

M.S.-AYURVEDA

PRELIMINARY PAPER-I
RESEARCH METHODOLOGY AND MEDICAL STATISTICS

PART-A
RESEARCH METHODOLOGY

- 1 Introduction to Research**
 - A. Definition of the term research
 - B. Definition of the term anusandhan
 - C. Need of research in the field of Ayurveda

- 2 General guidelines and steps in the research process**
 - A. Selection of the research problem
 - B. Literature review: different methods (including computer database) with their advantages and limitations
 - C. Defining research problem and formulation of hypothesis
 - D. Defining general and specific objectives
 - E. Research design: observational and interventional, descriptive and analytical, preclinical and clinical, qualitative and quantitative
 - F. Sample design
 - G. Collection of the data
 - H. Analysis of data.
 - I. Generalization and interpretation, evaluation and assessment of hypothesis.
 - J. Ethical aspects related to human and animal experimentation.
 - K. Information about Institutional Ethics Committee (IEC) and Animal Ethics Committee (AEC) and their functions. Procedure to obtain clearance from respective committees, including filling up of the consent forms and information sheets and publication ethics.

- 3 Preparation of research proposals in different disciplines for submission to funding agencies taking EMR-AYUSH scheme as a model.**

- 4. Scientific writing and publication skills.**
 - a. Familiarization with publication guidelines- Journal specific and CONSORT guidelines.
 - b. Different types of referencing and bibliography.
 - c. Thesis/Dissertation: contents and structure
 - d. Research articles structuring: Introduction, Methods, Results and Discussions (IMRAD)

- 5 Classical Methods of Research. Tadvidya sambhasha, vadmarga and tantrayukti**
Concept of Pratyakshadi Pramana Pariksha, their types and application for Research in Ayurveda.

Dravya-, Guna-, Karma-Parikshana Paddhati
Aushadhi-yog Parikshana Paddhati
Swastha, Atura Pariksha Paddhati
Dashvidha Parikshya Bhava
Tadvidya sambhasha, vadmarga and tantrayukti

6 Comparison between methods of research in Ayurveda (Pratigya, Hetu, Udaharana, Upanaya, Nigaman) and contemporary methods in health sciences.

7. Different fields of Research in Ayurveda

- a. Fundamental research on concepts of Ayurveda
- b. Panchamahabhuta and tridosha.
- c. Concepts of rasa, guna, virya, vipak, prabhav and karma
- d. Concept of prakriti-saradi bhava, ojas, srotas, agni, aam and koshta.

8. Literary Research-

Introduction to manuscriptology: Definition and scope. Collection, conservation, cataloguing.

Data mining techniques, searching methods for new literature; search of new concepts in the available literature. Methods for searching internal and external evidences about authors, concepts and development of particular body of knowledge.

9. Drug Research (Laboratory-based)- Basic knowledge of the following:

Drug sources: plant, animal and mineral. Methods of drug identification.

Quality control and standardization aspects: Basic knowledge of Pharmacopoeial standards and parameters set by Ayurvedic Pharmacopoeia of India.

Information on WHO guidelines for standardization of herbal preparations. Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP).

10. Safety aspects: Protocols for assessing acute, sub-acute and chronic toxicity studies. Familiarization with AYUSH guidelines (Rule 170), CDCSO and OECD guidelines.

11. Introduction to latest Trends in Drug Discovery and Drug Development

- Brief information on the traditional drug discovery process
- Brief information on the latest trends in the Drug Discovery process through employment of rational approach techniques; anti-sense approach, use of micro and macro-arrays, cell culture based assays, use of concepts of systems biology and network physiology
- Brief introduction to the process of Drug development

12. Clinical research:

Introduction to Clinical Research Methodology identifying the priority areas of Ayurveda

Basic knowledge of the following:-

Observational and Interventional studies

Descriptive & Analytical studies

Longitudinal & Cross sectional studies

Prospective & Retrospectives studies

Cohort studies

Randomized Controlled Trials (RCT) & their types
Single-case design, case control studies, ethnographic studies, black box design, cross-over design, factorial design.

Errors and bias in research.

New concepts in clinical trial- Adaptive clinical trials/ Good clinical practices (GCP)

Phases of Clinical studies: 0,1,2,3, and 4.

Survey studies -

Methodology, types, utility and analysis of Qualitative Research methods. Concepts of in-depth interview and Focus Group

Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives. National Pharmacovigilance Programme for ASU drugs.

14. Introduction to bioinformatics, scope of bioinformatics, role of computers in biology. Introduction to Database- Pub med, Medlar and Scopus. Accession of databases.

15. Intellectual Property Rights- Different aspect and steps in patenting. Information on Traditional Knowledge Digital Library (TKDL).

PART-B

40 marks

MEDICAL STATISTICS

Teaching hours: 80

1 Definition of Statistics : Concepts, relevance and general applications of Biostatistics in Ayurveda

Collection, classification, presentation, analysis and interpretation of data
(Definition, utility and methods)

2 Scales of Measurements - nominal, ordinal, interval and ratio scales.

Types of variables – Continuous, discrete, dependent and independent variables.

Type of series – Simple, Continuous and Discrete

3 Measures of Central tendency – Mean, Median and Mode.

4 Variability: Types and measures of variability – Range, Quartile deviation, Percentile, Mean deviation and Standard deviation

5 Probability: Definitions, types and laws of probability,

6 Normal distribution: Concept and Properties, Sampling distribution, Standard Error, Confidence Interval and its application in interpretation of results and normal probability curve.

7 Fundamentals of testing of hypotheses:

Null and alternate hypotheses, type I and type 2 errors.

Tests of significance: Parametric and Non-Parametric tests, level of significance and power of the test, 'P' value and its interpretation, statistical significance and clinical significance

8 Univariate analysis of categorical data:

Confidence interval of incidence and prevalence, Odds ratio, relative risk and Risk difference, and their confidence intervals

9 Parametric tests:

‘Z’ test, Student’s ‘t’ test: paired and unpaired, ‘F’ test, Analysis of variance(ANOVA) test, repeated measures analysis of variance

10 Non parametric methods:

Chi-square test, Fisher’s exact test, McNemar’s test, Wilcoxon test, Mann-Whitney U test, Kruskal – Wallis with relevant post hoc tests (Dunn)

11 Correlation and regression analysis:

Concept, properties, computation and applications of correlation, Simple linear correlation, Karl Pearson’s correlation co-efficient, Spearman’s rank correlation.
Regression- simple and multiple.

12 Sampling and Sample size computation for Ayurvedic research:

Population and sample. Advantages of sampling, Random (Probability) and non random (Non- probability) sampling. Merits of random sampling. Random sampling methods- simple random, stratified, systematic, cluster and multiphase sampling. Concept, logic and requirement of sample size computation, computation of sample size for comparing two means, two proportions, estimating mean and proportions.

13 Vital statistics and Demography:

computation and applications - Rate, Ratio, Proportion, Mortality and fertility rates, Attack rate and hospital-related statistics

14 Familiarization with the use of Statistical software like SPSS/Graph Pad

PRACTICAL

100 marks

I. RESEARCH METHODOLOGY

Teaching hours 120

PRACTICAL NAME

1 Pharmaceutical Chemistry

Familiarization and demonstration of common lab instruments for carrying out analysis as per API

2 Awareness of Chromatographic Techniques

Demonstration or Video clips of following:

- Thin-layer chromatography (TLC).
- Column chromatography (CC).
- Flash chromatography (FC)
- High-performance thin-layer chromatography (HPTLC)
- High Performance (Pressure) Liquid Chromatography (HPLC)
- Gas Chromatography (GC, GLC)

4 Pharmacognosy

Familiarization and Demonstration of different techniques related to:-Drug administration techniques- oral and parenteral.

Blood collection by orbital plexuses puncturing.

Techniques of anesthesia and euthanasia.

Information about different types of laboratory animals used in experimental research
Drug identification as per API including organoleptic evaluation

5 Pharmacology and toxicology

Familiarization and demonstration of techniques related to pharmacology and toxicology

6 Biochemistry (Clinical)

Familiarization and demonstration of techniques related to basic instruments used in a clinical biochemistry laboratory – semi and fully automated clinical analyzers, electrolyte analyzer, ELISA-techniques, nephelometry.

Demonstration of blood sugar estimation, lipid profiles, kidney function test, liver function test. HbA1, cystatin and microalbumin estimation by nephelometry or other suitable techniques. Interpretation of the results obtained in the light of the data on normal values.

7 Clinical Pathology

Familiarization and demonstration of techniques related to basic and advanced instruments used in a basic clinical

pathology lab. Auto cell counter, urine analyzer, ESR, microscopic examination of urine.

8 Imaging Sciences

Familiarization and demonstration of techniques related to the imaging techniques. Video film demonstration of CT-Scan, MRI-scan and PET-scan.

9 Clinical protocol development

II. MEDICAL STATISTICS

Practical hours:20

Statistical exercise of examples from Topic number 4, 5, 8-12, 14, 15. Records to be prepared.

Distribution of marks (practical):

1. Instrumental spotting test– 20 marks
2. Clinical protocol writing exercise on a given problem– 20 marks
3. Records:Research methodology -10 Mark
4. Medical statistics -10 marks
5. Viva- Voce -40 Marks

REFERENCE BOOKS:-

Pharmacognosy:

1. Aushotosh Kar “Pharmacognosy & Pharmacobiotechnology” New Age International Publisher. Latest Edition. New Delhi.
2. Drug Survey by Mayaram Uniyal
3. Fahn A (1981). Plant Anatomy 3rd Edition Pergamon Press, Oxford
4. Kokate, CK., Purohit, AP, Gokhale, SB (2010). Pharmacognosy. Nirali Prakashan. Pune.
5. Kokate, CK., Khandelwal and Gokhale, SB (1996). Practical Pharmacognosy. Nirali Prakashan. Pune.
6. Trease G E and Evans W C, Pharmacognosy, Bailliere Tindall, Eastbourne, U K.

7. Tyler V C., Brady, L R., and Robers J E., Pharmacognosy, Lea and Febiger, Philadelphia.
8. Tyler VE Jr and Schwarting AE., Experimental Pharmacognosy, Burgess Pub. Co, Minneapolis, Minnesota.
9. Wallis- TE (2011)- reprint. Practical Pharmacognosy (Fourth Edition) Pharma Med Press, Hyderabad.
10. Wallis T E, Analytical Microscopy, J & A Churchill limited, London.
11. Wallis T E., Text Book of Pharmacognosy, J & A Churchill Limited, London.
12. WHO guidelines on good agricultural and collection practices- (GACP) for medicinal plants (2003). World Health Organization- Geneva.
13. WHO monographs on selected medicinal plants (1999)—Vol. 1. 1.Plants, Medicinal 2.Herbs 3.Traditional medicine. ISBN 92 4 154517 8. WHO Geneva.

Pharmaceutical chemistry, quality control and drug standardization:

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1 to 3. Ministry of Health and Family Welfare. Controller of Publication. Govt of India. New Delhi.
2. Brain, KR and Turner, TD. (1975). The Practical Evaluation Phytopharmaceuticals. Wright Sciencetechnica, Bristol.
3. Galen Wood Ewing (1985). Instrumental Methods of Chemical Analysis. McGraw-Hill College ;Fifth edition
4. Harborne, JB (1973). Phytochemistry Methods. Chapman and Hall, International Edition, London.
5. HPTLC- Fingerprint atlas of Ayurvedic Single Plant Drugs mentioned in Ayurvedic Pharmacopoeia Vol- III and IV. CENTRAL COUNCIL FOR RESEARCH IN AYURVEDA AND SIDDHA. New Delhi.
6. Kapoor, RC (2010). Some observations on the metal based preparations in Indian System of Medicine. Indian Journal of Traditional Knowledge. 9(3): 562-575
7. Khopkar, S. M. Analytical Chemistry, New Age International Publishers , 3 rd edition
8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
9. Mahadik KR, Bothara K G. Principles of Chromatography by, 1st edition, Nirali Prakashan.
10. Qadry JS and Qadry S Z., Text book of Inorganic Pharmaceutical and Medicinal Chemistry, B. S.Shah Prakashan, Ahmedabad.
11. Quality Control Methods for Medicinal Plant Material. Reprint (2002). WHO- Geneva.
12. Rangari V.D., Pharmacognosy & Phytochemistry, Vol I, II, Career Publication,
13. Sharma BK. Instrumental Methods of Chemical Analysis by, Goel Publishing House.
14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
15. Stahl E., Thin Layer Chromatography - A Laboratory Handbook, Springer Verlag, Berlin.
16. Sukhdev Swami Handa, Suman Preet Singh Khanuja, Gennaro Longo and Dev Dutt Rakesh (2008).Extraction Technologies for Medicinal and Aromatic Plants -INTERNATIONAL CENTRE FOR SCIENCE AND HIGH TECHNOLOGY- Trieste,

Biochemistry and Laboratory techniques:

1. Asokan P. (2003) Analytical Biochemistry, China publications,
2. Campbell, P.N and A.D .Smith, Biochemistry Illustrated, 4th ed, Churchill Livingstone.
3. David Frifelder. W. H. Freeman. (1982). Physical Biochemistry by; 2 edition

4. David Sultan (2003). Text book of Radiology and Imaging, Vol-1, 7th Edition.
5. Deb, A.C., Fundamentals of Biochemistry, Books and Allied (P) Ltd, 2002.
6. Harold Varley. Practical Clinical Bio-chemistry
7. Kanai L. Mukherjee. Clinical Pathology; Medical Laboratory Technology Vol. I. Tata McGrawHill 1996, New Delhi.
8. Gradwohl, Clinical Laboratory-methods and diagnosis, Vol-I
9. Clinical Biochemistry -Sabitri Sanyal, Clinical Pathology, B.I. Churchill Livingstone (P) Ltd, New Delhi. 2000.
10. Satyanarayanan, U. Essentials of Biochemistry, Books and allied (P) Ltd. 2002
11. Zubay, G.L. Biochemistry, W.M.C. Brown Publishers, New York 1998.
12. Text book of Radiology and Imaging, Vol-1, David Sultan, 7th Edition. 2003.

Research methodology:

1. Alley, Michael. The craft of scientific writing. Englewood Cliffs. N.N. Prentice 1987.
2. Ayurvediya Anusandhan Paddhati – P.V. Sharma
3. Altick and Fenstermaker. (2007). *The Art of Literary Research*. 4th ed. W. W. Norton. Castle, Gregory. *Blackwell Guide to Literary Theory*. Blackwells,
4. Bowling, A. (2002). *Research Methods in Health* (2nd ed). Buckingham: Open University Press.
5. Day R.A. How to write a scientific paper. Cambridge University Press.
6. Cooray P.G. Guide to scientific and technical writing.
7. Deepika Chawla and Neena Sondhi. (2011). *Research Methods- Concepts and cases*. New Delhi: Vikas Publishing House.
8. Greenhalgh, T. (2006) *How to Read a Paper: The Basics of Evidence-Based Medicine*. (3rd ed) Blackwell
9. Kothari- CR (2004). *Research Methodology- Methods and Techniques* (Second Revised Edition). New Age International Publishers- New Delhi.
10. Kumar, R. 2005. *Research Methodology: a Step-by-Step Guide for Beginners, 2nd ed*. Thousand Oaks, CA, London: Sage Publications.
11. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). *Research Methodology in the Medical and Biological sciences*. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
12. Relevant portions of Ayurvedic Samhitas and other texts

Drug research and development:

1. RICK NG, (2009). *DRUGS- from discovery to approval*. John Wiley & Sons, Inc., Hoboken, New Jersey
2. Research guidelines for evaluating the safety and efficacy of herbal medicines. (1993). . WHO- (Regional Office for the Western Pacific – Manila) ISBN 92 9061 110 3 (NLM Classification: WB925).
3. Jagdeesh, Sreekant Murthy, Gupta, YK and Amitabh Prakash Eds. *Biomedical Research (From Ideation to Publication)* (2010). Wolters Kluwer/ Lippincott Williams and Wilkins.
4. WHO Guidelines on Safety Monitoring of herbal medicines in pharmacovigilance systems. (2004). WHO- Geneva. ISBN 92 4 1592214.
5. Natural products isolation. (2006) 2nd ed. / edited by Satyajit D. Sarker, Zahid Latif, Alexander I. Gray. (Methods in biotechnology; 20). Includes bibliographical references and

index. Humana Press Inc. ISBN 1-58829-447-1 (acid-free paper) – ISBN 1-59259-955-9 (eISBN)

6. Gazette Extraordinary Part- II-Section 3 - Sub section (i) December 2008. Govt of India. AYUSH Guidelines on safety studies- Rule 170 of Drugs and Cosmetics Act.
7. OECD (2000) Guidance Document on Acute Oral Toxicity. Environmental Health and Safety Monograph Series on Testing and Assessment No 24.
8. OECD Guideline for the Testing of Chemicals – Repeated Dose 90-day Oral Toxicity Study in Rodents, 408, 1998. <http://browse.oecdbookshop.org/oecd/pdfs/free/9740801e.pdf> (latest version)
9. OECD Series on Principles of Good Laboratory Practice (GLP) and Compliance Monitoring, 1998. http://www.oecd.org/document/63/0,2340,en_2649_34381_2346175_1_1_1_1,00.php
10. ICH Harmonised Tripartite Guideline (2000). Maintenance of the ICH Guideline on Non-clinical Safety Studies for the conduct of Human Clinical Trials for Pharmaceuticals M3 (R1).
11. Ghosh M.N.: Fundamentals of Experimental Pharmacology, *Scientific Book Agency, Bombay.*
12. Jaju B.P.: Pharmacological Practical Exercise Book, *Jaypee Brothers, New Delhi.*
13. Kulkarni S.K.: Hand Book of Experimental Pharmacology, *Vallabh Prakashan, New Delhi*
14. Ravindran R.: X-Pharm (Software), Indian Journal of Pharmacology, *JIPMER, Pondicherry.*

Biotechnology and Bio-informatics:

1. Angela M. Meireles A (2009). Extracting Bioactive compounds for food products. Theory and applications. CRC- Press Taylor and Francis Group.
2. Bergeron BP 2002 Bioinformatics Computing 1st Edition, Prentice Hall
3. Chikhale, N.J. and Virendra Gomase, Bioinformatics- Theory and Practice, Publisher: Himalaya Publication House, India; 1 edition (July, 2007) ISBN-13: 978-81-8318-831-9
4. Lesk, A.M. Introduction to Bioinformatics Oxford 2002.
5. Satyanarayana, U.: Biotechnology, Books and Allied (P) Ltd, Kolkata, 2005
6. Setubal J. C and J. Meidanis, Introduction to Computational Molecular Biology, PWS Publishing Company, 1997.
7. <http://www.iitb.ac.in/~crnts>.
8. <http://www.zygogen.com>.
9. <http://www.dsir.nic.in/reports/tifp/database/metallo.pdf>.
10. www.consort-statement.org
11. www.strobe-statement.org
12. www.icmr.nic.in

Clinical Evaluation:

1. CDSCO, Good Clinical Practices For Clinical Research in India, Schedule Y (Amended Version –2005), <http://cdsco.nic.in/html/GCPI.php>
2. Ethical Guidelines for Biomedical Research on Human subjects. (2000). Indian Council of Medical Research- New Delhi.
3. Gallo P., Chuang-Stein C., Dragalin V., Gaydos B., Krams M., Pinheiro J. Adaptive Designs

in Clinical Drug Development—An Executive Summary of the PhRMA Working Group. *Journal of Biopharmaceutical Statistics*. 16: 275–283; 2006

4. Good Clinical Practices- (2001). Guidelines for Clinical Trial on Pharmaceutical Products in India. Central Drugs Standard Control Organization. Directorate General of Health Services. New Delhi. (<http://WWW.cdsc.nic.in.ich.org>)
5. Gupta, SK Ed. Basic Principles of Clinical Research and Methodology (2007). Jaypee Brothers-new Delhi
6. ICH Harmonised Tripartite Guidelines for Good Clinical Practices.(1997)- Quintiles- Published by Brookwood Medical Publications. Richmond, Surrey. United Kingdom.
7. NCI. *Clinical Trials Education Series*. <http://www.cancer.gov/clinicaltrials/learning/clinical-trials-education-series>, 2001.
8. Petter Laake, Haakon Breien Benestad and Bjørn Reino Olsen. (2007). Research Methodology in the Medical and Biological sciences. Academic Press is an imprint of Elsevier, 84 Theobald's Road, London WC1X 8RR, UK. ISBN: 978-0-12-373874-5
9. William C. Scheffer Introduction to Clinical Researchs

Medical Statistics:

1. Armitage, P. and Berry, G. (1994) Statistical Methods in Medical Research (3rd ed). Blackwell Science.
2. Armitage P, Berry G, Matthews JNS: *Statistical Methods in Medical Research*. Fourth edition. Oxford, Blackwell Science Ltd; 2002
3. Bland, M. (2000) An Introduction to Medical Statistics (3rd ed). Oxford: Oxford University Press.
4. Bradford Hill – Basic Medical Statistics
5. Cambell, M.J. and Machin, D. (1993) Medical Statistics: A Common Sense Approach (2nd ed). Chester: Wiley.
6. Dwivedi S. N., Sundaram K. R and V. Sreenivas (2009). Medical Statistics - Principles & Methods-BI Publications Pvt. Ltd., New Delhi –1.
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8. Indrayan. (2008). Basic Methods of Medical Research. AITBS Publishers- India
9. Mahajan B K, Methods in Bio statistics for medical students, 5th Ed. New Delhi, Jaypee Brothers Medical Publishers
10. Mehdi, B and Prakash A. (2010). Biostatistics in Pharmacology. Practical Manual in experimental and clinical pharmacology. 1st Edition. New-Delhi: Jaypee brothers Medical Publishers
11. Rao, NSN and Murthy, NS. (2008) 2nd Edition. Applied statistics in health sciences. Jaypee Brothers Medical Publishers (P) Ltd. Bengaluru, New Delhi.
12. Rick J Turner and Todd A Durham (2008). Introduction to Statistics in Pharmaceutical Clinical trials. Published by the Pharmaceutical Press- An imprint of RPS Publishing, 1 Lambeth High Street, London SE1 7JN, UK
13. Symalan, K. (2006). Statistics in Medicine (First Edition) Trivandrum: Global Education Bureau.
14. Sundar Rao, Jesudian Richard - An Introduction to Biostatistics.
15. Suhas Kumar Shetty- Medical statistics made easy

PRELIMINARY
PAPER-II

M.S. (AYU) SHALYA TANTRA – GENERAL SURGERY
FUNDAMENTAL PRINCIPLES AND APPLIED ASPECTS OF SHALYA TANTRA

THEORY- 100 MARKS
TEACHING HOURS – 100 HRS

PART A 50 MARKS

1. Etymology, Definition, Scope and Importance of Shalya Tantra.
2. Study of Sushruta Samhita Sutra Sthana from 1st to 29th chapter.
3. Study of modern surgical clinical methodology.
4. Applied anatomy, physiology and surgical pathology of common surgical conditions including relevant Ayurvedic aspects.
5. Applied aspect of Shat Kriyakala in the pathogenesis of surgical diseases.
6. Applied aspect of Prakriti in understanding the causes and role of treatment in surgical diseases.
7. Applied aspect of basic principles of Ayurveda in Rogi Pariksha (Trividha, Shadvidha, Ashtavidha and Dashavidha Pariksha).
8. Concept and applied aspect of Sadhya-Asadhya (Prognosis) - Arishtha lakshana.
9. Marma Sharira – Etymological derivation, definition, basic concept of Marma, origin, classification, Pramana. Consequences of Marmaghata and their management.
10. Concept of Shock - Its varieties, etiopathogenesis and management – Cardiopulmonary resuscitation (CPR), Endo-tracheal intubation and Tracheostomy. Drug reactions and Anaphylaxis – Management.
11. Basics of Fluid, Electrolyte, Acid Base Balance and Nutrition
12. Antibiotics, Analgesics, Anti-inflammatory and Emergency drugs in surgical practice.
13. Surgical Emergency conditions and its management.
14. Sushruta's concept of Rakta. Raktasrava – Haemorrhage – Types, Patho-physiology, clinical features and management. Concept of Raktastambhana – Haemostasis. Bloodtransfusion – Indications, blood groups, components, compatibility and complications with management.
15. Medico-legal aspects in Surgery. Knowledge of documentation and record keeping.

PART B 50 marks

16. Knowledge of ancient and recent Yantra and Shastra – Surgical instruments and their application in surgical practice.
17. Asepsis and Antisepsis. Sterilisation (Nirjivanukaran) - methods and types.
18. Surgical infections – Sepsis, Cellulitis, Erysipelas, Tetanus, Gas gangrene. Handling and care of HIV and Hepatitis positive patients. Knowledge of conditions like Bacteraemia, Septicaemia, Toxaemia and Pyaemia
19. Sangyahan / Anesthesiology - Types, methods, indications, contraindications, complications and its management.

20. Trividha Karma – Purva, Pradhan and Pashchat Karma. Modern principles of preoperative and post-operative care.
21. Ashtavidha Shastra Karmas.
22. Bandhana Karma – Recent advances.
23. Kshara Karma – Introduction, types, method of various preparations like Kshara, Kshara Varti, Kshara Pichu and applications.
24. Kshara Sutra – Method of preparation, standardization and applications.
25. Agnikarma – Introduction, types and applications.
26. Raktamokshana – Introduction, types and applications.
27. Application of Panchakarma therapy in surgical practice.
28. Scope of Pathya-Apathya in the management of surgical diseases.

PRACTICAL 100 MARKS

Content:

1. Hospital duties in OPD, IPD, OT and Casualty.
2. Case record – 50 cases.
3. Surgical cases – Observing/Assisting/Performing- 50 cases.
4. Knowledge of instruments required in surgical practices.
5. Ayurvedic and Modern diagnostic and therapeutic procedures.
6. Fluid therapy and blood transfusion.
7. Contraception and sterilizations.
8. Pre-operative, operative and post operative procedures.
9. Practical training of local Anaesthesia.
10. Interpretation of Imaging techniques.
11. Practical knowledge of Yogya vidhi – Experimental surgery and Simulators.

Distribution of marks (practical):

1. Presentation of related Research work like Synopsis and Case record - 20 marks
2. Bedside clinical case taking Long case - 20 marks
- Short case - 10 marks
3. Identification of instruments, X-ray etc - 10 marks
4. Demonstration of Surgical and Parasurgical Procedure - 10 marks
5. Viva voce - 30 marks

REFERENCE BOOKS:

1. Sushruta Samhita
2. Ashtanga Sangraha
3. Ashtanga Hridaya
4. Charaka Samhita
5. The Surgical instruments of the Hindus - Girindranath Mukhopadhyaya
6. Shalya Tantra Samuchchaya - Pandit Ramadesh Sharma
7. Shalya Vigyan (Part 1-2) - Dr. Surendra Kumar Sharma
8. Shalya Samanvaya (Part 1-2) - Vd. Anantaram Sharma
9. Shalya Pradeepika - Dr. Mukund Swaroop Verma

- 10.Soushruti - Dr. Ram Nath Dwivedi
- 11.Clinical Shalya Vigyan - Dr. Akhilanand Sharma
- 12.Bhagna Chikitsa - Dr. Prabhakar Janardhan
Deshpande
- 13.Kshara sutra management in anorectal ailments - Dr. S.K. Sharma, Dr. K.R.Sharma
and Dr. Kulwant Singh.
- 14.A manual on Fistula-in-ano and Ksharasutra Therapy – Dr. Manoranjan Sahu
- 15.Recent trends in the management of
Arshas / Haemorrhoids - Dr. P. Hemantha Kumar
- 16.Anorectal diseases in Ayurveda - Dr. Sizoria and Dr. Praveen
CCIM MS Ayurved –Shalya Tantra Syllabus Page 3 of 3
Kumar Chowdary.
- 17.Adhunika Shalya Chikitsa Siddanta - Dr. Katil Narshingham Udupa
- 18.Agnikarma Technology Innovation - Dr. P.D. Gupta
- 19.Shalya Tantra Ke Siddhant - Dr. K.K.Takral
- 20.Arsha Evum Bhagander Mein sutra Avacharan - Vd. Kanak Prasad Vyas
- 21.Recent advances in Kshara Sutra - Dr. M. Bhaskar Rao
22. Leech application in Ayurveda - Dr. M. Bhaskar Rao
- 23.Kshara Sutra - Dr. S.N.Pathak
24. Text book of Shalya Tantra (Ayurvedic Surgery) - Dr. P. Hemantha Kumar
- 25.Shalya Shalaky Tantra - Vd. S.G. Joshi
- 26.Surgical ethics of Ayurveda - Dr. D.N. Pande
- 27.Anushastra Karma - Dr. D.N. Pande
- 28.Concept of Vrana is Ayurveda - Dr. Lakshman Singh
- 29.Significance for Poorva Karma in Surgical Patient - Dr. Lakshman Singh
- 30.Sangyahan Prakash - Dr. D.N. Pande
31. Marma Science and Principles of Marma Therapy – Dr. Sunil Kumar Joshi
- 32.Recent trends in the management of Bhagandara / Fistula-in-ano
- Dr. P. Hemantha Kumar
33. Principles and Practice of Agnikarma - Dr. Anand Kumar and
Dr. Kanchan Shekokar.
- 34.Shalya Vigyan (Sachitra) - Anantram Sharma
35. Text book of Surgery - Sabistan
36. Operative Surgery – Rob and smith
- 37.Bailey and Love’s Short Practice of Surgery - Norman.S. Williams, Charles.V.
Mann and R.C.G. Russell
38. Text books of Operative Surgery - Farquharson’s
39. Principles of Surgery - Schwartz
40. Emergency Surgery - Hamilton Bailey’s
41. Manipal Manual of Surgery - Dr. Rajgopal Shenoy
- 42.SRB’s Manual of Surgery - Sriram Bhat M
- 43.Surgery of the Anus, Rectum and Colon - John Goligher
- 44.Surgical pathology - Willing Worth
- 45.Clinical methods in surgery - S. Das

46. Textbook of Operative Surgery - S. Das
47. A concise Text Book of Surgery - S. Das
48. A manual on Clinical Surgery - S. Das
49. A System of Surgical Diagnosis - T.N. Patel
50. Clinical Anatomy/ Surgical Anatomy - John E. Skandalakis
51. A Practical Guide to Operative Surgery - S. Das
52. Manual of Surgical Instruments - M.M. Kapur
53. Ward Procedures - Patel Mansukh. B
54. Drugs and Equipment for Anaesthesia - Arun kumar
55. Primary Anaesthesia - Maurice King
56. Synopsis of Anaesthesia - Lee
57. Outline of Orthopedics - John Crawford Adams and David Hamblen. L
58. Fractures and Joint Injuries - Watson-Jones
59. Outline of Fracture - John Crawford Adams



POST GRADUATE FINAL YEAR
MS (AYU) SHALYA TANTRA – GENERAL SURGERY

PAPER – I Shalya Tantra Vangmaya – Literature, Research and Development 100 Marks 100 Hours

1. Thorough study of the Sushruta Samhita including other relevant portions of Brihatrayee and Laghutrayee.
2. Knowledge and importance of Surgical Audit and Research.
3. Medico legal issues – Understanding the implications of acts of omission and commission in practice. Issues regarding Consumer Protection Act, medical profession, national health policy - Implications in a medico-legal case like accidents, assaults etc.
4. Surgical ethics including Informed consent.
5. Yogya Vidhi – Practical and Experimental training on different types of Surgical Models for Research in Surgery.
6. Clinical and diagnostic methods in Shalya Tantra - X-rays, U.S.G., Endoscopies (for diagnostic and treatment purposes), MRI, CAT scanning and other recent diagnostic tools.
7. Concept of Sandhana Karma – Plastic reconstructive and cosmetic surgery. Fundamentals of Sandhana Karma –
 - i. Karna Sandhana – Auroplasty
 - ii. Nasa Sandhana – Rhinoplasty
 - iii. Ostasandhana – Cheiloplasty
 - iv. Grafts and Flaps – Techniques and applications.
 - v. Vascular anastomosis and grafts.
8. Recent development on Sushruta's surgical principles and practices.

PAPER – II - SHALYA TANTRA VIGYAN 100 Marks 100 Hours

1. Vrana – Wound management
 - i. Management of Nija Vrana, Dushta Vrana and Nadi Vrana.
 - ii. Vrana Chikitsa – Shasti upakramas, Pathya-apathya.
 - iii. Wound and Ulcer.
 - iv. Dagdha Vrana – Burns, scalds, Dhumopaghata, Ushnavata, Frost bite, electric burns and their management.
 - v. Prameha Pidaka – Diabetic carbuncle, Diabetic wound and its management.
 - vi. Kotha – Gangrene and Principles of Amputation.
 - vii. Sadyo Vrana - Traumatic wounds – Nidana, Prakara, Lakshana, Upadrava and Chikitsa, Bites and stings and its management.
2. Pranasta Shalya – Diagnosis and management. 3. Vranashopha-Inflammation, Vidradhi – Abscesses and Pidika – Boils. 4. Granthi – Cyst and Arbuda – Benign and malignant Neoplasm.
5. Bhagna - Classification, Clinical features, Complications and Management.
6. Sandimoksha – Classification, Clinical features, Complications and Management.
7. Udara Roga - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.

8. Gulma Roga - Nidana, Prakara, Lakshana, Upadrava and Chikitsa.
9. Shoola vyadhi - Nidana, Prakara, Lakshana, Upadrava and Chikitsa.
10. Diseases of Rectum and Anal Canal – Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management of Arshas, Parikartika, Bhagandara, Guda Vidradi, Gudabhramsa and Sanniruddaguda.
11. Ashmari - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.
12. Mutraghata and Mutrakrichhra - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.
13. Niruddhaprakasha - Phimosis, Parivartika – Paraphimosis and Avapatika - Prepuceal ulcer.
14. Vriddhi Roga - Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and Management.

PAPER – III - ADHUNIK SHALYA KARMA - MODERN SURGERY 100 Marks 100 Hours

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 trauma and abdominal trauma. Blast injuries and Management.
3. Diagnosis and surgical measures for disorders of Artery, Vein, Ligaments, Muscles and Tendons.
4. Diagnosis and Surgical management of neck disorders e.g. salivary glands, thyroid, Thyroglossal cyst and Fistula, Branchial cyst and fistula, Cystic hygroma and Lymphadenopathies.
5. Diagnosis and Surgical management of breast diseases, Benign and Malignant breast tumours.
6. Diagnosis and Surgical measures of diseases of Gastrointestinal system -
 - i. Oral cavity - Oral ulcers, Oral cancer, Precancerous conditions, Submucosal fibrosis, Leukoplakia, Cleft lip and palate, Lip tumours, Mucosal cyst, Nasopharyngeal cancer, Tongue ulcer and cancer.
 - ii. Oesophagus - Oesophageal varices, Dysphagia, Neoplasm, Strictures and Gastro oesophageal reflux.
 - iii. Stomach and duodenum – Congenital anomalies, Injuries, Inflammation, Ulcer, Neoplasm, Pyloric stenosis, Acute dilatation ,Hiatus hernia and Foreign bodies.
 - iv. Pancreas - Congenital anomalies, Acute and Chronic pancreatitis, Calculi Neoplasm and Cysts of pancreas.
 - v. Peritoneum, Omentum, Mesentery, Retroperitoneal Space – Peritonitis, Abscess, Neoplasm, Mesenteric cyst, Torsion of mesentery, Vascular thrombosis, Retroperitoneal cyst and Fibrosis.
 - vi. Abdominal mass - Diagnosis and Management.
 - vii. Small intestine - Congenital anomalies, Inflammation, Ulcer, Neoplasm, Stenosis, Injuries, Foreign bodies, Diverticuli, Peutz-jeghers syndrome, Chron’s disease, Carcinoid tumours, Enteric perforation and Intestinal fistula.
 - viii. Large intestine - Congenital anomalies, Inflammation, Ulcer, Neoplasm, Stenosis, Injuries, Foreign bodies, Diverticuli, Faecal fistula, Amoebiasis and Familial polyposis coli.

- ix. Caecum and Vermiform appendix- Appendicitis, Appendicular abscess, Appendicular mass, Perforation, Carcinoid Tumor and other Neoplasm.
- x. Gastrointestinal bleeding – Haemetemesis, Malaena, Haemobilia, Bleeding per anum - Causes, Diagnosis and Management.
- xi. Rectum and anal canal - Diagnosis and Surgical management of Congenital Anomalies, Inflammation, Ulcer, Neoplasm, Stenosis, Prolapse, Haemorrhoids, Fistula-in-ano, Fissure-in-ano, Anorectal Abscess, Incontinence, Injuries, Foreign bodies and Pilonidal sinus.
7. Umbilicus and abdominal wall – Congenital anomalies, Umbilical infections, Sinus, Neoplasm and Desmoid tumor.
8. Diagnosis and surgical measures of diseases of Hepatobiliary system -
 - i. Liver – Abscess, Cyst - Hydatid cyst, Primary and Secondary malignant tumours, Portal Hypertension and Budd-Chiari Syndrome.
 - ii. Gall bladder and Bile duct - Congenital anomalies, Acute and Chronic Cholecystitis, Cholelithiasis, Neoplasm, Cholangitis, Stenosis, Choledocholith iasis, Choledochal cyst and Cholangiocarcinoma.
 - iii. Spleen – Splenomegaly and Splenic Injury.
9. Diagnosis and surgical management of Hernias – Inguinal, Femoral, Umbilical, Incisional, Abdominal wall and other hernias.
10. Endoscopic procedures - Oesophagogastroduodenoscopy, Sigmoidoscopy and Colonoscopy.
11. Principles of laproscopic surgery - Diagnostic and therapeutic laparoscopy.

PAPER –IV VISHISHTA SHALYA VIGYAN – SPECIALITY

The Scholar has to choose the any one of the Specialities amongst the following based on research area

PAPER – IV - Speciality No - 01 Anushastra Vigyan – Parasurgical Therapeutics 100 Marks
100 Hours

1. Kshara Karma and Prayoga – Caustic therapy
 - i. Introduction of different types of Kshara, Method of preparation, Standardization, pH value, Application, Complications and its management.
 - ii. Surgical Anatomy and Physiology of Anus and Rectum.
 - iii. Arshas - Nidana, Purvaroop, Roopa, Samprapti, Prakara and Chikitsa.
 - iv. Haemorrhoids - Aetio-pathogenesis, types and its surgical management. Knowledge of different methods of treating Haemorrhoids - Rubber band ligation, D.G.H.A.L, Radiofrequency, Ablation, Cryo-surgery, Cautery, Laser, Infrared coagulation and other advanced techniques.
 - v. Bhagandara - Nidana, Purvaroop, Roopa, Samprapti, Prakara, Chikitsa and application of Kshara Sutra.
 - vi. Fistula-in-ano - Definition, Aetio-Pathogenesis, Types, Diagnostic methods and its Surgical and parasurgical management including knowledge of Fibrin Glue, Advanced Flap Therapies and other recent techniques.
 - vii. Parikartika - Nidana, Samprapti and its Chikitsa.
 - viii. Fissure-in-ano - Aetio-pathogenesis, types and its management.
 - ix. Sannirudhaguda and its Chikitsa.

- x. Anal Stenosis - Aetio-pathogenesis and its management.
- xi. Gudavidradhi - Nidana, Purvaroop, Roopa, Samprapti, Prakara and its Chikitsa.
- xii. Anorectal abscesses – Aetio- pathogenesis, types, complications and its management.
- xiii. Foreign body in rectum and anal canal - Method of diagnosis and its management.
- xiv. Congenital Anorectal disorders and its management.
- xv. Anorectal tumour - Types and its management.

2. Agnikarma – Thermo therapy

- i. Introduction, definition and importance of Agnikarma.
- ii. Agnikarma - Poorva, Pradhana and Paschat karma, various substances and Shalaks used for Agnikarma and their indications, contra-indications and complications.
- iii. Knowledge of modern thermal equipment - Diathermy, Laser therapy, Microwave, Ultracission technique, Cryo Technique and its uses.
- iv. Effect of Agnikarma on skin, muscle tissue, nerves, metabolism, blood circulation and infective lesions.

3. Raktamokshana – Bloodletting Procedures

- i. Indications, contraindications and importance of Raktamokshana.
- ii. Justification of usage of different types of Raktamokshana in various therapeutic applications.
- iii. Different types of Raktamokshana – Sastrakritha - Siravyadhana, Prachana and Asastrakritha - Shringa, Jaluka, Alabu and Ghati.
- iv. Jalauka - Nirukti, Paryaya, Bhedha, Sangrahana, Samrakshana, Jalaukavacharana Vidhi - Poorva, Pradhana and Paschat karma.
- v. Knowledge of Leeches - Morphology, Anatomy, Physiology, Bio-chemical effects of its various constituents present in its saliva.

PAPER – IV - SPECIALITY NO–02 ASTHI SANDHI EVAM MARMA VIGYAN – ORTHOPAEDICS 100 marks 100 Hours

1. Asthi Sharira - Etymology, Embryology, Applied Anatomy and Physiology of Asthi. Its Panchbhautik constitution, Poshan (Nutrition), Asthivaha Srotas, Upadhatu and Mala. Total Number and classification of Asthi. Concept of Dhatwagni in Ayurveda. Asthi Dhatu Kshaya and Vriddhi lakshana. Knowledge about Tarunasthi. Embryology, Ossification, Histology, Metabolism, Blood Supply, Types and Biomechanics of Bone and cartilage.
2. Healing mechanism of bone and factors influencing the bone healing according to Ayurvedic and Modern concept. Biological and Biophysical technologies for the Enhancement of Fracture Repair. Knowledge of Sandhaniya and Ropaniya drugs.
3. Sandhi Sharira – Classification, Applied Anatomy and Physiology of Asthi Sandhi. Classification, Applied Anatomy and Physiology of Joints and Healing Mechanism of a joint.
4. Knowledge of Splints, Orthotics & Prosthetics.
5. Knowledge of Orthopedic implants (e.g. wires, screws, plates, nails) and Instruments. Knowledge of equipments (e.g. C-arm image intensifier and drill machines etc).
6. Concept of Pain according to Ayurved and Modern Medical science.
7. Principles of Reconstruction, Transplantation, Bone grafting, Bone Banking, Bone transportation and Amputation.
8. Vata Vikara – Asthi, Sandhi and Marma related Vata Vikara like Gridhrasi, Bisvachi,

Avabahuka, Manyastambha, Khalvi, Dhatugata vata, Snayugata vata, Katishoola, Katigraha.

9. Diseases pertaining to Muscles, Tendons, Ligaments, Fascia and Bursae.

10. Diseases and Congenital anomalies of Spine e.g. Ankylosing spondylitis, Infective conditions, Tuberculosis, Spondylolisthesis, Inter-vertebral Disc Prolapse, Spondylosis, Scoliosis, Kyphosis, spina bifida, Hemivertebra, Block vertebra, Sacralisation and Lumbrisation.

11. Diseases and Congenital anomalies of Cervical Spine

12. Diseases and Congenital anomalies Sacroiliac Joint and Bony Pelvis.

13. Diseases and Congenital anomalies of Hand.

14. Diseases and Congenital anomalies of Foot.

15. Diseases and Congenital anomalies of Limbs.

16. Orthopedic Neurological Disorders. Post Polio Paralysis & Cerebral Palsy.

17. Snehana, Swedana and Panchakarma in Marma, Asthi and Sandhi Vyadhi.

18. Yogic Practices in Orthopedics.

19. Principles of Arthroplasty- Joint Replacement.

20. Introduction of Peripheral Vascular Diseases.

21. Bhagna - Etiology, classification and General Management principles and Prognosis.

22. Modern concept of Bone and Joint injuries - Etiology, Epidemiology, Classification and General management principles.

23. Individual Bone and Joint injuries - Etiology, Epidemiology, Classification and management principles.

24. External immobilization techniques - Classical and traditional Kusha -splints, Plaster of Paris Technique, Knowledge of different splints and Plasters.

25. Pathological Fractures including Fragility fractures, Stress Fractures and Peri-prosthetic Fractures.

26. Fractures in Children – Etiology, Epidemiology, Diagnosis, management and complications.

27. Prognosis of skeletal injuries, Complications of Fractures and Joint Injuries e.g. Myositis ossificans, Volkman's ischemic contracture, Compartment syndrome, Crush Syndrome, DVT, Thromboembolism, Fat Embolism.

28. Rehabilitation of trauma patient and Principles of Sukhchestaprachara - Physiotherapy and its use in skeletal injuries.

29. Treatment Principles of Asahanta Bhagna - Non-unions, Vishmolvana Sahanta - Malunions and Ignored or un-reduced dislocations.

30. Diagnosis and management principles of injuries of Vessels, Nerves, Tendons and Ligaments.

31. Head, Chest and Abdominal Injuries and management principles.

32. Pelvis and Spine injuries and their management principles.

33. Sports medicine and sports injuries – Sports medicine and sports related Shoulder injuries, Elbow injuries, Knee injuries, Ankle Injuries, Recurrent Dislocations and other sports related injuries.

34. Knowledge of Conventional and advanced procedures being done for Different Bone and Joint Injuries e.g. Open Reduction and Internal Fixation, Closed Reduction and Internal Fixation, External fixators and other operative techniques.

35. Knowledge of Plastic Surgery in orthopedics and Bone grafting techniques.
36. Knowledge of various surgical procedures being done for Different Bone and Joint Diseases.
37. Hand Surgery for Diseases, Deformities and Injuries.
38. Foot Surgery for Diseases, Deformities and Injuries. 39. Amputations and Arthrodesis – General Principles of Amputations /Arthrodesis and regional Amputations. 40. Knowledge of Diagnostic and Therapeutic Arthroscopy.

PAPER – IV - SPECIALITY NO-03 SANGYAHARAN VIGYAN – ANAESTHESIOLOGY 100 MARKS 100 HOURS

1. Knowledge of disorders like Unmada, Apasmara, Mada, Murrcha, Sanyasa and Stabdhatta etc.
2. Madataya, Stages of Madataya and its management.
3. Pharmacology of Medhya, Vednasthapak, Madkari, Sangyasthapak, Nidrajanan, Akshepjanan and shamana , Svedjanan, Hridyae, Hridyotejak, Raktbharshamak, Shoolprashaman, Vaman and hrillashar (Antiemetic) dravya as mentioned in Ayurvedic samhita and their application in Sangyahan.
4. Aroma therapy as complementary and alternative therapy in pain management and Palliative care.
5. Sangyahan Bhesaja Vigyan (Pharmacology related to Anesthesia)
Pharmacology of:
 - Drugs acting on Autonomic nervous system:
 - a .Cholinergic system and drugs- Agonist and antagonist b .Adrenergic system and drugs- Agonist and antagonist
 - Autocoids and related drugs:
 - a. Histamine and Antihistaminic b. 5HT and antagonist c. NSAID'S d. Prostaglandins and leukotrienes
 - Drugs acting on Respiratory system
 - Drugs acting on Somatic nervous system
 - a. Skeletal muscle relaxants – Depolarizer and Non-Depolarizer. b. Local anesthetics
 - Drugs acting on central nervous system
 - a. General Anesthetics- Fixed and Volatile anesthetic agents. b. Sedative and hypnotics c. Anti epileptics d. Anti psychotic and anti-maniacs e. Opioids Analgesics and antagonists
 - Drugs acting on cardiovascular system
 - a. Cardiac glycosides b. Anti arrhythmic drugs c. Anti anginal and other anti ischemic drugs d. Anti hypertensive drugs
 - Drugs acting on Kidneys
 - a. Diuretics b. Anti diuretics
 - Coagulants and anti coagulants
6. Airway management- Intubation, failed intubation drill, LMA, Bag and mask ventilation.
7. Anesthesia For: General surgery, Obstetric and Gynecology, E.N.T. and Ophthalmic, Orthopedic, Dental, Pediatric, Urology, Plastic and Outpatient / Day care surgery.
8. Anesthesia for patients with: Diabetes mellitus, Thyroid diseases, inherited metabolic diseases, Obesity, Respiratory diseases, Cardiac diseases, Renal diseases, Geriatric problems

and neuromuscular diseases.

9. Regional anesthesia:

- Sub-arachnoid and epidural anesthesia, analgesia
- Plexus and nerve blocks for upper and lower limb
- Regional anesthesia for thorax and abdomen
- Surface anesthesia, infiltration and field blocks

10. Complications of Regional and general anesthesia, morbidity, mortality and medico-legal aspects.

11. Anesthesia for Endoscopic, laparoscopic Surgery and Laser Surgery

12.

a. Monitoring in anesthesia:

- Cardiovascular, Respiratory, Renal function, Neurologic and neuromuscular monitoring.
- Peri- operative Thermo- regulation and monitoring
- Peri- operative awareness and monitoring depth of anesthesia with BIS.
- Peri- operative acid-base balance
- Pt's positioning in anesthesia, its hazards and management
- Peri- operative Fluid management and Blood transfusion.
- Risks and hazards of anesthesia

b. Anesthesia equipments –

- Medical gas systems
- Breathing systems
- Ventilators
- Anesthesia machine

c. Post operative management-

- Post anesthesia care
- Post operative nausea and vomiting
- Post operative Intra-Venous fluid therapy
- Acute post operative pain

d. Miscellaneous-

- HDU, ICU, CCPR- BLS & ACLS.
- Parenteral nutrition.
- Environmental factor and electrical safety

e. Management of Acute / Chronic Pain-

- Assessment of pain
- Peri-operative pain
- Chronic pain syndrome-detection and prevention
- WHO regime for Cancer pain
- TENS, Behavioral therapy

f. Anesthesia in remote locations

g. Clinical care in extreme environments (At high and low pressure and space).

h. Relevance of Sammohana (Hypnosis), Acupressure and Acupuncture in Sangyahan.

i. Recent advances in research in Sangyahrana, Pain Management and Palliative Care. Scope and Application of principles of Ayurveda in Sangyahrana Research.

PAPER – IV - SPECIALITY NO – 04 MUTRA ROGA – UROLOGY 100 MARKS 100 HOURS

1. Anatomical and physiological knowledge of kidney, ureter, urinary bladder, prostate, seminal vesicles, urethra and penis.
2. Investigations of Mutravaha Srotas – Urinary tract.
3. Aetiopathogenesis, Classification, Clinical features, Diagnosis, Complications and management of Ashmari – Urinary stone diseases.
4. Kidney and ureter – Clinical presentation, Investigations and Management of Congenital anomalies, Trauma, Infection, Neoplasm, Hydronephrosis, Hydroureter and Haematuria.
5. Urinary bladder - Clinical presentation, Investigations and Management of Congenital anomalies, Trauma, Infection, Neoplasm, Diverticulum, Vesico-vaginal fistula, Atony, Schistosomiasis, Urinary diversions, Retention of urine – Mutraghata and Mutrakruccha.
6. Urethra - Clinical presentation, Investigations and Management of Congenital anomalies – Hypospadias, Epispadias, Posterior urethral valve, Trauma, Infection, and Neoplasm.
7. Prostate and seminal vesicles – Benign and malignant enlargement of prostate, Prostatitis, Prostatic abscess and Calculi.
8. Penis – Clinical presentation, Investigations and Management of Congenital anomalies, Trauma, Infection, Phimosis, Paraphimosis, Peyronie’s disease and Neoplasm.
9. Testis and scrotum-Clinical presentation, Investigations and Management of Congenital anomalies, Ectopic testis, Trauma, Infection, Neoplasm, Testicular torsion, Hydrocele, Varicocele, Spermatocele, Chylocele, Pyocele, Haematocele, Epididymal cyst and Fournier’s gangrene.
10. Renal failure – Causes, Diagnosis, Investigations and Management.

PRACTICALS Content:

1. Identification, uses, demonstration of surgical instruments and methods of sterilization.
2. Training of case taking, bed side clinicals and case presentation.
3. Training of Surgery related Diagnostic imaging techniques.
4. Training of Surgery related Pre-operative, Operative and Post-operative procedures.
5. Demonstration and Practical training in Anaesthesia.
6. P.G. Scholars shall develop the skills by observing, assisting and performing independently all surgical and parasurgical procedures.
7. P.G. Scholars shall develop the skills by observing, assisting and performing independently concerned specialities like Anushastra Vigyan - Parasurgical therapeutics, Asthi Sandhi Evam Marma Vigyan – Orthopaedics, Sangyahan Vigyan – Anaesthesiology, Mutra Roga – Urology etc.
8. Training of Surgical Emergencies and Trauma Management.

METHODS OF TRAINING AND TEACHING FOR M.S. (AYU) SHALYA TANTRA

- Case Presentation Once a Week
- Seminar Once a Week
- Classroom Lectures Thrice a Week
- Morbidity / Mortality Once a Week

- Surgical Audit Once a month
- Journal Club Once a month
- Emergency Drills / Protocols Once a Week
- Interesting Cases Once a Month
- Assessment of Scholar Once a Month

Minimum Academic Requirements For PG Scholars

Case Presentation Ten per year

Seminar Five per year

Journal club One per year

Distribution of marks (practical):

1. Dissertation Presentation and Teaching demonstration - 20 marks
2. Bedside clinical case taking- Long case - 20 marks Short case - 10 marks
3. Identification of instruments, images etc - 10 marks
4. Demonstration of Surgical and Parasurgical Procedures - 10 marks
5. Viva voce - 30 marks

REFERENCE BOOKS:

1. Sushruta Samhita
2. Ashtanga Sangraha
3. Ashtanga Hridaya
4. Charaka Samhita
5. The Surgical instruments of the Hindus - Girindranath Mukhopadhyaya
6. Shalya Tantra Samuchchaya - Pandit Ramadesh Sharma
7. Shalya Vigyan (Part 1-2) - Dr. Surendra Kumar Sharma
8. Shalya Samanvaya (Part 1-2) - Vd. Anantaram Sharma
9. Shalya Pradeepika - Dr. Mukund Swaroop Verma
10. Sushruti - Dr. Ram Nath Dwivedi
11. Clinical Shalya Vigyan - Dr. Akhilanand Sharma
12. Bhagna Chikitsa - Dr. Prabhakar Janardhan
Deshpande
13. Kshara sutra management in anorectal ailments - Dr. S.K. Sharma, Dr. K.R. Sharma and
Dr. Kulwant Singh.
14. A manual on Fistula-in-ano and Ksharasutra Therapy – Dr. Manoranjan Sahu
15. Recent trends in the management of Arshas / Haemorrhoids
- Dr. P. Hemantha Kumar
16. Anorectal diseases in Ayurveda - Dr. Sizoria and Dr. Praveen
Kumar Chowdary.
17. Adhunik Shalya Chikitsa Siddhanta - Dr. Katil Narshingham Udupa
18. Agnikarma Technology Innovation - Dr. P.D. Gupta
19. Shalya Tantra Ke Siddhant - Dr. K.K.Takral
20. Arsha Evum Bhagander Mein sutra Avacharan - Vd. Kanak Prasad Vyas
21. Recent advances in Kshara Sutra - Dr. M. Bhaskar Rao
22. Leech application in Ayurveda - Dr. M. Bhaskar Rao
23. Kshara Sutra - Dr. S.N.Pathak

24. Text book of Shalya Tantra (Ayurvedic Surgery) - Dr. P. Hemantha Kumar
25. Shalya Shalakya Tantra - Vd. S.G. Joshi
26. Surgical ethics of Ayurveda - Dr. D.N. Pande
27. Anushastra Karma - Dr. D.N. Pande
28. Concept of Vrana in Ayurveda - Dr. Lakshman Singh
29. Significance for Poorva Karma in Surgical Patient - Dr. Lakshman Singh
30. Sangyahan Prakash - Dr. D.N. Pande
31. Marma Science and Principles of Marma Therapy – Dr. Sunil Kumar Joshi
32. Recent trends in the management of Bhagandara / Fistula-in-ano
- Dr. P. Hemantha Kumar
33. Principles and Practice of Agnikarma - Dr. Anand Kumar and
CCIM MS Ayurved –Shalya Tantra Syllabus Page 10 of 10
Dr. Kanchan Shekokar.
34. Shalya Vigyan (Sachitra) - Anantram Sharma
35. Text book of Surgery - Sabistan
36. Operative Surgery – Rob and smith
37. Bailey and Love’s Short Practice of Surgery - Norman.S. Williams, Charles.V.
Mann and R.C.G. Russell
38. Text books of Operative Surgery - Farquharson’s
39. Principles of Surgery - Schwartz
40. Emergency Surgery - Hamilton Bailey’s
41. Manipal Manual of Surgery - Dr. Rajgopal Shenoy
42. SRB’s Manual of Surgery - Sriram Bhat M
43. Surgery of the Anus, Rectum and Colon - John Goligher
44. Surgical pathology - Willing Worth
45. Clinical methods in surgery - S. Das
46. Textbook of Operative Surgery - S. Das
47. A concise Text Book of Surgery - S. Das
48. A manual on Clinical Surgery - S. Das
49. A System of Surgical Diagnosis - T.N. Patel
50. Clinical Anatomy/ Surgical Anatomy - John E.Skandalakis
51. A Practical Guide to Operative Surgery - S. Das
52. Manual of Surgical Instruments - M.M. Kapur
53. Ward Procedures - Patel Mansukh. B
54. Drugs and Equipment for Anaesthesia - Arun kumar
55. Primary Anaesthesia - Maurice King
56. Synopsis of Anaesthesia - Lee
57. Miller’s Anesthesia - Ronald D Miller
58. Synopsis of Anesthesia - Alfred Lee
59. Practice of Anesthesia and Resuscitation - Dr.P.K. Gupta et al.
60. Essentials of Anesthesiology - Prof. A.K. Paul
61. Clinical Anesthesia - Prof. A.K. Paul
62. Textbook of Anesthesia - Aitkenhead
63. Practice of Anesthesia - Churchill Davidson

64. Anesthesia and co-existing disease - Stoelting's
65. Outline of Orthopedics - John Crawford Adams and David Hamblen. L
66. Fractures and Joint Injuries - Watson-Jones
67. Outline of Fracture - John Crawford Adams
68. Practical Fracture Treatment - R.McRae
69. Clinical Orthopedic Examination - R.McRae
70. Apleys System of Orthopedics - Apley Louis Solomon
71. Orthopedics – Principles & their Application – Vol. I-II – Samuel L. Turek
72. Text book of Orthopedics and Trauma Vol. I-IV – G.S. Kulkarni
73. Campbell's Operative Orthopedics – Vol. I-IV
74. Urology - Campbell-Walsh
75. Urology Instrumentation:A comprehensive guide – Sabnis Ravindra B
76. Text book of Operative Urology - F.F.Marshall, J.W.McAninch
77. Oxford Hand book of Urology - John Reynard, Simon Brewster
78. Smith and Tanagho's General Urology - Jack W. McAninch, Tom F.Lue
79. Urological Emergencies in Clinical Practice - Hashim, John Reynard

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