REGULATIONS AND CURRICULUM GOVERNING

MDS PROGRAM

ORAL PATHOLOGY & MICROBIOLOGY

(Academic year from which the curriculum is amended May 2023)

Name of the Constituent Unit/Centre: Yenepoya Dental College

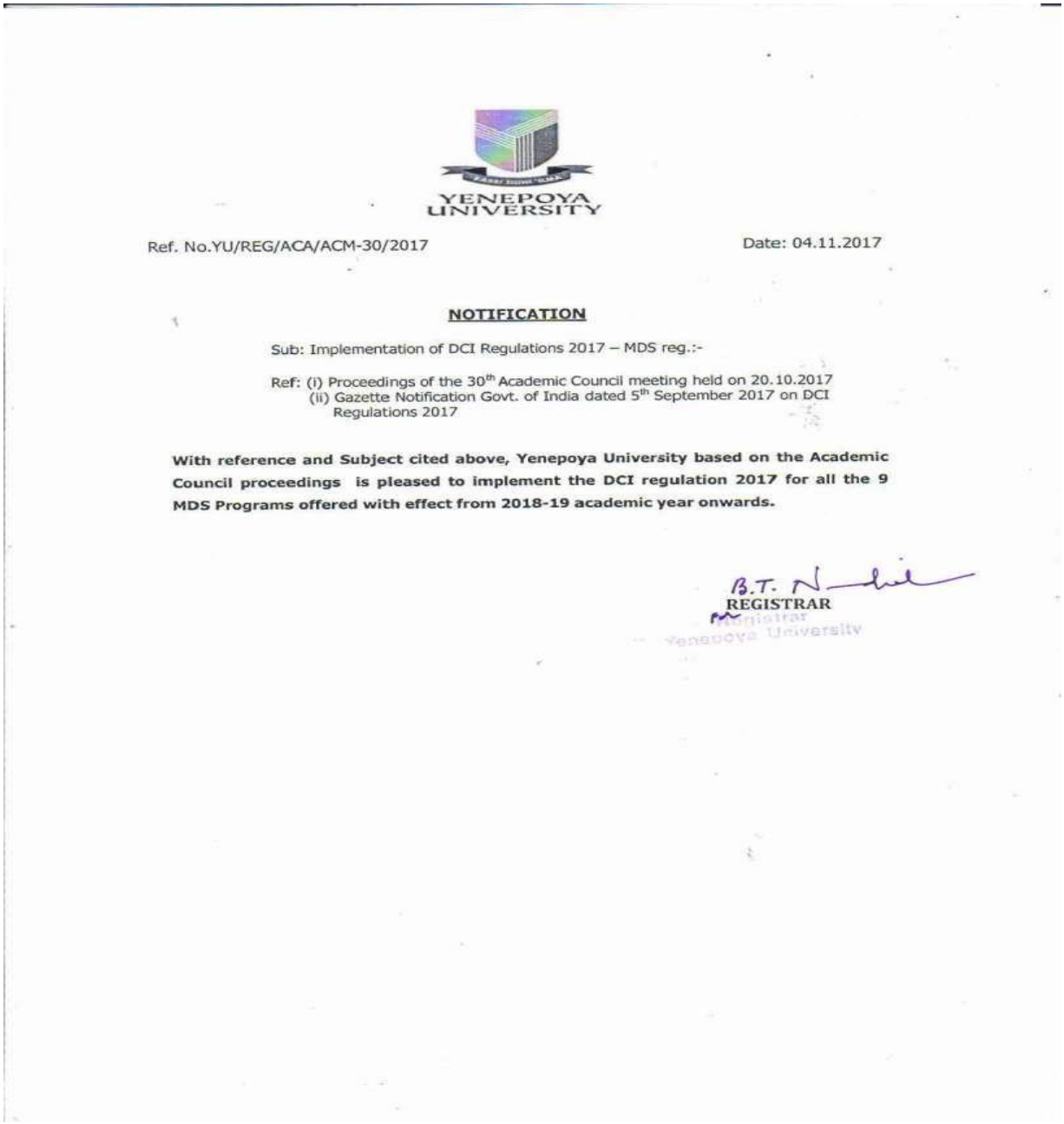
RABBI ZIDNI 'ILMA

YENEPOYA

(DEEMED TO BE UNIVERSITY)

Deralakatte, Mangalore, Karnataka.

NOTIFICATION FROM THE UNIVERSITY



YENEPOYA UNIVERSITY

Ref. No.YU/REG/ACA/ACM-30/2017 Date: 04.11.2017

NOTIFICATION

Sub: Implementation of DCI Regulations 2017 – MDS reg.:-

Ref: (i) Proceedings of the 30th Academic Council meeting held on 20.10.2017
(ii) Gazette Notification Govt. of India dated 5th September 2017 on DCI Regulations 2017

With reference and Subject cited above, Yenepoya University based on the Academic Council proceedings is pleased to implement the DCI regulation 2017 for all the 9 MDS Programs offered with effect from 2018-19 academic year onwards.

B.T.

REGISTRAR

Registrar
Yenepoya University

YENEPOYA
(DEEMED TO BE UNIVERSITY)

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Preamble

Oral Pathology - is a branch of dentistry that deals with the structural and functional changes in cells, tissues, and organs of the oral cavity that cause or are caused by disease.

We undertake teaching for 1st BDS, 2nd BDS, 3rd BDS, MDS

Patient care such as Biopsy and Cytology reporting, and Anti Tobacco Campaign is also done by the department

The department also conducts research using Self fundings, Extra mural and University grants.

MDS course was started in the year 1997.

Definitions

- BoM means Board of Management of Yenepoya (Deemed to be University)
- BoS means Board of Studies in Dental Sciences (UG and PG)
- Constituent College means any institution under the ambit of the Yenepoya (Deemed to be University)
- DCI means Dental Council of India
- *He/him/his/himself* includes all genders as the case may be.
- Head of the Institution means the Dean / Principal of the College.
- Institution/College means Yenepoya Dental College
- Regulations means this set of academic regulations
- Regulatory Authority – Authority appointed/constituted by the Central / State Government/s to regulate health science education.
- Teaching Hospital means the Hospital attached to the Dental College or any other Hospital owned by or under the management of the University.
- University means Yenepoya (Deemed to be University)

- NEET means National Eligibility-cum-Entrance Test conducted by the National Board Examination

Eligibility for admission

- BDS as per DCI Regulation NEET
- Admissions are processed based on NEET qualification please refer to http://www.mcc.nic.in/

Duration of the program:

The period of training for the award of the MDS course shall be of three years duration for three academic years as full time candidates in an institution

Maximum period for completion of the program:

The time period required for passing out of the MDS course shall be a maximum of six years from the date of admission in said course

GOALS

- Promote oral health awareness among general population and prevent oral diseases.
- By participating in camps conducted by the department of community dentistry and educating the general public about various oral diseases such as oral cancer, dental caries, periodontal disease etc. through talks, audio visual presentations, charts, models etc.
- To facilitate learning and help the student gain sufficient knowledge on the development, structure and function of orofacial tissues and diseases of the orofacial region so that the student gains sound foundation to understand the common dental diseases and institute most appropriate treatment.
- By combining traditional teaching techniques with innovative teaching method, and promoting student centered learning .Special attention on students who have difficulties in learning is placed.
- To ensure that students have gained adequate knowledge, periodic evaluation is done.
- Disseminate adequate knowledge of diseases affecting the orofacial region and importance of etiology and pathogenesis of oral diseases.
- Imparting thorough knowledge and skill in evaluating clinical findings, ability to carry out and interpret various investigative procedures to establish definitive diagnosis and institute proper treatment.
- To assist the clinician in providing better treatment plan by providing accurate histopathological diagnosis.
- By critically analyzing the histopathological features and combining it with the clinical data to arrive at most appropriate diagnosis of oral & maxillofacial diseases within the shortest possible time.
- To carry out the research activities related to oral diseases to develop newer diagnostic techniques for early diagnosis of oral cancer and pre-cancer and also add knowledge component to existing knowledge.

Objectives :

- To train a post graduate dental surgeon so as to ensure higher competence in both general and special pathology dealing with the nature of oral diseases, their causes, processes and effects.
- An oral pathologist is expected to perform routine histopathological evaluation of specimens relating to oral and perioral tissues, to carry out routine diagnostic procedures including hematological, cytological, microbiological, Immunological and ultra structural investigations.
- He/she is expected to have an understanding of current research methodology, collection and interpretation of data, ability to carry out research projects on clinical and or epidemiological aspects, a working knowledge on current databases, automated data retrieval systems, referencing and skill in writing scientific papers.
- He/she is expected to present scientific data pertaining to the field, in conferences both as poster and verbal presentations and to take part in group discussions.

PROGRAM OUTCOMES

PO 1	Apply the basic knowledge of both general and oral pathology in dealing with oral diseases, their causes, processes, and effects.
PO 2	Perform routine histopathological evaluation of specimens relating to oral and tissues, including principles of histochemistry, immunochemistry, applied and theoretical biochemical basis of histochemistry.
PO 3	Plan and administer the routine diagnostic procedures including hematological, cytological, microbiological, immunological and ultra structural investigations.
PO 4	Demonstrate the current research methodology, collection and interpretation, the ability to carry out research projects on clinical and/or epidemiological aspects.
PO 5	Write scientific papers and update knowledge on current databases, automate retrieval systems and referencing.
PO 6	Demonstrate the scientific data pertaining to the field and present it in conferences as poster and verbal presentations and take part in group discussions.
PO 7	Recognize the pathology of oral tissues as well as the relation of local pathology clinical findings to systemic conditions.
PO 8	Apply basic oral microbiology and their relationship to various branches of dentistry affecting hard and soft tissues.
PO 9	Describe the basics in Forensic Odontology and ability to apply it in medico-legal cases.
PO 10	Demonstrate and practice integrity, respect and selflessness.
PO 11	Examine and interpret gross tissue specimens.
PO 12	Interpret pathological cellular change microscopically and group diseases of similar histologic patterns in order to arrive at a differential diagnosis and ultimately the diagnosis.
PO 13	Provide a pathology report with final diagnosis and communicate effectively about it with the contributing clinician.

PO 14	Read, interpret, and critically evaluate the oral and maxillofacial pathology literature.
PO 15	Communicate effectively and sensitively with patients, caregivers, colleagues, surgeons and the public in a manner that will improve healthcare outcomes.

Program Specific / Course Outcomes

Cognitive Domain

1. Should have a sound knowledge about the diseases affecting the oral cavity.
2. Should have a thorough knowledge about tissue processing techniques.
3. Should have good knowledge about the various laboratory techniques used to diagnose oral disease.
4. Should be updated with the recent advances in diagnostic techniques of oral diseases.
5. Should keep abreast with the latest trends in research.

Psychomotor Domain

The student should acquire competencies in the following tasks:

1. **Biopsy:** The student should be confident in performing the following biopsy techniques:
   a. Incisional Biopsy
   b. Excisional Biopsy
   c. Punch Biopsy
   d. Fine Needle Aspiration Cytology
   e. Fine Needle Aspiration Biopsy
   f. Exfoliative cytology
2. **Tissue processing:** The student should be well versed with tissue processing and various steps in tissue processing such as:
   a. Fixation
   b. Dehydration
   c. Clearing
   d. Wax impregnation
   e. Microtomy

3. **Staining:** The student should be competent in doing:

   a. Routine Staining such as H&E

   b. Special stains such as mucicarmine, Van Gieson, Masson's Trichrome etc.

   c. Advanced techniques such as immunohistochemistry

4. **Blood:** The student should be confident in performing the following tasks:

   1. Determination of total RBC count
   2. Determination of total WBC count
   3. Preparation of peripheral blood smear and determination of differential leucocyte count
   4. Determination of hemoglobin concentration of blood
   5. Determination of packed cell volume and erythrocyte sedimentation rate
   6. Determination of bleeding time, clotting time and plasma prothrombin time

Affective Domain

1. To diagnose a case without consideration of caste, creed or any other bias.
2. To inculcate a virtue of honesty and altruism while diagnosing a patient with disease.
3. Develop ethics while treating a patient.
4. Willingness to learn newer diagnostic techniques and latest advances in the field of oral pathology.
5. Willingness to respect all peers and to obtain opinion from them in case of diagnostic difficulties.

COURSE CONTENTS

Broad Outline of Theoretical, Clinical and Practical Courses

I MDS

1. Biostatistics and Research Methodology:

- Basic principles of biostatistics and study as applied to dentistry and research
- Collection/ organization of data/ measurement scales / presentation of data and analysis
- Measures of central tendency
- Measures of variability
- Sampling and planning of health survey
- Probability, normal distribution & indicative statistics
- Estimating population values
- Tests of significance(parametric/non-parametric qualitative methods)
- Analysis of variance
- Association, correlation and regression

Approach:

- Didactic Lectures

2. Applied Gross Anatomy of head and neck, histology and genetics :

- Temporo-mandibular joint
- Trigeminal nerve and facial nerve
- Muscles of mastication
- Tongue
- Salivary glands
- Nerve supply, blood supply, lymphatic drainage & venous drainage of oro-dental tissues

- Development of face, palate, mandible, maxilla, tongue and applied aspects of the same
- Development of teeth & dental tissues and developmental defects of oral and maxilla- facial region & abnormalities of teeth
- Maxillary sinus
- Jaw muscles and facial muscles
- Introduction to genetics
- Modes of inheritance
- Chromosomal anomalies of oral tissues & single gene disorders

Approach:

- Didactic Lectures
- Postings in the Department of Anatomy for dissection of Head, Face and Neck

3. Physiology [General & Oral) :

- Saliva
- Pain
- Mastication
- Taste
- Deglutition
- Wound healing
- Vitamins (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)
- Calcium metabolism
- Theories of mineralization
- Tooth eruption and shedding
- Blood and its constituents
- Hormones (influence on growth, development and structure of oral soft and hard tissues & paraoral tissues)

Approach:

- Didactic Lectures

4. Cell Biology :

- CeII structure and function (ultra structural & molecular aspects)
- Intercellular junctions
- CeII cycle and division
- CeII cycle regulators
- Cell—cell & cell-extracellular matrix interactions
- Detailed molecular aspects of DNA,RNA and intracellular organelles, transcription and translation and molecular biology techniques

Approach:

- Seminars & Didactic Lectures

5. General Histology :

- Light & electron microscopy considerations of epithelial tissues and gIands,bone.
- Light & electron microscopy considerations of hemopoetic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)

Approach:

- Didactic Lectures
- Postings in the Department of Anatomy & Histology for slide discussion
- Record book to be maintained

6. Biochemistry :

- Chemistry of carbohydrates, lipids and proteins

- Methods of identification and purification
- Metabolism of carbohydrates, lipids and proteins
- Biological oxidation
- Various techniques-cell fractionation and ultra filtration, centrifugation, lectrophoresis, spectrophotometry and radioactive techniques

Approach:

- Didactic Lectures
- Postings in the Department of Biochemistry to familiarize with various techniques
- Record book to be maintained

7. General Pathology:

- Inflammation and chemical mediator
- Thrombosis
- Embolism
- Necrosis
- Repair
- Degeneration
- Shock
- Hemorrhage
- Pathogenic mechanisms at molecular level
- Blood dyscrasias
- Carcinogenesis and neoplasia

Approach:

- Didactic Lectures & Seminars

8. General Microbiology :

- Definitions of various types of infections
- Routes of infection and spread
- Sterilization ,disinfection and antiseptics

- Bacterial genetics
- Physiology, growth of microorganisms

Approach:

- Didactic Lectures & Seminars

9. Basic Immunology :

- Basic principles of immunity, antigen and antibody reaction
- Cell mediated and humoral immunity
- Immunology of hypersensitivity
- Immunological basis of auto immune phenomena
- Immunodeficiency with relevance to opportunistic infections
- Basic principles of transplantation and tumor immunity

Approach:

- Didactic Lectures & Seminars

10. Systemic Microbiology/Applied Microbiology :

Morphology, classification, pathogenicity, mode of transmission, methods of prevention, collection and transport of specimen for laboratory diagnosis, staining methods, common culture media, interpretation of laboratory reports and antibiotic sensitivity tests.

- Staphylococci
- Streptococci
- Corynebacterium diphtheria
- Mycobacteria
- Clostridia, bacteroids & fusobacteria
- Actinomycetales

- Spirochetes
- General structure, broad classification of viruses, pathogenesis, pathology of viral infections
- Herpes virus
- Hepatitis virus
- HIV
- General properties of fungi
- Superficial, subcutaneous, deep opportunistic infections
- General principles of fungal infections, method of collection of samples, diagnosis and examination of fungi

Approach :

- Didactic Lectures & Seminars
- Postings in the Department of Microbiology to familiarize with relevant diagnostic methods
- Record book to be maintained

11. Oral biology (Oral and Dental Histology) :

- Study of morphology of permanent and deciduous teeth
- Structure and function of oral, dental and paraoral tissues including their ultra structure, molecular and biochemical aspects

Approach :

- Didactic Lectures & Seminars
- Slide discussion on histological appearance of normal oral tissues
- Record book to be maintained

12. Basic Histo-Techniques and Microscopy :

- Routine hematological tests and clinical significance of the same
- Biopsy procedures for oral lesions
- Tissue processing
- Microtome and principles of microtomy

- Various stains used in histopathology and their applications
- Microscope, principles and theories of microscopy
- Light microscopy and various other types including electron microscopy
- Fixation and fixatives
- Ground sections and decalcified sections
- Cytological smears

Approach:

- Didactic Lectures & Seminars
- Postings in Clinical Pathology and Microbiology for relevant training
- Preparation of Ground and decalcified sections, tissue processing, sectioning and staining
- Tooth Carving (Permanent Dentition)
- Record book to be maintained

II MDS

1. Oral and Dental Pathology:

- Developmental disorders of oral and paraoral structures
- Potentially malignant disorders
- Benign and malignant tumors of the oral cavity
- Odontogenic cysts and tumors
- Pathology of salivary glands
- Regressive alterations of teeth
- Bacterial, fungal, viral and protozoal infections of the oral cavity
- Dental caries
- Diseases of pulp and periapical region
- Spread of oral infection
- Healing of oral wounds
- Physical and chemical injuries of oral cavity
- Oral aspects of metabolic diseases
- Diseases of bones and joints
- Diseases of skin and mucous membrane
- Diseases of periodontia
- Diseases of blood and blood forming organs
- Diseases of nerves and muscles
- Oro-facial pain
- Immunological diseases of oral cavity including tumor immunology
- Molecular pathology
- Oral Microbiology

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Dermatology of a Medical College
- Postings in a Cancer Centre

2. Basic histo-techniques and microscopy:

- Enzyme histochemistry
- Principles, techniques and applications of immunofluorescence
- Principles, techniques and applications of immunohistochemistry
- Preparation of frozen sections
- Museum set up
- Quality control
- Animal models

Approach:

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Visit to the centre of animal experimentation to be familiarize with laboratory techniques, upkeep and care of animals
- Record book to be maintained

3. Recent Molecular Techniques :

- Basic principles, techniques and applications of
  - PCR
  - BLOTS
  - Hybridization
  - Recombinant DNA technology
  - Micro array
  - DNA sequencing
  - Cell culture and cloning

Approach:

- Didactic Lectures & Seminars
- Training to be imparted in the Department or in other institutions having the facility
- Record book to be maintained

4. Recording of Case History and Clinico-Pathological Discussions:

Approach:

- Postings in the Department of Oral Medicine, Diagnosis & Radiology
- Record of minimum 10 case histories to be maintained

5. Histopathology — Slide discussion:

- Record book to be maintained

III MDS

- Forensic odontology
- Giant cell lesions
- Clear cell lesions
- Round cell lesions
- Spindle cell lesions
- Pigmented lesions
- Fibro-osseous lesions
- Mechanism of formation and expansion of cysts of orofacial region
- Mechanism of growth and metastasis of tumors
- Lab diagnosis of bacterial infections
- Lab diagnosis of viral infections
- Lab diagnosis of fungal infections
- Hamartomas
- Phakomatoses
- Vascular tumors of oro-facial region
- Genodermatoses
- Tumor markers
- Histogenesis of salivary gland tumors
- Tumor angiogenesis
- Concept of premalignancy
- Blue cell lesions
- Molecular basics of oral squamous cell carcinoma
- Matrix remodelling in pathological condition
- Etiopathogenesis of developmental defects of teeth
- Viral oncogenesis
- Lesions associated with impacted and missing teeth
- Syndromes affecting oro-facial region
- Hereditary oral defects
- Techniques to assess the prognosis of neoplastic lesions

- Vesiculo-bullous lesions
- Lymphoreticular malignancy
- Haemopoietic malignancy
- Micronutrients
- Oral aspects of metabolic disorders
- Hormones and oro-maxillofacial lesions
- Matrix metalloproteinases
- Current concepts in HIV related oral diseases
- Current concepts in OSMF
- Epithelial —connective tissue interaction
- Stem cell research

Approach:

- Didactic Lectures & Seminars
- Postings in the Department of Forensic Medicine / Sciences
- Record book to be maintained

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring should be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment is done using checklists that assess various aspects.

Scheme of Examination

A. Theory :	Part-I:	Basic Sciences Paper	-	**100 Marks**
	Part-II:	Paper-I, Paper-II & Paper-III	-	**300 Marks**
				(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration.Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. Three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I : Applied Basic Sciences: Applied Anatomy, Physiology (General and oral), Cell Biology, General Histology, Biochemistry, General Pathology, General Pharmacology specially related to drug induced oral mucosal lesions, General and systemic Microbiology, Virology, Mycology, Basic Immunology, Oral Biology (Oral and Dental Histology), Biostatistics and Research Methodology

PART-II

Paper-I : Oral pathology, Oral Microbiology & Immunology and Forensic Odontology

Paper-II : Laboratory techniques & Diagnosis and Oral Oncology

Paper-III : Essays (descriptive and analyzing type questions)

* The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

B. Practical/Clinical Examination - 200 Marks

1. Case Presentation

a) Long case - 20 marks

b) Short case - 10 marks

2. Clinical Hematology (any two investigations) - 20 Marks

Hb%, bleeding time, clotting time, Total WBC count, Differential WBC count and ESR

3. Smear Presentation - 20 marks

Cytology or microbial smear and staining

4. Paraffin sectioning and H & E Staining - 30 Marks

5. Histopathology slide discussion - 100 Marks

C. Viva Voce - 100 Marks

i. **Viva-Voce examination** - 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents.

ii. **Pedagogy Exercise** - 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minute

SCHEDULE – I
(See clause (b) of sub-regulation (2) of regulation 11)

MODEL CHECKLIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS.

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Article chosen was					
2.	Extent of understanding of scope and objectives of the paper by the candidate.					
3.	Whether cross-references have been consulted.					
4.	Whether other relevant publications consulted.					
5.	Ability to respond to questions on the paper / subject.					
6.	Audio – Visual aids used.					
7.	Ability to defend the paper.					
8.	Clarity of presentation.					
9.	Any other observation.					
	Total Score					

SCHEDULE-III
(See clause (e) of sub-regulation (2) of regulation 11)

(a) MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN Outpatient Department
(To be completed once a month by respective unit heads including posting in other department)

Name of the Trainee : Date :
Name of the Unit Head :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Regularity of attendance.					
2.	Punctuality.					
3.	Interaction with colleagues and supportive staff.					
4.	Maintenance of case records.					
5.	Presentation of cases.					
6.	Investigations work up.					
7.	Chair-side manners.					
8.	Rapport with patients.					
9.	Over all quality of clinical work.					
	Total Score					

SCHEDULE-II
(See clause (c) of sub-regulation (2) of regulation 11)

MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Items for observation during presentation	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1.	Completeness & Preparation.					
2.	Clarity of presentation.					
3.	Understanding of subject.					
4.	Whether other relevant publications consulted.					
5.	Whether cross-references have been consulted.					
6.	Ability to answer the questions.					
7.	Time scheduling.					
8.	Appropriate use of audio – visual aids.					
9.	Overall performance.					
10.	Any other observation.					
	Total Score					

SCHEDULE-V
(See clause (l) of sub-regulation (2) of regulation 11)

(a) MODEL CHECKLIST FOR DISSERTATION PRESENTATION

Name of the Trainee : Date :
Name of the Faculty / Observer :

Sl. No.	Prints to be considered.	Poor 0	Below Average 1	Average 2	Good 3	Very Good 4
1	Interest shown in selecting topic.					
2	Appropriate review.					
3	Discussion with guide and other faculty.					
4	Quality of protocol.					
5	Preparation of proforma					
	Total Score					