical features, Upashaya, Anupashaya, Sadhyasadyata of Karna Shoola, Karna Nada & Kshweda, Badirya, Karnasrava, Karna Pratinaha, Pootikarna,

Karnagoothaka, Karnavidradhi, Karnapali Rogas with Modern Correlation like Otagia, ASOM, CSOM, Deafness, Ear Wax, Otomycosis, Otosclerosis, Tinnitus, Vertigo.

10. Descriptive knowledge of Etiology, Pathogenesis, Prodromal symptoms, Classification, Clinical features, Upashaya, Anupashaya, Sadhyasadyata of Pratishyaya, Dusta Pratishyaya, Nasanaha, Kshavathu, Nasagata Raktapitta & Nasa Arsha, Putinasa, Bramshatu, Peenasa, Apeenasa, Nasarbuda, Nasadipta with Modern Correlation like Rhinitis & Sinusitis, Epistaxis, Nasal Polyp, DNS, Nasal Trauma, Tumours of Nose & Para Nasal Sinuses.
11. Detailed study of Etiology, Pathology, Classification, Clinical Features and Management of Oshtha Prakopa, Khandosta, Gandalaji, Jalarbuda, Cleft Lip, Sheetada, Dantavestaka, Upakusha with Modern Correlation like Gingivitis, Apical Abscess, Periodontitis.
12. Detailed study of Etiology, Pathology, Classification, Clinical Features and Management of Dalana, Krimidanta, Hanumoksha, Kapalika with Modern Correlation like Dental Caries, Dental Tartar and Tooth Extraction.
13. Detailed study of Etiology, Pathology, Classification, Clinical Features and Management of Gala Shundika, Talu Paka, Adrusha, Kachhapa with Modern Correlation like Cleft Palate, Palatitis and Tumours of Palate.
14. Detailed study of Etiology, Pathology, Classification, Clinical Features and Management of Tundikeri, Kanta Shaluka, Gilayu, Galaganda, Rohini with Modern Correlation like Pharyngitis, Tonsillitis & Adenoiditis.

## **SHALYATANTRA**

### **Shalya Siddhanta - Fundamentals of Surgery**

1. Sushruta's contributions in surgical concepts and practices.
2. Knowledge of Dosha, Dhatu and Mala Vigyan and their importance in surgical diseases.
3. Significance and importance of Rakta as the Chaturth Dosha.
4. Yantras and Shastras – Surgical Instruments - Ancient and recent advances.
5. Trividha Karma – Purva, Pradhana and Pashchat Karma and their Importance.
6. Applicability of Shat Kriyakala in the pathogenesis of surgical diseases.
7. Asepsis and Antisepsis.
8. Nirjivakarana-Sterilization-Variou methods for surgical equipments, endoscopies, linen and Operation theatre.
9. Surgical infections – Sepsis, Tetanus and Gas gangrene.
10. Care of patients suffering from Hepatitis, HIV-AIDS, STD and other associated infectious diseases.
11. Ashtavidha Shastra Karma – Critical knowledge and their application in surgical practice.
12. Suturing materials, appropriate use of sutures, drains, prosthetic, grafts and surgical implants.
13. Concept of Marma and their clinical application.
14. Shock - Its varieties and management.
15. Raktasrava / Haemorrhage – Types, Clinical features and Management.
16. Concept of Raktastambhana –Haemostasis.
17. Blood Transfusion – Blood groups, compatibility, Indications, Contraindications and complications with management.
18. Fluid, electrolyte, Acid Base Balance and Nutrition
19. Vranasopha – Inflammation and Vidradhi – Abscess
20. Granthi – Cyst and Arbuda – Benign and malignant Neoplasm – Concept of Oncogenesis and genetics of cancer.
21. Gulma and Udara Roga.
22. Kshudra Roga.
23. Knowledge of antibiotics, analgesics, anti-inflammatory and emergency drugs in surgical practice.

### **Vishishta Shalya Vigyana - Shalya Tantra Speciality:**

1. Yogya Vidhi - Practical and Experimental training
2. Vrana-Wound management
3. Mutra Roga-Urological diseases.
4. Asthi roga and Marma Chikitsa-Orthopaedics

## **Adhunik Shalya Karma - Modern surgery**

1. Fundamentals of modern surgery and treatment of surgical disorders including surgical anatomy, physiology and pathology.
2. Diagnosis and Surgical treatment of head and spine injury, thoracic and abdominal trauma. Blast injuries and Management
3. Diagnosis and Surgical management of neck disorders e.g. salivary glands, thyroid, Thyroglossal cyst and Fistula, Branchial cyst and fistula, Cystic hygroma and Lymphadenopathies.
4. Diagnosis and Surgical management of breast diseases- Benign and Malignant breast tumours.
5. Diagnosis and Surgical measures of diseases of Gastrointestinal system-
6. Umbilicus and abdominal wall – Congenital anomalies, Umbilical infections, Sinus, Neoplasm, Abdominal dehiscence, Divarication of recti, Desmoid tumor and Meleney's gangrene.
7. Diagnosis and surgical measures of diseases of Hepatobiliary system-
8. Diagnosis and surgical measures for disorders of Artery, Vein, Ligaments, Muscles and Tendons.
9. Diagnosis and surgical management of Hernias-Inguinal, Femoral, Umbilical, Incisional, Abdominal wall and other hernias.
10. Endoscopic procedures - Oesophagogastroduodenoscopy, Sigmoidoscopy and Colonoscopy.
11. Diagnostic and therapeutic laparoscopy.
12. Anaesthesia - Definition, Types, Anesthetic agents, Indications, Contraindications, Procedures, Complications and management.

## **Shalya Vangmaya-Shalya literature, Research and Development**

1. Critical study of the Sushruta Samhita and relevant portions of Shalyatantra in Brihatrayee and Laghutrayee.
2. Knowledge and importance of Surgical Audit.
3. Surgical ethics, including Informed consent.
4. Sandhana Karma-Plastic reconstructive and cosmetic surgery.
5. Anushalya Karma-Parasurgical procedures.

## **SWASTHAVRITTA & YOGA**

### **(COMMUNITY MEDICINE)**

#### **(Preventive, Social Medicine & Yoga)**

1. Concept of Health and Disease. Various definitions of Swastha, Swasthya, Arogya lakshanas, dimensions of health. WHO definition of health, concept of well being.
2. Role of Dinacharya in Health Promotion.
3. Importance of Rutucharya in the prevention of diseases. Role of Rutu kaleena shodana in disease prevention.
4. Concept of Dharaniya and Adharaniya Vega in health promotion and prevention of diseases.
5. Role of Sadvritta in the prevention and control of diseases.
6. Concept of Ahara- its importance, Ahara vidhi vidhana, Dwadashaashana pravichara Ashta ahara vidhi visheshayatana, types of ashana, viruddha ahara & its effects, shadrasa bhojana mahatwa, sources and deficiency diseases of nutrients, nitya sevaneeya ahara dravya, balanced diet, pasteurization of milk, food born diseases, food adulteration, pathyaapathya in life style disorders.
7. Concept of Nidra- its relation with health, properties of yukta nidra, types of nidra, duration of sleep according to age.
8. Concept of Brahmacharya- importance of Naishtiki and Vaivahika Brahmacharya, methods of Veerya raksha.
9. Concept of Vyadhikshamatva- definition, correlation with bala and oja, classification of immunity, immunization schedule.
10. Rasayana for swastha.
11. Concept of Ashta nindita purusha.
12. Air-composition, comfort zone, air pollution, prevention & control measures, ventilation types.
13. Jala-importance, safe and wholesome water, sources of water, properties of different types of jala, water born diseases, methods of water purification, hardness of water.
14. Housing standards.
15. Requirement of good lighting, biological effects of lighting.
16. Effects and control of Radiation.
17. Epidemiology of different communicable diseases.
18. Non communicable diseases.
19. Levels of disease prevention.



20. Vital Statistics.
21. National Health Policy Alma Ata Declaration.
22. Health Administration.
23. National health programs and nutritional programs
24. Different Schools of Yoga.
25. Concept of Panchakosh theory.
26. Astang Yoga
27. Pranayama
28. Role of Shatkarma in body Purification.
29. Therapeutic effect of Yogic Practice.
30. Naturopathy (Jala, Mruttika, mardana, upavasa, vishrama chikitsa)
31. Naturopathy diet types.
32. Preventive Geriatrics.
33. Family planning Methods, MCH programs.
34. WHO and International health agencies.