AYURVED DHANWANTARI 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 andlimitations
C. Defining research problem and formulation of hypothesis
D. Defining general and specific objectives
E. Research design: observational and interventional, descriptive and analytical, preclinical andclinical, 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 fillingup 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 koshtha.

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 parametersas 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 withAYUSH 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 approachtechniques; 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 andFocus Group Discussion.

13. Pharmacovigilance for ASU drugs. Need, scope and aims & objectives. National PharmacovigilanceProgramme 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 KnowledgeDigital 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 andmethods)

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 deviationand Standard deviation

5 **Probability**: Definitions, types and laws of probability,

6 **Normal distribution**: Concept and Properties, Sampling distribution, Standard Error, Confidence Intervaland 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 theirconfidence 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, Kruskall – Wallis with relevant post hoc tests (Dunn)

11 Correlation and regression analysis:
Concept, properties, computation and applications of correlation, Simple linear correlation, KarlPearson'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 sizecomputation, computation of sample size for comparing two means, two proportions, estimating meanand proportions.

13 **Vital statistics and Demography**:
computation and applications - Rate, Ratio, Proportion, Mortality andfertility 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 researchDrug 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 abasic 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 houís: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

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Pharmaceutical chemistry, quality control and drug standardization:

1. Ayurvedic Pharmacopoeia of India. Part I- volume 1 to 8 and Part II- volume 1to 3. Ministry ofHealth and Family Welfare. Controller of Publication. Govt of India. New Delhi.
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8. Laboratory Guide for- The Analysis of Ayurved and Siddha Formulations – CCRAS, New Delhi.
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14. Srivastav VK and Shrivastav KK. Introduction to Chromatography (Theory and Practice)
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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.
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PRELIMINARY
PAPER-II

MS(AYU) SHALAKYA TANTRA
(DISEASES OF EYE, EAR, NOSE, THROAT, HEAD, ORO- DENTISTRY)
PRELIMINARY – PAPER II

THEORY – 100 MARKS (3 HOURS)
PRACTICAL AND VIVA VOCE – 100 MARKS

Part A – 50 marks

1. History and chronological development of Shalakya Tantra.
2. Establishment and importance of 'Shirasouttamangatwam', 'Nasa Hi shirsodwaram', and 'Sarvendriyanam Nayanam Pradhanam'.
3. Applied Anatomy and physiology of Netra, Karna, Nasa, Mukha with related marmas and disease classification as per Ayurvedic classics.
4. Knowledge of Agropaharaniya in Shalakya Tantra.
5. Fundamental knowledge of Sterilization and Anaesthesia in Shalakya Tantra.
6. Swasthvritta related to Shalakya Tantra.
7. Description of Yantra, Shastra and anushastra related to Shalakya Tantra.
8. Application of Panchakarma chikitsa in Urdhvajatrugata Vikaras.
9. Applied knowledge of various therapeutic procedures used in Netra rogas
10. Applied knowledge of various therapeutic procedures used in Karna-Nasa-Mukha Danta and Shirorogas, like Karnaprakshalana, Karna dhoopana,Karnapichu , Karnapoorana , Nasaprakshalan, Nasapichu,Kavala, Gandusha, Pratisarana, Dhoomapana, Shiroabhyanga, Shiropichu, Shirodhara, Shirobasti etc.
11. Knowledge of Vranabandhana (bandaging of wounds) in Shalakya Tantra.
12. Common classical yogas and single drug therapy in Shalakya Tantra.
13. Pathyapathya in Shalakya Tantra.

Part B – 50 marks

14. Critical analysis of nidana of Urdhwajatruvikaras.
15. Fundamentals of optics and refraction.
16. Clinical methods of eye examination and application of various aids and techniques with their respective interpretation viz. Retinoscopy, Refraction, Tonometry, Slit lamp examination, Pachymetry, Direct and Indirect Ophthalmoscopy, Gonioscopy, Perimetry, A scan, B scan, FFA (Fundus Fluorescein Angiography), OCT (Optical Coherence Tomography)etc.
17. Clinical methods of Ear examination with special reference to hearing and balance.
18. Fundamentals of Acoustics and Audiology.
19. Clinical methods of examination of Nose and Para nasal sinuses with various aids and techniques.
20. Clinical methods of Oro-Dental examination with various instruments and techniques.
21. Basic pharmacology of common drugs required in diagnostic and therapeutic procedures in Eye, ENT and Oro-Dentistry.

22. Eye donation and Eye banking.
23. Knowledge of handling of Bio-medical waste

PRACTICAL AND VIVA VOCE – 100 MARKS

Pattern of practical/clinical training 1. Clinical postings in OPD, IPD, Kriyakalpa and OT.
2. Clinical bed side case presentation
3. Case record - 20 cases (Eye, ENT, Shiras and Oro-dental 5 cases each).
4. Hands on training in Ayurvedic treatment procedures in Netra, Karna-Nasa – Shira – Mukha-Danta Rogas.
5. Participation in seminars, workshops, CMEs.

Distribution of marks (practical)- 100 marks
1. Case record - 20marks
2. Bed side examination
a. Long case - 20marks
b. Short case - 10marks
c. Procedure demonstration - 15marks
3. Identification of specimens, radiographs, - 15marks
4. Viva voce – - 20marks

MS(AYU) SHALAKYA TANTRA - FINAL
(DISEASES OF EYE, EAR, NOSE, THROAT, HEAD, ORO- DENTISTRY)

THEORY - 400 MARKS
PRACTICAL & VIVA - 100 MARKS

PAPER I– SHALAKYA - NETRA ROGA
THEORY – 100 MARKS (3 HOURS)

Part A – 50 marks

1. Nidanapanchaka and samanya chikitsa of netrarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sandhigata, Vartmagata and Pakshmagatarogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shuklagata and Krishnagatarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Drishtigata and Sarvagatarogas with their comparative knowledge of modern science.
5. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidhachikitsa (Bheshaja,Shastra, Kshara and Agni) and post operative care of the patient with respect to Netrarogas.
6. Diseases of eyelids and lacrimal apparatus and their Modern and Ayurvedic Management.
7. Disorders of conjunctiva, cornea and sclera and their Modern and Ayurvedic Management.

PART B – 50 marks

8. Disorders of uveal tract and lens and their Modern and Ayurvedic Management.
9. Disorders of vitreous, retina,optic nerve, visual pathway and visual cortex and their Modern and Ayurvedic Management.
10. Benign and malignant tumours of the eye and their Ayurvedic Management.
11. Study of Nayanabhighata with prevention and management.
12. Concept of congenital, developmental disorders of eye and prevention and management through Ayurveda and modern science.
13. Ocular motility disorders and their management as per Ayurvedic and modern science.
14. Neurological and systemic disorders affecting Eyes and their Modern and Ayurvedic Management.

PAPER II THEORY – 100 MARKS (03 HOURS)

PART A – 50 MARKS

1. Nidanapanchaka and samanya chikitsa of shiro-nasa-karna and kantharogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Shiro and kapalgatha rogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Nasarogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Karna rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Kantharogas with their comparative knowledge of modern science.

PART B – 50 marks

6. Descriptive knowledge of Ashtavidhashastrakarma (eight types of surgical procedures) and Chaturvidha chikitsa (Bheshaja, Shasthra, kshara and Agni) and post-operative care of the patient with respect to ENT disorders.
7. Study of various types of Headache and their Modern and Ayurvedic Management.
8. Diseases of the Nose and paranasal sinuses and their Modern and Ayurvedic Management.
9. Diseases of the Ear and their Modern and Ayurvedic Management.
10. Diseases of the Throat and Larynx and their Modern and Ayurvedic Managemen

Paper III – SHALAKYA –MUKHA DANTA ROGA

THEORY - 100 marks

(Part A- 50 and Part B-50)

PART A

1. Nidanapanchaka and samanyachikitsa of Mukha-Dantarogas.
2. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Oshthagata rogas with their comparative knowledge of modern science.
3. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Dantamulagata rogas with their comparative knowledge of modern science.
4. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Danta rogas with their comparative knowledge of modern science.
5. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Jiwhagata rogas with their comparative knowledge of modern science.

6. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Talugata rogas with their comparative knowledge of modern science.

PART B

7. Descriptive knowledge of etiology, pathogenesis, prodromal symptoms, clinical features, complications, differential diagnosis, prognosis and management of Sarvasara mukha rogas with their comparative knowledge of modern science.
8. Jalandhar bandha and its importance and application in painless tooth extraction.
9. Diagnostic Methedology in oral and dental diseases.
10. Oro- Dental diseases with their Modern and Ayurvedic management.
11. Knowledge of essential modern drugs and anaesthetic agents for diagnosis and surgical procedures in oro-dentistry.
13. Updated knowledge of modern instruments of Oro-Dental Disorders.

PAPER IV – SHALAKYA – SHALAKYA VISHISHTHA CHIKITSA VIGYAN
THEORY - 100 MARKS
(PART A- 50 AND PART B-50)

PART A

1. Detailed study of Netra kriyakalpas and vishishta aushadhikalpas with their standard operative procedures and their critical analysis.
2. Critical analysis of classical treatment procedures and vishishta aushadhikalpas with their standard operative procedures and their critical analysis in the context of Anya Urdhwajatrugata vikaras .
3. Role of Panchakarma chikitsa in Urdhwajatrugata vikaras.
4. Descriptive knowledge of common ocular surgical procedures like DCT, DCR, Pterygium, Entropion, Ectropion, Chalazion surgery, Cataract surgery, Evisceration, Enucleation, surgical procedures of glaucoma etc.
5. Descriptive knowledge of common ENT surgical procedures like Tympanoplasty, Mastoidectomy, Septoplasty, Septorhinoplasty, antral puncture, Turbinectomy, Polypectomy, Tonsillectomy etc.
6. Applied aspects of Imaging in ENT and head disorders
7. Speech therapy and rehabilitation of the deaf and mute.
8. Recent advances in the medical and surgical management of Eye, ENT and Oro Dental diseases.
9. Karna sandhana, Nasasandhana, Oshthasandhana with their recent advances.
10. Scope of researches in Shalakya Tantra in present era.

PART B

11. Ocular emergencies and their management.
12. Knowledge of preventive and community ophthalmology -WHO and National Programme for control of blindness and role of Ayurveda in these Programmes.
13. Knowledge of National Programme for deafness and tinnitus and role of Ayurveda in these Programmes.
14. Knowledge of National Programme for prevention of oral cancer and role of

Ayurveda in these Programmes. .
15. Effects of environmental hazards, and life style disorders of Eye, ENT and Oro dental disorders and their Modern and Ayurvedic preventive and therapeutic measures.
16. Management of emergencies in ENT, Head and Oro-Dental disorders.
17. Effects of systemic diseases on Eye, ENT, Head and Oro-dental diseases and their Modern and Ayurvedic management.
18. Removal of foreign bodies from Eye, ENT and Oro-Dental disorders.
19. Importance of Yogic kriyas, Yogasana and pranayama in Shalakya tantra.
20. Knowledge of rules, regulations and medico-legal aspects of Ophthalmic, ENT and Oro-dental practice

FINAL EXAM METHODS OF TRAINING

 Intensive integrative training would be imparted to scholars in understanding the classical Ayurvedic aspects with an emphasis of critical comparative interpretation.
 Mandatory participation of scholars in seminars, group discussions, clinical demonstrations, journal review meetings, case study, continuing education activities and research clinical projects.
 During the first year course the emphasis would be laid to impart adequate knowledge on fundamental aspects and their applications, with afocuson latest diagnostic tools, instrumentations and laboratory procedures. Practical orientation and hospital based clinical training is an integral part of the curriculum all through and also to be involved in the dissertation work.
 In the second year, training would stress upon extending the knowledge on techniques and imparting skill for surgical performance, so that the scholar is able to perform Eye, Ear, Nose, Throat and Dental surgical procedures independently.
 In the third year the scholar should concentrate on the clinical work and research work based on the dissertation.
 The participation of the scholars in all the aspects of educational process is mandatory.
 Hospital postings- The student has to work for 6 terms (one term of 6 months each) of resident posting is compulsory you to which first 2 postings will be as a JR 1, the next two postings will be as a JR 2 and final two postings as JR 3.
 The student should also develop in the academic work of the department.

Pattern of Practical Examination:

1. Bed side examination
Short case 2 of 10 marks each -20 Marks
Long case -20 Marks
2. Identification of specimen/Instrument/Radiograph -10 Marks
3. Thesis Presentation / Viva -10 Marks
4. Teaching Skills -10Marks
5. Viva Voce -30 Marks

Reference Books

1. Charaka Samhita with commentaries.
2. Sushrut Samhita and vaghbhata with commentaries.
3. Astangahridaya and Astangasangraha with commentaries.
4. Madhavanidan with commentaries.
5. Bhavaprakashawith commentaries.
6. Sarangadhara Samhita with commentaries.
7. Sahstrayoga Sangraha.
8. Nimi Tantra.
9. Relevent part of Chakradhatta, Bhel Samhita, Harita Samhita.
10. Shalakya Tantra – Ramanath Dwivedi - R.C. Chaudhary.
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11. The Actions and uses of Indigenous Ophthalmic Drugs N. Srikanth.
12. Clinical Examination of Ophthalmic Cases - Agarwal and Gupta.
13. Alder's Physiology of the Eye and Clinical Applications Cotlier, St. Louis.
14. Disease of the Lens and Vitreous, Glaucoma and Hypotony Duke Elder, St. Louis.
15. Manual of the Diseases of the Eye – Bailliere Tindal and Castell. Ahmed E, Dhanda, Dutta, L.C Jaypee brothers, May C and Worth C.
16. Ocular Differential diagnosis.
17. Clinical Ophthalmology – Roy Fedrick Hampton, Lea and Febiger Smith, R Varghese.
18. Manual of Refraction - Duke and Elder.
19. Hand Book of ophthalmology - B.M. Chaterjee.
20. Clinical Ophthalmology - Kanski.
21. Parsons Diseases of Eye.
22. Stallard's Eye Surgery.
23. Dental Anatomy Histology.
24. Killey and Kay's Outline of Oral Surgery.
25. Diseases of Nose Throat and Ear - Bhargav Shah.
26. Diseases of Nose Throat and Ear, Head and Neck EBEdr.
27. A Text book of Otorhinololaryngology-ScottBrowns edition.
28. Text book of Ear Nose Throat diseases - Dhingra.
29. Text book on ENT - Mohd. Maqbool.
30. Logan Turner's book on ENT.
31. Ballengers text book of ENT.
32. Kumin's text book of ENT.
33. Rob Smith's book of ENT surgery.
34. Paprella's book of ENT.
35. Hazarika's text book on ENT.
36. Audiology Anirwan Biswas.