2.6.1 The Institution has stated the learning outcomes (generic and program-specific) and graduate attributes asper the provisions of the Regulatory bodies and the University; which are communicated to the students and teachers through the website and other documents

INDEX

DR GIJU GEORGE BABY

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CERTIFICATE OF THE HEAD OF INSTITUTION

Dr. GIJU GEORGE BABY, M.D.S.,
PRINCIPAL

TO WHOMSOEVER IT MAY CONCERN

This is to certify that, our Institution has stated the learning outcomes (generic and program-specific) and graduate attributes as per the provisions of the Regulatory bodies and the University; which are communicated to the students and teachers through the website and other documents

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PRINCIPAL

METHODS OF THE ASSESSMENT OF LEARNING OUTCOMES AND GRADUATE ATTRIBUTES

REGULATIONS 2016

SYLLABUS

for Courses affiliated to the

Kerala University of Health Sciences

Thrissur 680596

Bachelor of Dental Surgery [B.D.S]

Course Code 002

(2016-17 Academic year onwards)

2016

DR GIJU GEORGE BABY

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2. Course Content

2.1. Title of course:

Bachelor of Dental Surgery (B.D.S)

2.2. Aims & Objectives of BDS Course

A. Aims:

To create a graduate in Dental Science who has adequate knowledge, necessary skills and such attitudes which are required for carrying out all the activities appropriate to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues. The graduate should also understand the concept of community oral health education and be able to participate in the rural health care delivery programmes existing in the country.

B. Objectives:

The objectives are dealt under three headings namely (a) knowledge and understanding (b) skills and (c) attitudes.

(a) ***Knowledge and understanding***

The student should acquire the following during the period of training.

1. Adequate knowledge of the scientific foundations on which dentistry is based and good understanding of various relevant scientific methods and principles of biological functions.
2. Adequate knowledge to evaluate and analyse scientifically various established facts and data.
3. Adequate knowledge of the development, structure and function of teeth, mouth, jaws and associated tissues both in health and disease and their relationship and effect on general state of health and also their bearing on physical and social well-being of the patient.
4. Adequate knowledge of clinical disciplines and methods, which provide a coherent picture of anomalies, lesions and diseases of the teeth, mouth and jaws.
5. Adequate knowledge on the preventive, diagnostic and therapeutic aspects of dentistry.
6. Adequate knowledge on laboratory steps involved in dental treatment.
7. Adequate clinical experience required for general dental practice.

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8. Adequate knowledge of biological function and behavior of persons in health and sickness as well as the influence of natural and social environment on the state of health so far as it affects dentistry.

(b) ***Skills***

A graduate should be able to demonstrate the following skills necessary for practice of dentistry:

1. Able to diagnose and manage various common dental problems encountered in general dental practice, keeping in mind the expectations and the right of the society to receive the best available treatment wherever possible.
2. Acquire skill to prevent and manage complications if any encountered while carrying out various dental surgical and other procedures.
3. Possess skill to carry out required investigative procedures and ability to interpret laboratory findings.
4. Acquire skill in laboratory procedures involved in dental treatment.
5. Promote oral health and help to prevent oral diseases wherever possible.
6. Competent in control of pain and anxiety during dental treatment.

(c) ***Attitudes***

A graduate should develop during the training period the following attitudes.

1. Willing to apply current knowledge of dentistry in the best interest of the patients and the community.
2. Maintain a high standard of professional ethics and conduct and apply these in all aspects of professional life.
3. Seek to improve awareness and provide possible solutions for oral health problems and needs throughout the community.
4. Willingness to participate in the continuing education programmes to update knowledge and professional skills from time to time.
5. To help and to participate in the implementation of national health programmes.

C. *Goals of BDS Curriculum*

On completion of the undergraduate training program the graduates shall be competent in the following. –

i. General Skills

- Apply knowledge & skills in day to day practice.
- Apply principles of ethics.
- Analyze the outcome of treatment.
- Evaluate the scientific literature and information to decide the treatment.

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- Participate and involve in professional bodies.
- Be capable of self-assessment and be willing to update the knowledge & skills from time to time.
- Inclined to do simple research projects.
- Acquire minimum computer proficiency to enhance knowledge and skills.
- Be aware of one's limitations and know when to refer patients to specialists.
- Be familiar with basic Forensic Odontology techniques and manage Geriatric dental problems.
- Death certification

ii. Practice Management

- Evaluate practice location, population dynamics & reimbursement mechanism.
- Able to communicate freely, orally and in writing with all concerned.
- Maintain records.
- Implement & monitor infection control and environmental safety programs.
- Practice within the scope of one's competence Communication & Community Resources.
- Assess patient's goals, values and concerns to establish rapport and guide patient care.
- Co-ordinate & supervise the activities of allied dental health personnel.
- Participate in improving the oral health of the individuals through community activities.

iii. Patient Care – Diagnosis

- Obtaining patient's history in a methodical way.
- Performing thorough clinical examination.
- Selection and interpretation of clinical, radiological and other diagnostic information.
- Obtaining appropriate consultation.
- Arriving at provisional, differential and final diagnosis.

iv. Patient Care - Treatment Planning

- Integrate multiple disciplines into an individual comprehensive sequenced treatment plan using diagnostic and prognostic information.
- Be able to order appropriate investigations.

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v. Patient Care – Treatment

- Recognition and initial management of medical emergencies that may occur during Dental treatment.
- Perform basic cardiac life support.
- Management of pain including post operative.
- Administration of all forms of local anesthesia.
- Administration of intra muscular and venous injections.
- Prescription of drugs, pre operative, prophylactic and therapeutic requirements.
- Uncomplicated extraction of teeth.
- Transalveolar extractions and removal of simple impacted teeth.
- Minor oral surgical procedures.
- Management of Oro-facial infections.
- Simple orthodontic appliance therapy.
- Taking, processing and interpretation of various types of intra oral radiographs.
- Various kinds of restorative procedures using different materials available.
- Simple endodontic procedures.
- Removable and basic fixed Prosthodontics.
- Various kinds of periodontal therapy.

D. *Competencies Expected- Specialty wise*

ORAL MEDICINE & RADIOLOGY

On completion of the undergraduate training programme the graduate should:

- Be able to identify the common dental problems like dental caries and periodontal disease and their sequelae
- Be able to differentiate the normal variations and oral mucosal lesions
- Be able to identify pre cancerous and cancerous lesions of the oral cavity and refer to the concerned specialty for their management.
- Have an adequate knowledge about common laboratory investigations and interpretation of their results.
- Have adequate knowledge about medical complications that can arise while treating systemically compromised patients and take prior precautions/ consent from the concerned medical specialist.

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- To formulate a clinical diagnosis, order investigations, seek expert consultations to come to a final diagnosis and chart out a proper treatment plan for patients with oral lesions.
- Have adequate knowledge about radiation health hazards, radiation safety and protection.
- Be competent to take intra-oral radiographs and interpret the radiographic findings
- Gain adequate knowledge of various extra-oral radiographic procedures, TMJ radiography and sialography.
- Be aware of the importance of intra- and extra-oral radiographs in forensic identification and age estimation.
- Be familiar with jurisprudence, ethics and understand the significance of dental records with respect to law.

ORAL & MAXILLOFACIAL SURGERY

On completion of the undergraduate training programme the graduate should:

- Be able to apply the knowledge gained in the basic medical and clinical subjects in the management of patients with surgical problems.
- Be able to diagnose, manage and treat patients with basic oral surgical problem
- Have a broad knowledge of maxillofacial surgery and oral Implantology.
- Be familiar with legal, ethical and moral issues pertaining to patient care and communication skills.
- Have acquired the skill to examine any patient with an oral surgical problem in an orderly manner.
- Understand and practice the basic principles of asepsis and sterilization.
- Be competent in the extraction of the teeth under local anesthesia.
- Be Competent to carry out certain minor oral surgical procedures under Local Anesthesia like trans-alveolar extraction, frenectomy, Dentoalveolar procedures, simple impaction, biopsy, etc.
- Be Competent to assess, prevent and manage common complications that arise during and after minor oral surgery.
- Able to provide primary care and manage medical emergencies in the dental office.
- Be familiar with the management of major oral surgical problems and principles involved in the in-patient management.
- Be able to Certify Death

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PERIODONTOLOGY

On completion of the undergraduate training programme the graduate should:

- Be able to diagnose the patient's periodontal problem, plan and perform appropriate periodontal treatment.
- Be Competent to educate and motivate the patient.
- Be Competent to perform thorough oral prophylaxis, subgingival scaling, root planning and minor periodontal surgical procedures.
- Give proper post treatment instructions and do periodic recall and evaluation.
- Be Familiar with concepts of osseointegration and basic surgical aspects of implantology.

CONSERVATIVE DENTISTRY AND ENDODONTICS

On completion of the undergraduate training programme the graduate should:

- Be Competent to diagnose all carious lesions.
- Be Competent to perform Class I and Class II cavities and their restoration with amalgam.
- Be able to restore class V and Class III cavities with glass ionomer cement.
- Be able to diagnose and appropriately treat pulpally involved teeth (pulp capping procedures).
- Be able to perform RCT for anterior teeth
- Be competent to carry out small composite restorations
- Understand the principles of aesthetic dental procedures

ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS

On completion of the undergraduate training programme the graduate should:

- Understand about normal growth and development of facial skeleton and dentition.
- Be able to pinpoint aberrations in growth process both dental and skeletal and plan necessary treatment
- Be able to diagnose the various malocclusion categories
- Be able to motivate and explain to the patient and parent/guardian about the necessity of treatment
- Be able to plan and execute preventive orthodontics (space maintainers or space regainers)
- Be able to plan and execute interceptive orthodontics (habit breaking appliances)

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- Be able to manage treatment of simple malocclusion such as anterior spacing using removable appliances
- Be able to handle delivery and activation of removable orthodontic/myofacial appliances.
- Be able to diagnose and appropriately refer patients with complex malocclusion to the specialist.

PUBLIC HEALTH DENTISTRY

On completion of the undergraduate training programme the graduate should:

- Apply the principles of health promotion and disease prevention.
- Have knowledge of the organization and provision of health care in community and in the hospital service
- Have knowledge of the prevalence of common dental conditions in India
- Have knowledge of community based preventive measures
- Have knowledge of the social, cultural and environmental factors, which contribute to health or illness.
- Be able to administer hygiene instructions, topical fluoride therapy and fissure sealing.
- Be able to educate patients concerning the etiology and prevention of oral disease and encourage them to assure responsibility for their oral health.

PROSTHODONTICS AND CROWN & BRIDGE

On completion of the undergraduate training programme the graduate should:

- Be able to understand and use various dental materials.
- Be competent to carry out treatment of conventional Simple complete and partial removable dentures and anterior crowns.
- Be able to carry out Prosthodontic laboratory procedures.
- Be familiar with the concepts of osseointegration and the value of implant-supported Prosthodontic procedures.
- Be able to diagnose and appropriately refer patients requiring complex treatment procedures to the specialist

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PAEDIATRIC AND PREVENTIVE DENTISTRY

On completion of the undergraduate training programme the graduate should:

- Be able to instill a positive attitude and behavior in children towards oral health and understand the principles of prevention and preventive dentistry right from birth to adolescence.
- Be able to guide and counsel the parents/guardian in regards to various treatment modalities including different facets of preventive dentistry.
- Be able to treat dental diseases occurring in child patient.
- Be able to manage the physically and mentally challenged / disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.

2.3 Medium of Instruction

The medium of Instruction and examinations of BDS course will be in English language.

2.4 General Outline of BDS Degree Course

1) The undergraduate course involves organisation of year-wise teaching program. However, this course, as a whole, should demonstrate integration of the basic sciences, clinical dentistry and practical or laboratory skills. The course should be designed and integrated in such a way as to permit smooth progression from pre-clinical to clinical phase. Collaboration should be encouraged between teachers of basic sciences, dental sciences and clinical subjects.

2) The undergraduate dental course consists of three main components. The first component consists subjects common to modern medicine and dentistry like anatomy, physiology, biochemistry and behavioral science, leading to pharmacology, pathology, microbiology and then on to general medicine and general surgery. The second component runs concurrently with the first and deals with special aspects of oral and dental tissues, oral biology and oral pathology. Finally, the third component based on the foundations of the first two, deals with the clinical and technical aspects of dentistry as is required for general dental practice.

3) The first component of the course is intended to provide initially, an appreciation of normal human structure, development, function and behavior, leading to understanding of the diseases, its prevention and treatment. The main objective is to provide student with a broad knowledge of normal structures and functions of the body, the alterations which take place in disease with particular reference to those conditions in which medical and dental co-operation

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is essential for proper management. At this stage, the student should also be made aware of the social and psychological aspects of patient care with special reference to the relationship between dentist and patient. The behavioral sciences including both sociology and psychology should be introduced at the initial stages of the training program, much before the students actually deal with the patients.

4) The second component of dental undergraduate program includes instruction in the subjects dealing with dental and oral aspects to ensure a detailed knowledge of the structure and function of the dental and oral tissues. This enables the student to diagnose, prevent and treat the dental and oral diseases and disorders, which were not included in the first component. The subject of oral biology is to be introduced at this level to provide the students a comprehensive knowledge and application of oral physiology, microbiology, biochemistry and oral immunology. Students should be exposed to the basic aspects of forensic odontology at this stage of the course along with oral biology/oral pathology.

5) The third component of the course comprising the clinical and technical aspects of dentistry actually prepares the student to undertake total oral and dental health care of patients of all ages. The emphasis at this stage should be on the prevention of the various dental diseases and how to preserve natural teeth with their supporting structures. The importance of various preventive methods needs to be stressed. The significance of diagnosis of various dental and oral problems needs to be emphasized along with treatment planning before actual treatment procedures are undertaken. In addition to acquiring the knowledge, the students need to gain adequate clinical hands-on-experience in extractions and other minor oral surgical procedures, all aspects of Conservative Dentistry, Endodontics, Crown and Bridge, provision of partial and complete dentures, various periodontal therapeutic procedures and use of removable orthodontic appliances. Familiarity with various radiological techniques, particularly intra-oral methods and proper interpretation of the radiographs, is an essential part of this component of training and has application in clinical diagnosis, forensic identification and age estimation. Training in handling medico-legal cases including death certification should be imparted at this stage. Towards the final stage of the clinical training, each student should be involved in comprehensive oral health care or holistic approach to enable him or her to plan and treat patients as a whole, instead of piece-meal treatment provided in each specialty. The aim of the undergraduate program should undoubtedly be to produce a graduate, competent in general dental practice.

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6) The commitment towards the society as a whole needs to be stressed along with the knowledge and treatment skills gained. Instruction in public health dentistry should emphasise the sociological aspects of health care and palliative care particularly; oral health care, including the reasons for variation in oral and dental needs of different sections of the society. It is important to know the influence of social, behavioral, environmental and economic factors on oral and dental health. Students should be made aware of the National oral health Policy and the importance of being a member of the Health care team delivering medical and oral health care particularly among rural population. Students should also be encouraged to participate in simple research project work

7) The undergraduate curriculum stresses the significance of infection and cross infection control in dental practice. Aspects like sources of infection, measures to be adopted both general and specific for control, particularly the HIV and hepatitis is incorporated in the curriculum so that the graduates are aware of its significance and follow it in their practice.

8) The information technology has touched every aspect of an individual's personal and professional life. The University hence recommends that all undergraduates acquire minimum computer proficiency, which will enable them to enhance their professional knowledge and skills.

2.5 Duration & course of Study

1. The undergraduate dental training program leading to B.D.S. degree shall be of four and a half years duration in addition to one year compulsory paid rotating internship. During this period, the students shall be required to engage in full time study at a Dental college recognized or approved by the Dental Council of India. During the first four and a half years of undergraduate course, the instruction in clinical subjects should be at least for two and a half years.

2. Basic Medical & Dental Subjects

   The basic medical and dental sciences comprise of Anatomy - Gross and Microscopic, Physiology, Biochemistry, Pharmacology, science of Dental Materials and Oral biology. Subjects like behavioral sciences, which would be useful to develop communication skills, should also be introduced in the first year itself and spread over the undergraduate course. An introduction to Public Health Dentistry also will be useful to develop the concept of commitment to community. The laboratory skills like pre-clinical Prosthodontics, Crown and Bridge, Conservative dentistry and Orthodontics is to be developed by the students.

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Studying dental morphology also is a part of initial training. At the end of this period the student should be in a position to understand and comprehend in general the development, structure and function of the human body in both health and disease.

3. The instruction in basic dental sciences should include theoretical and practical aspects of oral anatomy and physiology, to provide a detailed knowledge of the form and structure of teeth, associated tissues and occlusal relationships. The study should also aim at development of a concept regarding physiological and biochemical processes relevant to oral cavity for better understanding of the changes that occur with the onset of disease in the oral cavity. The student should be made aware of the importance of various dental tissues in forensic investigation.

4. Clinical, Medical and Dental subjects:

The students should be introduced to clinics in the initial stage, preferably in the first year, as an observer to familiarize with clinical set-up and working. The period of instruction in the clinical subjects shall not be less than two and a half years full time. During this, the student shall attend a dental hospital, general hospital, community camps and satellite clinics, in order to obtain instruction and experience in the practice of dentistry. The main objective of training in clinical dental subjects is to produce a graduate, able and competent to recognize or diagnose various dental and oral diseases, to undertake general dental treatment, advice on the provision of specialized treatment available and finally advise the patient on prevention. The student should also understand the relationship between oral and systemic diseases.

5. The general medicine and surgery training should provide sufficient knowledge on human disease to enable the student to understand its manifestations as relevant to the practice of dentistry. This requires clinical teaching on patients and shall be carried out in inpatient and outpatient medical departments and specialist clinics. This clinical instruction should enable the student to understand and perhaps diagnose common systemic diseases, which have relevance to dental practice, by adopting a systematic approach of history taking and clinical examination. The student should also realize the significance of various general and special investigations in the diagnosis of diseases. The ability to recognize physical and mental illness, dealing with emergencies, effective communication with patients, and interaction with professional colleagues also become important aspects of this training.

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6. All dental students should receive instruction in first-aid and principles of cardio-pulmonary resuscitation. The students should also attend to the accident and emergency department of a Medical hospital.

7. The purpose of the clinical training is to provide sufficient practical skill in all aspects of clinical dentistry. The instruction should also include patient management skills, treatment of patients of all ages with special reference to children (paediatric), very elderly (geriatric), medically compromised and disabled patients.

8. During the two and a half years of clinical course, the students should receive thorough instruction which involves history taking, diagnosis and treatment planning in all aspects of dentistry and should be competent on graduation to carry out all routine general procedures. In Oral & Maxillofacial Surgery, instruction should include the knowledge of various maxillofacial problems like injuries, infections and deformities of the jaws and associated structures. The clinical experience should include those procedures commonly undertaken in general practice like extraction of teeth, minor oral surgical procedure etc. In Conservative dentistry and Endodontics, Prosthodontics and Crown & Bridge and Periodontology students should be competent on graduation to carry out routine treatments like restorations of various types, endodontic procedures, removable Prosthodontics, and finally various kinds of periodontal therapy. In Orthodontics & Dentofacial Orthopaedics, students should carry out simple appliance therapy including myofacial appliances for patients. Students should also be able to appreciate the role of Dentofacial growth in the development and treatment of malocclusion. In addition, students should be aware of their limitations on graduation, need to refer patients for consultant opinion and/or treatment and also the need for postgraduate and continuous education programmes.

9. In Paediatric & Preventive Dentistry, the students should concentrate on effective management of the behavior of the child patient to instill a positive attitude, on efficacy of preventive measures and clinical management, including the treatment needs particularly for children with disabilities. In oral medicine and Radiology, the student should receive instruction in various common lesions, occurring in the oral cavity and its diagnosis with particular reference to oral cancer. All students should receive instructions and gain practical experience in taking various types of intra and extra oral radiographs and its processing and interpretation. They should be aware of the hazards of radiation and proper

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protective measures from radiation for the patient, operator and other staff. Since Paediatric dentistry involves the practice of various branches of clinical dentistry, training in Paediatric Dentistry is extended to Part II of the final year.

10. The successful control and management of pain is an integral part of dental practice. Upon graduation the students should be competent to administer all forms of local anesthesia. The value of behavioral methods of anxiety management should be emphasized. The students should also have the practical experience in the administration of intra-muscular and intra-venous injections. Knowledge of pain mechanisms and strategies to control post-operative pain is essential for practice of dentistry.

11. Instruction should be given in dental jurisprudence, legal and ethical obligations of dental practitioners and the constitution and functions of Dental Council of India. Students should be made competent in the management of medico legal cases and death certification.

12. Infection and cross infection control assume significance in dental practice. The students should be made aware of the potential risk of transmission of various infectious diseases particularly HIV and hepatitis in the dental surgery. The students should be aware of their professional responsibility for the protection of the patients, themselves and their staff and the requirements of the health and safety regulations.

13. The subjects of Aesthetic dentistry, Oral Implantology, Behavioral sciences and Forensic Odontology have assumed great significance. Hence, these four specialties are incorporated into the undergraduate curriculum. The instruction and clinical training in aesthetic dentistry shall be carried out by the departments of Prosthodontics and Crown & Bridge and Conservative Dentistry & Endodontics. Similarly, the instruction and clinical training in Oral Implantology shall be done by the departments of Prosthodontics and Crown & Bridge, Oral & Maxillofacial Surgery, and Periodontology. The instruction in behavioral sciences should ideally commence before the students come in contact with the patients and shall be carried out by the departments of Public Health Dentistry and Paediatric and Preventive Dentistry. Forensic Odontology including procedures of death certification will be a part of Oral Pathology & Oral Microbiology, Oral Medicine & Radiology and Oral & Maxillofacial Surgery.

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14. With increased life expectancy and treatment facilities, Palliative care has gained importance in the modern world. Palliative medicine is the branch of medicine involved in treatment of patients with advanced, progressive, life-threatening disease for whom the focus of care is maximising their quality of life through expert symptom management, psychological, social and spiritual support as part of a multi-professional team. Understanding the role of dental surgeon in the field of palliative care this subject is introduced in the syllabus to be handled by faculty under public health dentistry trained in palliative care.

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2.6 Syllabus

(The syllabus given below is a guideline and is not intended to restrict the student from learning relevant topics not mentioned herein and is not intended to restrict the examiner in assessing the extent of knowledge of the student in the subject)

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1. GENERAL HUMAN ANOTMY INCLUDING EMBRYOLOGY AND HISTOLOGY

a) GOAL

The students should gain the knowledge and insight into, the functional anatomy of the normal human head and neck, functional histology and an appreciation of the genetic basis of inheritance and disease, and the embryological development of clinically important structures. So that relevant anatomical & scientific foundations are laid down for the clinical years of the BDS course.

b) OBJECTIVES:

i. Knowledge & understanding:

At the end of the 1st year BDS course in Anatomical Sciences the undergraduate student is expected to:

(1) Know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.

(2) Know the anatomical basis of disease and injury.

(3) Know the microscopic structure of the various tissues, a pre-requisite for understanding of the disease processes.

(4) Know the nervous system to locate the site of lesions according to the sensory and or motor deficits encountered.

(5) Have an idea about the basis of abnormal development, critical stages of development, effects of teratogens, genetic mutations and environmental hazards.

(6) Know the sectional anatomy of head neck and brain to read the features in radiographs and pictures taken by modern imaging techniques.

(7) Know the anatomy of cardio-pulmonary resuscitation.

ii. Skills

1) To locate various structures of the body and to mark the topography of the living anatomy.
2) To identify various tissues under microscope.
3) To identify the features in radiographs and modern imaging techniques.
4) To detect various congenital abnormalities.

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c) INTEGRATION

By emphasizing on the relevant information and avoiding unwanted details, the anatomy taught integrally with other basic sciences & clinical subjects not only keeps the curiosity alive in the learner but also lays down the scientific foundation for making a better doctor, a benefit to the society.

This insight is gained in a variety of ways:

i. Lectures & small group teaching
ii. Demonstrations
iii. Dissection of the human cadaver
iv. Study of dissected specimens
v. Osteology
vi. Surface anatomy on living individual
vii. Study of radiographs & other modern imaging techniques.
viii. Study of Histology slides.
ix. Study of embryology models
x. Audio-visual aids

Throughout the course, particular emphasis is placed on the functional correlation, clinical application & on integration with teaching in other bio dental disciplines.

d) AN OUTLINE OF THE COURSE CONTENT:

General anatomy: Introduction of anatomical terms and brief outline of various systems of the body.

i. Regional anatomy of head & neck with Osteology of bones of head & neck, with emphasis on topics of dental importance.
ii. General disposition of thoracic, abdominal & pelvic organs.
iii. The regional anatomy of the sites of intramuscular & intra vascular injections, & lumbar puncture.
iv. General embryology & systemic embryology with respect to development of head & neck.
v. Histology of basic tissues and of the organs of gastrointestinal, respiratory, Endocrine, excretory systems & gonads.
vi. Medical genetics

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e) THEORY: 100 HOURS

	THEORY	
	TOPICS	**HOURS**
1	Introduction to anatomical terms, position, skin, superficial fascia and deep fascia	1
2	Simple epithelium, compound epithelium, Glandular epithelium	1
3	Scalp	1
4	Muscles of facial expression	1
5	Norma verticalis & Norma frontalis	1
6	Norma occiptalis & norma lateralis	1
7	Cervical vertebrae	1
8	Deep cervical fascia	1
9	Development of face	1
10	Brachial plexus	1
11	Classification of joints	1
12	Connective tissue	2
13	Cartilage	1
14	Bone	2
15	Muscle	1
16	Nervous tissue – Neurons, classification, regeneration, optic nerve, sciatic nerve, sensory & autonomic ganglia	2
17	Thyroid gland & development & developmental anomalies	1
18	Lymphatic drainage of head & neck.	1
19	Lacrimal apparatus & eyelid	1
20	Parotid gland & development	1
21	Dural venous sinuses – classification, cavernous sinus in detail	1
22	Pituitary gland and development & anomalies	1
23	Vascular tissue – Large artery, Medium sized artery, Large vein	1
24	Lymphatic tissue	2
25	Skin and its appendages – hair follicle – Sebaceous gland – sweat gland – nail	1
26	Anterior cranial fossa	1
27	Middle cranial fossa	1

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28	Posterior cranial fossa	1
29	Parietal bone	1
30	Occipital bone	1
31	Frontal bone	1
32	Temporal bone	2
33	Norma basalis	2
34	General embryology – oogenesis	1
35	General embryology – spermatogenesis	1
36	General embryology – fertilization	1
37	General embryology – implantation bilaminar	1
38	General embryology – bilaminar germ disc	1
39	General embryology - Neural tube formation, trilaminar germ disc, neural crest, Intraembryonic mesoderm & its fate, Notochord	2
40	General embryology - Folding of embryo	1
41	General embryology - Placenta & foetal membranes	2
42	Pharyngeal pouches & cleft	1
43	Bony orbit	1
44	Muscles of mastication	1
45	Temporomandibular joint	1
46	Hyoglossus muscle and its relations	1
47	Mandible	2
48	Maxilla	2
49	Zygomatic & hyoid bones	1
50	Pharynx	2
51	Nasal cavity & its lateral wall	1
52	Larynx	2
53	Tongue and its development & developmental anomalies	1
54	Middle ear & development	1
55	Coats of the eye – uveal tract in detail	1
56	External features of spinal cord	1
57	Leptomeninges	1
58	Blood supply of brain	1
59	Medulla oblongata– external features	1
60	Pons – external features	1

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61	Cerebellum	1
62	4th ventricle	1
63	Mid brain – external features	1
64	3rd ventricle	1
65	Cerebrum – Sulci, gyri and functional area	1
66	Lateral ventricle	1
67	Optic pathway	1
68	White matter of cerebrum and internal capsule	2
69	Basal ganglia	1
70	III Cranial Nerve & IV Cranial nerves	1
71	V Cranial nerve & VI cranial nerves	1
72	VII cranial nerve	1
73	VIII, IX cranial nerves	1
74	X, XI, XII cranial nerves	1
75	Gastrointestinal system	2
76	Respiratory system	2
77	Cardiovascular system	2
78	Excretory system	2
79	Reproductive system – male (1 hr), female (1 hr)	2
80	Medical genetics – Mitosis, Meiosis, Chromosomes and anomalies	1
81	Medical Genetics - Gene structure and genetic disorders	1
82	Medical Genetics - Mode of inheritance	1

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Sl. No.	SEMINARS
1.	Submandibular gland
2.	Nasal septum
3.	Soft palate
4.	Auditory tube
5.	Otic ganglion
6.	Pterygopalatine ganglion
7.	Submandibular ganglion
8.	Ciliary ganglion
9.	Ansa cervicalis
10.	Internal and external jugular veins
11.	Subclavian artery
12.	Autonomic nervous system
13.	Paranasal air sinuses
14.	Lingual artery
15.	Circle of Willis
16.	Choroid plexuses of the ventricles

f) PRACTICAL: 175 HOURS

Sl. No.	**PRACTICALS**
	HISTOLOGY
1.	Simple epithelium
2.	Compound epithelium
3.	Glandular epithelium
4.	Connective tissue
5.	Cartilage
6.	Bone
7.	Muscle
8.	Neuron – Optic Nerve - Peripheral Nerve
9.	Ganglia
10.	Blood vessels
11.	Lymphatic tissue – Lymph node, - Spleen, - Thymus, - Tonsil

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12.	Skin – Thin skin, Thick skin
13.	Placenta & Umbilical cord
14.	Trachea & lung
15.	Spinal cord, Cerebellum, Cerebrum
16.	Cornea & Retina
17.	Thyroid & Parathyroid gland
18.	Suprarenal & Pituitary glands
19.	Kidney, Ureter, Urinary bladder
20.	Ovary, Corpus luteum, Testis
21.	Tongue – filiform, fungiform, circumvallate papillae
22.	Salivary glands – Mucous – Serious – Mixed
23.	Liver, Pancreas
DISSECTION	
24.	Introduction to dissection
25.	Scalp
26.	Superficial dissection of face – muscles of face
27.	Side of the neck & Posterior triangle
28.	Back of the neck – suboccipital triangle
29.	Anterior triangle
30.	Deep dissection of the neck – Thyroid gland parathyroid gland trachea, oesophagus, Brachiocephalic trunk, Subclavian artery Bracheiocephalic vein Thoracic duct. Cervical pleura Neurovascular bundle of the neck, Sympathetic chain, Scalene muscles; Cervical fascia
31.	Lymph nodes & lymph vessels of head & neck
32.	Prevertebral region – Vertebral artery – Vertebral vein
33.	Deep dissection of face – Facial artery – Other vessels - Nerves
34.	Structures in the cheek & lips
35.	Eyelid & lacrimal apparatus
36.	Parotid region
37.	Cranial cavity –meninges Dural folds, Venous sinuses
38.	Anterior cranial fossa
39.	Middle cranial fossa – Pituitary gland
40.	Posterior cranial fossa
41.	Orbit – structures in the orbit

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42.	Temporal and infratemporal regions
43.	Submandibular region
44.	Mouth and pharynx
45.	Soft palate and Auditory tube
46.	Cavity of the nose
47.	Larynx
48.	Tongue
49.	Organs of hearing & equilibrium – External ear – Middle ear – Internal ear
50.	Eye ball
51.	Joints of the neck
52.	Spinal Cord
53.	Introduction to brain
54.	Meninges of brain
55.	Blood vessels of brain
56.	Base of brain
57.	Hind brain –Medulla
58.	Hind brain – Pons
59.	Hind brain – Cerebellum
60.	4th ventricle
61.	Midbrain
62.	Cerebral hemispheres
63.	White matter of cerebrum
64.	3rd ventricle
65.	Lateral ventricle
66.	Thalami – Optic tract
67.	Deep dissection of cerebral hemisphere & Internal capsule
68.	Deep nuclei and connections of thalamus
DEMONSTRATION OF SPECIMENS	
69.	Thoracic wall Chambers of heart Coronary arteries Pericardium
70.	Lungs Pleural cavity Diaphragm
71.	Abdomen –

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	Peritoneal cavity Organs in abdominal & pelvic cavities
CLINICAL PROCEDURES	
72.	Intramuscular injections Deltoid muscle Gluteal region Quadriceps femoris
73.	Intravenous injection Median cubital vein Cephalic vein Basilic vein Long saplenous vein Short saplenous vein
74.	Arterial pulsations Superficial temporal Facial Carotid Brachial Radial Femoral Dorsalis pedis Lumbar puncture

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g) SCHEME OF EXAMINATION

Distribution of Topics and Type of Questions for University Written examination:

Contents	Types of Questions and Marks	Marks
Questions from any topic included in the theory syllabus	Structured Essays 2x 10marks	20
Questions from any topic included in the theory syllabus Except from the topics from which the long essays have been set	Short Notes 4 x 5marks	20
	Brief Notes 10x3marks	30
	Total	**70**

i. Theory

University Written **70 Marks**

Internal Assessment **10 Marks**

Viva Voce: Examiner 1-Gross Anatomy-

Examiner 2-Osteology, Surface Marking & embryology **20Marks**

ii. Practicals:

University Practical Examination: **80 Marks**

Gross Anatomy including osteology Spotters (2 mark each) *2x 15* *30 Marks*

Discussion on Dissected parts (2 Specimens) *2x15* *30 Marks*

Histology –spotters (10 slides) 2*x10* *20 Marks*

Internal Assessment: **20 Marks**

Grand Total 200 Marks

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2. GENERAL HUMAN PHYSIOLOGY

a) GOAL

The broad goal of the teaching undergraduate students in Physiology aims at providing the student comprehensive knowledge of the normal functions of the organ systems of the body to facilitate an understanding of the physiological basis of health and disease.

b) OBJECTIVES

i. Knowledge

At the end of the course, the student will be able to:

(1) Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function.

(2) Assess the relative contribution of each organ system towards the maintenance of the milieu interior.

(3) List the physiological principles underlying the pathogenesis and treatment of disease.

ii. Skills

At the end of the course, the student shall be able to:

(1) Conduct experiments designed for the study of physiological phenomena.

(2) Interpret experimental and investigative data

(3) Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.

iii. Integration

At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

c) THEORY: 120 Hours

.	**Hours**
1. GENERAL PHYSIOLOGY	
Homeostasis: Basic concept, Feedback mechanisms Structure of cell membrane, transport across cell membrane Body fluid Compartments: distribution of total body water, intracellular & extracellular compartments, major anions & cations in intra and extra cellular fluid. Membrane potentials. RMP & Action Potential.	**4**
2. BLOOD:	**15**
Composition & functions of blood,	

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Plasma proteins - Types, concentration, functions & variations, Erythrocyte: Morphology, functions & variations. Erythropoiesis & factors affecting erythropoiesis, ESR- factors affecting, variations & significance. Haemoglobin - Normal concentration, method of determination [P] & variation in concentration, functions Anaemia - Definition, classification, life span of RBC's destruction of RBC's, formation & fate of bile pigments, Jaundice - types. Leucocytes: Classification, number, percentage, distribution morphology, properties, functions & variation. Role of lymphocytes in immunity, life span & fate of leucocytes. [Mention Leukemia] Thromobocytes - Morphology, number, variations, function. Haemostatsis – Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction. Fibrinolytic system. Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time - normal values, method & variations. Anticoagulants - mechanism of action. Bleeding disorders. Blood groups: ABO & Rh system, method of determination, importance, indications & dangers of blood transfusion, blood substitutes.[mention only] Blood volume: Normal values, variations. Functions of reticulo-endothelial system. Specific gravity, Packed cell volume, Methods of estimation [in practicals] Blood Indices - MCV, MCH, MCHC - definition, normal values, variation. Leucopoiesis Thrombopoiesis.	
3.MUSCLE AND NERVE	**8**
Classification of nerves, Structure of skeletal muscle - Molecular mechanism of muscle contraction, Neuromuscular junction and NM transmission.	

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Properties of skeletal muscle. Structure and properties of cardiac muscle & smooth muscle.	
4. DIGESTIVE SYSTEM :	
Introduction to digestion: General structure of G.I. tract, Innervation. Salivary glands: Saliva: composition, regulation of secretion & functions of saliva. Stomach: Composition and functions of gastric juice, mechanism and regulation of gastric secretion. HCl secretion. Physiological basis of Peptic ulcer management [briefly] Exocrine Pancreas - Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion. Liver : structure , composition of bile, functions of bile Gall bladder: structure, functions. Small intestine - Composition, functions Large intestine - Functions. Motor functions of GIT: Mastication, deglutition, gastric filling & emptying, movements of small and large intestine, defecation.	**10**
5. EXCRETORY SYSTEM :	
Structure & functions of kidney, functional unit of kidney & functions of different parts. Juxta Glomerular apparatus. Special functional features of renal circulation. Formation of Urine: Glomerular filtration rate - definition, normal values, factors influencing G.F.R. Tubular reabsorption - Reabsorption of sodium, glucose, water & other substances. Tubular secretion - secretion of urea, hydrogen and other substances. Countercurrent mechanisms. Micturition: anatomy & innervation of Urinary bladder, mechanism of micturition. Determination of GFR. Role of kidney in the regulation of pH of the blood. Urinary bladder: abnormalities.	**8**
6. SKIN AND TEMPERATURE REGULATION [basics only]	**4**
7. ENDOCRINOLOGY	**14**
General endocrinology- endocrine glands & hormones. Second messengers.	

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Endocrine function of hypothalamus. Hormones of anterior pituitary & their actions, Disorders of secretion of anterior pituitary hormones. Posterior pituitary hormones: actions Thyroid: secretion & transport of hormones, actions of hormones, regulation. Adrenal cortex & Medulla- action, Other hormones - Angiotensin, local hormones Pancreatic Hormone PTH Endocrine Disorders to be taught with each gland.	
8. REPRODUCTION	**6**
Physiological anatomy of male and female sex organs, Gonadotropic hormones. Sex chromatin. Female reproductive system: Menstrual cycle, functions and hormones of ovary. Ovarian and uterine changes during menstrual cycle. Actions of oestrogen &Progesterone control of secretion of ovarian hormones, fertilization, implantation, maternal changes during pregnancy and parturition. Lactation, milk ejection reflex. Male reproductive system, spermatogenesis, hormones-testosterone. Semen. Contraception.	
9. CARDIO VASCULAR SYSTEM	**15**
Functional anatomy and innervation of heart. Properties of cardiac muscle. Origin & propagation of cardiac impulse and Pacemaker potential. Action potential. Cardiac cycle - Phases, Pressure changes in atria, ventricles & aorta. Volume changes in ventricles. Heart sounds. Jugular venous pulse Arterial pulse. Electrocardiogram- Basic principles only. Normal electrocardiogram. Heart rate: Normal value, variation. Stroke volume and Cardiac output: definition, normal values, variations, factors affecting. Arterial blood pressure: Definition, normal values, variations, determinants. Regulation of heart rate, stroke volume, blood pressure: integrated concept.	

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Coronary circulation: special features. Cardiac murmurs Cardiac output: one method of determination Cardio vascular homeostasis in exercise & posture.	
10. RESPIRATORY SYSTEM	
Physiology of Respiration: External & internal respiration. Functional anatomy of respiratory passage & lungs. Respiratory movements: Muscles of respiration, Mechanism of inflation & deflation of lungs. Intra pleural & intra pulmonary pressures & their changes during the phases of respiration. Mechanics of breathing - surfactant, compliance & work of breathing [basics only]. Spirometry: Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, Pulmonary ventilation- alveolar ventilation & dead space-ventilation. Pulmonary circulation: Functional features. Composition of inspired air, alveolar air and expired air. Exchange of gases: Diffusing capacity, factors affecting it. Transport of Oxygen & carbon dioxide in the blood. Regulation of respiration- neural & chemical. Hypoxia, cyanosis, dyspnoea, periodic breathing. Artificial respiration. FEV & its variations. Pulmonary function tests Respiratory changes during exercise	**12**
11. CENTRAL NERVOUS SYSTEM	
Organisation of central nervous system Neuronal organisation at spinal cord level, Synapse: functional significance. Receptors, reflexes, sensations and sensory tracts, motor system Physiology of pain. Referred pain. Analgesia systems. Functions of thalamus, cerebellum. Vestibular apparatus [basics only] Cerebral cortex: Basics of higher functions. Formation and functions of CSF: clinical significance. Autonomic nervous system	**10**

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12. SPECIAL SENSES	
Fundamental knowledge of vision, hearing, taste and smell. Errors of refraction. Tests of auditory function .	**14**

d) PRACTICALS

The following list of practical is minimum and essential. The entire practical have been categorized as procedures and demonstrations. The procedures are to be performed by the students during practical classes to acquire skills. All the procedures are to be included in the University practical examination. Those categorized as demonstrations are to be shown to the students during practical classes. However these demonstrations would not be included in the University examinations but question based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

Practicals & demonstrations: 60 hours

Practicals	Hours
Study of Microscope and its uses	02
Collection of blood and study of haemocytometer	02
Haemoglobinometry	02
Determination of RB count	08
Determination of WBC count	04
Determination of blood groups	02
Leishman's staining and differential leucocyte count	10
Calculation of blood indices	02
Determination of bleeding time	01
Determination of clotting time	01
Blood pressure recording	03
Auscultation of Heart sounds	02
Demonstrations	
Determination of Erythrocyte Sedimentation rate(ESR)	02
Determination of packed cell volume(PCV)	02
Determination of specific gravity of blood	02
Fragility test for RBC	02
Clinical examination of Cardiovascular and Respiratory System	03
Determination of vital capacity	02
Artificial respiration	02
Demonstration of deep and superficial reflexes	02
Activity of frog's heart and effects of Acetylcholine, Atropine and	02
Electrocardiography: Demonstration of recording of normal Electro	02
Total	**60**

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e) SCHEME OF EXAMINATION

Types of Questions for written examination

Type of Questions	Marks
Structured Essays 1x 10 marks	10
Short Notes 2 x 5 marks	10
Brief Notes 5 x 3 marks	15
Total	**35**

i. ***Theory:***

University written Examination: **35Marks**
University Viva: **10Marks**
Internal Assessment: **5 Marks**
Total: 50 Marks

ii. ***Practicals:***

Internal Assessment: **10 Marks**
University Practicals: **40Marks**
Total: 50 Marks
Grand Total 100Marks

Mark distribution for University practical examination

Major Experiments: **20Marks**

Any one of the Major Experiments: R.B.C. Count, W.B.C. Count, Differential Count, Blood Pressure Recording

Minor Experiments: **15Marks**

Any one of the minor Experiments: Determination of Blood Groups, Determination of Bleeding & Clotting time, Haemoglobin Estimation, Calculation of absolute Hematological Indices–MCH, MCV, MCHC

Practical Work record: **5 Marks**

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3. BIOCHEMISTRY, NUTRITION AND DIETETICS

a) AIMS AND SCOPE

The major aim is to provide a sound but crisp knowledge on the biochemical basis of the life processes relevant to the human system and to dental/medical practice. The contents should be organized to build on the already existing information available to the students in the pre-university stage and reorienting. A mere rehash should be avoided.

The chemistry portion should strive towards providing information on the functional groups, hydrophobic and hydrophilic moieties and weak valence forces that organise macromolecules. Details on structure need not be emphasised.

Discussion on metabolic processes should put emphasis on the overall change, interdependence and molecular turnover. While details of the steps may be given, the student should not be expected to memorise them. An introduction to biochemical genetics and molecular biology is a must but details should be avoided. The exposure to antivitamins, antimetabolites and enzyme inhibitors at this stage, will provide a basis for the future study of medical subjects. An overview of metabolic regulation is to be taught by covering hormonal action, second messengers and regulation of enzyme activities. Medical aspects of biochemistry should avoid describing innumerable functional tests, most of which are not in vogue. Cataloguing genetic disorders under each head of metabolism is unnecessary. A few examples which correlate genotype change to functional changes should be adequate.

At the end of the course the student would be able to acquire a useful core of information, which can be retained for a long time.

b) THEORY: 70 HOURS

No.	TOPIC	HOURS ALLOTTED
1	**CARBOHYDRATES**	**12 hours**
	Definition, biological importance and classification. Monosaccharide's –Glucose, fructose, galactose, mannose	1
	Reactions: reducing property, oxidation, osazone, Molisch test. Define anomerism, epimerism with examples.	1
	Disaccharides-lactose, maltose, sucrose, Glycosidic bond, amino sugars, deoxy sugars	1
	Polysaccharides. Structures of starch and glycogen, Mucopolysaccharides (definition, name, components, biochemical	1

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	significance. *nature of linkages not required*) Dietary fibers.	
	Digestion and absorption of carbohydrates. associated disorders(in brief)	1
	Glycolysis, fates of pyruvate Gluconeogenesis.	2
	Glycogenesis, glycogenolysis,	2
	Significance of pentose phosphate pathway. Importance of glucuronic acid.	1
	Regulation of blood glucose. Diabetes mellitus: impaired fasting glucose, impaired glucose tolerance, gestational diabetes mellitus. Evaluation of glycemic status.	2
2	**LIPIDS**	**9 hours**
	Definition, biological importance and classification. Fats and fatty acids. Essential fatty acids. Introduction to compound lipids. Cholesterol.	2
	Digestion and absorption of lipids	1
	Beta oxidation of fatty acids	1
	Fatty acid synthesis, (in brief)	1
	Ketone body formation and utilization	1
	Outlines of cholesterol synthesis and compounds formed from cholesterol	1
	Plasma lipoproteins: Formation, function and dyslipidemia, Atherosclerosis.	2
3	**ENZYMES**	**6 hours**
	Definition, classification, specificity and active site. Cofactors.	1
	Factors affecting enzyme action	2
	Enzyme inhibition	2
	Clinical important enzymes- AST,ALT,ALP,PSA,LDH,CK,G6PD,GGT	1
4	**PROTEINS**	**9hours**
	Amino acids: Classification. Introduction to peptides, peptide bond Proteins: Classification. Charge properties. Buffer action. Levels of protein organization Denaturation.	3
	Digestion and absorption of proteins. Nitrogen balance. Essential amino acids. Protein quality and requirement (methods for	2

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	evaluation of protein quality to be excluded). Protein-calorie malnutrition, Balanced diet.(*in brief*)	
	Formation of Ammonia and Urea cycle.	1
	Reactions of amino acids-transamination, trans methylation, trans sulfuration (*in brief*)	1
	Compounds formed from glycine	1
	Biologic importance of aromatic amino acids, sulphur containing amino acids, Aminoacidurias (in brief)	1
5	**INTEGRATION OF METABOLISM** High energy compounds, Electron transport chain and oxidative phosphorylation.	**2hours**
6	**VITAMINS**	**5 hours**
	Fat soluble vitamins A,D,E,K, sources, functions, daily requirements, deficiency, Toxicity	2
	Water soluble vitamins B, C, sources, functions, daily requirements, deficiency, Toxicity	3
7	**ACID BASE BALANCE** Buffers, respiratory and renal regulation, disorders, analysis	**4hours**
8	**MINERALS**	**6hours**
	Classification, daily requirement. Calcium and phosphorous: sources, uptake, excretion, function. Serum calcium regulation.	2
	Iron: sources, uptake and transport. Heme and nonheme iron functions; deficiency	2
	Iodine: Brief introduction to thyroxine synthesis. General functions of thyroxine. Fluoride: function, deficiency and excess	1
	Indications of role of other minerals	1
9	**HAEMOGLOBIN**	**3 hours**
	Structure, synthesis, degradation	1
	Hemoglobinopathies	1
	Jaundice	1
10	**PLASMA PROTEINS** Classification and separation. Functions of albumin.	**2 hours**

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	immunoglobulins. Biochemistry of AIDS.	
11	**LIVER FUNCTION TESTS**	**1 hours**
12	**KIDNEY FUNCTION TESTS**	**1 hours**
13	**MOLECULAR BIOLOGY**	**8 hours**
	Nucleic acids: Building units. Nucleotides. Outline structure of DNA and RNA.	2
	Formation and degradation of nucleotides. (*in brief*) Gout. Lesch-nyhan syndrome	2
	Replication. Transcription. (*in brief*) Antimetabolites and antibiotics interfering in replication, transcription	2
	Outline of translation process.	2
14	**Techniques-colorimetry, ELISA, RIA**	**2 hours**

c) PRACTICALS,DEMONSTRATION& SEMINAR: 60 hours

i. Practical: 45 hours

Sl.No.	Procedure	Hours
1.	Introduction to lab procedures	1
2.	Normal & abnormal constituents of urine	12
3.	Introduction to clinical chemistry	2
4.	Estimation of blood urea	2
5.	Estimation of serum protein	2
6.	Estimation of blood sugar	2
7.	Estimation of serum creatinine	2
8	Estimation of serum albumin	2

ii. Demonstration: 20 hours

Sl.No.	Procedure	Hours
1.	Electrophoresis	2
2.	Chromatography	2
3.	GTT charts	2
4.	LFT charts	2
5.	Revision	3

iii. Seminars: 15 hours

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d) SCHEMEOF EXAMINATION

Types of Questions for written examination

Type of Questions	Marks
Structured Essays 1x 10 marks	10
Short Notes 2 x 5 marks	10
Brief Notes 5 x 3 marks	15
Total	**35**

i. ***Theory:***

University written Examination: **35Marks**
University Viva: **10Marks**
Internal Assessment: **5 Marks**
Total: 50 Marks

ii. ***Practicals:***

Internal Assessment: **10 Marks**
University Practicals: **40Marks**
Total: 50 Marks
Grand Total 100Marks

Mark distribution for University practical examination;

One procedure for quantitative estimation	15marks
One procedure for qualitative analysis	20marks
Practical Work record:	5 Marks

The following Procedures are suggested for University Practical Examination:

Quantitative Estimation (Any ONE estimation to be done)

Estimation of blood sugar/serum creatinine/blood urea/serum protein/serum albumin

Qualitative Analysis (Any ONE analysis to be done)

Urine Analysis–normal constituents

Report of abnormal urine

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4. DENTAL ANATOMY, EMBRYOLOGY AND ORAL HISTOLOGY.

a) INTRODUCTION:

The course includes instructions in the subject of Dental Morphology, Oral Embryology, Oral Histology and Oral Physiology. A composite study of basic Dental Sciences & their clinical applications.

b) SKILLS

The student should acquire basic skills in:

i. Carving of crowns of permanent teeth in wax.
ii. Microscopic study of Oral tissues.
iii. Identification of Deciduous & Permanent teeth
iv. Age estimation by patterns of teeth eruption from plaster casts of different age groups.

c) OBJECTIVES

After a course on Oral Biology,

i. The student is expected to appreciate the normal development, morphology, structure & functions of oral tissues & variations in different pathological/non-pathological states.
ii. The student should understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues.
iii. The students must know the basic knowledge of various research methodologies

d) COURSE CONTENT

i. Theory: 105 hours

DENTAL ANATOMY	HOURS
1. Introduction, Dental Anthropology & Comparative Dental Anatomy	**3**
2. Function of teeth.	
3. Nomenclature.	
4. Tooth numbering systems (Different system)(Dental formula).	
5. Chronology of deciduous and permanent teeth. (First evidence of calcification, crown completion, eruption and root completion).	**2**
6. Deciduous teeth - a) Nomenclature. b) Importance of deciduous teeth. c) Form & function, comparative dental anatomy, fundamental curvature	**4**
7. Gross morphology of deciduous teeth.	**5**
8. General differences between deciduous and permanent teeth.	**1**
9. Morphology of permanent teeth. Chronology, measurements, description of individual surface and	**12**

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variations of each tooth.	
10. Morphological differences between incisors, premolars and molars of same arch.	**1**
11. Morphological differences between maxillary and mandibular. incisors, canines, premolars and molars of the opposite arch	**1**
12. Internal Anatomy of Pulp.	**1**
13. Occlusion: a. Development of occlusion. b. Dental arch form. c. Compensating curves of dental arches. d. Angulations of individual teeth in relation to various planes. e. Functional form of the teeth at their incisal and occlusal thirds. f. Facial relations of each tooth in one arch to its antagonist or antagonists in the opposing arch in centric occlusion. g. Occlusal contact and interscusp relations of all the teeth of one arch with those in the opposing arch in centric occlusion. h. Occlusal contact and intercusp relations of all the teeth during the various functional mandibular movements. i. Neurobehavioral aspect of occlusion	**8**
14. Temporo Mandibular Joint (T.M.J.): Gross Anatomy and articulation.Muscles (Muscles of mastication). Mandibular position and movements.Histology. Clinical considerations with special emphasis on Myofacial Pain Dysfunction Syndrome (MPDS) - (Desirable to Know)	**2**
ORAL PHYSIOLOGY	
1. Theories of calcification	**1**
2. Mastication and deglutition	**1**
Oral Embryology, Anatomy and Histology:	
1. Development and growth of face and jaws.	**1**
2. Development of tooth.	**3**
3. Cranial nerves with more emphasis on V.VII and IX.	**1**
4. Blood supply, nerve supply and lymphatic drainage of teeth and surrounding structures	**1**
5. Cell - structure and function	**1**

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6. Maxillary sinus - Structure, Variations, Histology function and clinical considerations	**2**
7. Salivary Glands - Classification, structure, function, Histology, Clinical Considerations and age changes.	**4**
8. Oral Mucous membrane: Definitions, General consideration. Functions and classifications. Structure and microscopic appearance of gingiva, palate, lips, alveolar mucosa, tongue, floor of mouth. Gingival sulcus and dentogingival junction. Clinical considerations and age changes.	**8**
9.ENAMEL: Physical characteristics, chemical properties structure. Development - Life cycle of ameloblasts, Amelogenesis and Mineralisation. Clinical considerations. Age changes.	**8**
10.DENTIN: Physical characteristics, chemical properties, structure. Types of dentin. Dentin innervation and hypersensitivity. Development - Dentinogenesis and mineralisation. Clinical considerations. Age Changes.	**6**
11.PULP: Anatomy, structural features, functions, pulp organs. Developments. Clinical consideration Age changes.	**6**
12.CEMENIUM: Physical characteristics, chemical properties, structure. Cementogenesis. Clinical consideration Age changes.	**4**
13.PERIODONTAL LIGAMENT: Cells and fibers, Functions, Development, Clinical Considerations., Age Changes	**5**
14.ALVEOLAR BONE: Physical characteristics, chemical properties structure. Structure, Development., Internal reconstruction, Clinical consideration.	**5**
Tissue processing & Histochemistry	**4**
THEORIES OF ERUPTION AND SHEDDING. (Physiological tooth movement)	**4**

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ii. Practical: 250 Hours

DENTAL ANATOMY: Carving on wax blocks:- a. Individual tooth - Only permanent teeth of both arches. - Central, Incisors, Lateral, Canines, Premolars and 1st and 2nd molars
HISTOLOGY: List of Histology slides: **Development of tooth:** 01. Bud stage of tooth development. 02. Cap stage of tooth development. 03. Early bell stage of tooth development. 04. Late Bell stage of tooth development. 05. Root formation. **ENAMEL:** 01. Enamel rod. 02. Hunter-Schreger Bands 03. Tufts, Lamellae, Spindles. 04. Incremental lines of Retzius. 05. Neonatal line. 06. Gnarled Enamel. **DENTIN:** 01. Dentino - Enamel junction. 02. Dentinal Tubules. 03. Incremental lines of Von Ebner. 04. Contour lines of Owen. 05. Neonatal line. 06. Tomes granular layer. 07. Interglobular Dentin. 08. Secondary Dentin. 09. Intratubular Dentin. 10. Intertubular Dentin. **CEMENTUM:** 01. Cellular cementum.

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02. Acellular cementum.

03. Cemento enamel junction

- Type 1 - 60% type - Overlapping.

- Type 2 - 30% type - Butt

- Type 3 - 10% type - Cementum & Enamel do not meet.

04. Sharpey's fibers.

05. Hypercementosis.

PULP:

01. Zones of Pulp.

02. Pulp stones.

PERIODONTAL LIGAMENT:

01. Principle fibers of Periodontal ligament

- Apical, Horizontal, Oblique, Alveolar crest, Interradicular, Transeptal

ALVEOLAR BONE:

01. Haversian system.

02. Trabeculated bone.

03. Mature and immature bone.

SALIVARY GLANDS:

01. Mucous gland.

02. Serous gland.

03. Mixed gland.

MAXILLARY SINUS:

Sinus lining (Pseudostratified ciliated columnar)
(Desirable to know)

ORAL MUCOUS MEMBRAIN:

01. Parakeratinised epithelium.

02. Orthokeratinised epithelium.

03. Palate - Anterolateral zone.

04. Palate - Posterolateral zone.

05. Alveolar mucosa.

06. Vermilion border of lip.

07. Tongue - Circumvallate Papillae.
- Fungiform Papillae
- Filiform Papillae

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Preparation of Ground sections, haematoxylin & Eosin sections & decalcified section

iii. Lecture demonstration:

Identification of Individual teeth

(1) Deciduous

(2) Permanent

(3) Mixed dentition using study models

(4) Demonstration of preparation of ground section, Decalcification, Paraffin section and H & E Staining.

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e) SCHEME OF EXAMINATION

Distribution of Topics and Type of Questions for University written examination

Contents	Type of Questions and Marks	Marks
Dental anatomy - one question - 14 marks Detailed morphology of Permanent teeth, Differences between Primary & Permanent teeth, Occlusion and Arrangement of teeth. **B. Oral histology - one question - 14 marks** Development of tooth, Enamel-structure & development, Dentin-structure& development, Cementum, Dental pulp-structure & histology, Periodontal ligament, Alveolar bone-structure & histology, Oral mucosa-structure & histology, Eruption of teeth	Structured Essays 2x 10marks	20
A. Oral histology - two questions - 16 marks B. Dental anatomy - one question - 08 marks C. Oral physiology - one question - 08 marks	Short notes 4 x 5marks	20
A. Oral histology - five questions - 20 marks B. Dental anatomy - three question - 12 marks C. Oral physiology - one question - 04 marks D. Oral embryology - one question - 04 marks	Brief Notes 10x3marks	30
	Total	**70**

i. Theory

University written Examination: **70Marks**

University Viva: **20Marks**

Internal Assessment: **10 Marks**

ii. Practicals:

Internal Assessment: **20 Marks**

University Practicals: **80Marks**

Grand Total **200 Marks**

Mark Distribution for University Practical Examination:

Tooth Carving: (Time allotted 75 Minutes) 25 Marks

Spotters: (15X3 marks) 45 Marks

Practical work Record: 10 marks

Type of Spotters:

8 Histology and Ground Section slides

5 Tooth identification

2 Casts for identification of teeth, numbering system and age assessment

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5. GENERAL PATHOLOGY

a) AIM:

At the end of the course the student should be competent to: Apply the scientific study of disease processes, which result in morphological and functional alterations in cells, tissues and organs to the study of pathology and the practice of dentistry.

b) OBJECTIVES:

Enabling the student

i. To demonstrate and analyze pathological changes macroscopically explain their observations in terms of disease processes.

ii. To integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.

iii. To demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research.

iv. To demonstrate ability to consult resource materials outside lectures, laboratory and tutorial classes.

c) COURSE CONTENT:

i. Theory: 55Hours

Sl. No.	TOPIC	HOURS ALLOTTED
1	Introduction , Terminologies, The cell in health, The normal cell structure, The cellular functions	1
2	Etiology and Pathogenesis of disease, Cell Injury Types - congenital, Acquired Mainly Acquired causes (Hypoxic injury, chemical injury, physical injury, immunological injury) Cell death& Necrosis Apoptosis, definition, causes, features and types of necrosis Gangrene - Dry, wet, gas Pathological Calcifications (Dystrophic and metastatic)	3
3	Degenerations, Amyloidosis, Fatty change, Cloudy swelling, Hyaline change, mucoid degeneration	2
4	Inflammation, Definition, causes types, and features, Acute inflammation, The vascular response, The cellular response, Chemical mediators, The inflammatory cells Fate, Chronic inflammation, Granulomatous inflammation	3

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5	Healing Regeneration, Repair Mechanisms, Healing by primary intention, Healing by secondary intention, Fracture healing, Factors influencing healing process, Complications	3
6	Immunological mechanisms in disease Humoral & cellular immunity Hypersensitivity & autoimmunity	2
7	Infections & infestations (1) Syphilis: Epidemiology, Types and stages of syphilis, Pathological, features, Diagnostic criteria, Oral lesions (2) Typhoid, Epidemiology, Pathogenesis, Pathological features, Diagnostic criteria, Thrombosis (3) Tuberculosis, Epidemiology, Pathogenesis, (Formation of tubercle), Pathological, features of Primary and secondary TB, Complications and Fate (4) AIDS & Hepatitis (5) Actinomycosis (6) Candidiasis (7) Mucormycosis (8) Pyogenic infections	6
8	(1) Disorders of circulation, Hyperemia, Shock (2) Definition, Pathophysiology, Formation, complications & Fate of a thrombus (3) Embolism, Definition, Types, Effects (4) Ischemia and Infarction, Definition, etiology, types, Infraction of various organs (5) Derangements of body fluids, Oedema - Pathogenesis, Different types	4
9	Nutritional Disorders, starvation, obesity, malnutrition, pathogenesis of deficiency diseases with special reference to disorders of vitamins & minerals	3
10	Diabetes Mellitus, Definition, Classification, Pathogenesis, Pathology in different organs	2
11	Hypertension, Definition, classification, Pathophysiology, Effects in various organs	2
12	Brief introduction to growth & differentiation Adaptive disorders of	1

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	growth, Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia	
13	General Aspects of neoplasia, Definition, terminology, classification, Differences between benign and malignant neoplasms, The neoplastic cell, Metastasis, Etiology and pathogenesis of neoplasia, Carcinogenesis, Tumour biology, Oncogene and anti-oncogenes, Diagnosis, Precancerous lesions, Common specific tumours, Sq papilloma & Ca, Basal cell Ca, Adenoma & Adenocarcinoma, Fibroma & Fibrosarcoma, Lipoma and liposarcoma	4
14	Common diseases of Bones, Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma, Osteocalstoma, Giant cell Tumour, Ewing's sarcoma, Fibrous dysplasia, Aneurismal bone cyst	3
15	Diseases of oral cavity, Lichen planus, Stomatitis, Leukoplakia, Squamous cell Ca, Dental caries, Dentigerious cyst, Ameloblastoma Diseases of salivary glands, Normal structure, Sialadenitis & Tumours	4
16	Diseases of Cardiovascular system Cardiac failure, Congenital heart disease ASD, VSD, PDA, Fallot's Tetrology, Infective Endocarditis, Atherosclerosis, Ischaemic heart Disease	2
17	Introduction to haematology , haemopoiesis, bone marrow aspiration & biopsy, Anaemias, classification, Iron Deficiency anaemia, Megaloblastic anaemia, hemolytic anaemeas and their lab investigations, Polycythemea.	3
18	Haemorrhagic Disorders, Coagulation cascade Coagulation disorders Platelet function, Platelet disorders	3
19	Diseases of WBC's pathologic variations in white blood cell counts and leukemoid reactions, Leukaemias, Acute and chronic leukaemias, Diagnosis and clinical features Diseases of Lymph nodes, Hodgkin's disease, Non Hodgkins lymphoma, Metastatic carcinoma	4

ii. Practicals and lecture demonstrations: 55 hours

(1) Lecture demonstrations: 10 Hours

a) Anti coagulants, Blood indices

b) PCV & ESR

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c) Instruments & their uses:

(i) Neubauer's Counting chamber

(ii) Haemoglobinometer

(iii) W.B.C Pipette

(iv) Wintrobe Tube

(v) Urinometer

d) Cytologic Techniques- FNAC and buccal smear

e) Study of anaemeas- Microcytic, Macrocytic and Dimorphic blood picture

f) Study of Acute leukemias- Any one type

g) Study of Chronic Leukemias- Any one type

(2) Histopathology Slides & Specimens: 20 Hours

a) Tissue Processing, Staining

b) Histopathology slides

(i) Acute appendicitis,

(ii) Granulation tissue,

(iii) fatty liver

(iv) CVC lung, CVC liver, CVC spleen

(v) Kidney amyloidosis

(vi) Tuberculosis,

(vii) Actionomycosis,

(viii) Rhinosporidiosis

(ix) Squamous cell papilloma,

(x) Transitional cell papilloma,

(xi) Pleomorphic adenoma

(xii) Basal cell carcinomas

(xiii) Sqamous cell carcinoma

(xiv) Osteosarcoma,

(xv) osteoclastoma,

(xvi) fibrosarcoma

(xvii) Malignant melanoma,

(xviii) Ameloblastoma,

(xix) Adenocarcinoma

(xx) Pleomorphic adenoma

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(xxi) Metastatic carcinoma in lymph node

(xxii) Capillary and cavernous haemangioma

(xxiii) Fibroma

(xxiv) Neurofibroma

(xxv) Lipoma

(xxvi) Osteoma, chondroma

c) Specimens

(i) Acute Appendicitis.

(ii) Tuberculosis Lymphnode.

(iii) Fatty liver.

(iv) Infarction spleen.

(v) Chronic Venous Congestion (C.V.C.) Liver

(vi) Squamous papilloma

(vii) Basal cell carcinoma

(viii) Lipoma

(ix) Squamous cell carcinoma

(x) Malignant Melanoma

(xi) Adenocarcinoma

(xii) Osteosarcoma

(xiii) Osteoclastoma.

(xiv) Gangrene.

(3) **Practicals that must be done by the students: 25hrs.**

(i) Determination of Haemoglobin percentage

(ii) Blood grouping.

(iii) Total Leukocytecount

(iv) Bleeding time , Clotting time

(v) Peripheral blood smear staining and study

(vi) Differential leukocyte count.

(vii) Urine examination- for sugar, ketone bodies, protein, blood, bile pigments and bile salts- any one standard test

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d) SCHEME OF EXAMINATION

i. Theory:

Distribution of Topics and Type of Questions for written examination

Contents	Types of Questions and Marks	Marks
Question from General Pathology Inflammation, Healing and Repair, Tuberculosis, Leprosy, Syphilis, Thrombosis, Neoplasia, Diseases of bone, Cell injury, metabolic disturbances, Circulatory disturbances, Hypertension, diseases of oral cavity	Structured Essay 1x 10marks	10
Two questions from General Pathology Intracellular accumulations, Necrosis, Gangrene, Apoptosis, Amyloidosis, Pathologic calcification, hypersensitivity reactions, Infections, Shock, Oedema, Infarction, Congestion, Hypertension, Diabetes Mellitus, Premalignant Conditions, Neoplasia, Osteomyelitis, Anaemias, Neoplastic Proliferation of WBCs–Leukaemias and Lymphomas, Haemorrhagic disorders, Erythrocyte Sedimentation Rate(ESR),Urine sediment. Two from Haematology One from Clinical Pathology	Short Notes 2 x 5marks Brief notes 5 x 3	10 15
	Total	**35**

i. ***Theory:***

University written Examination: **35Marks**
University Viva: **10Marks**
Internal Assessment: **5 Marks**
Total: 50 Marks

ii. ***Practicals:***

Internal Assessment: **10 Marks**
University Practicals: **40Marks**
Total: 50 Marks
Grand Total 100Marks

Mark distribution for University practical examination

Spotters

Haematology slide	2x 2marks
Histopathology slides	5x2marks
Specimens	2x2marks
Instruments	1x2marks

Any three of the following exercises to be evaluated:

To examine given sample of urine for abnormal constituents
To do differential count on the given peripheral blood smear
To estimate haemoglobin percentage in the given sample of blood
To determine blood groups (ABO and Rh) in the given sample of blood
} 3x 5 marks

Practical work record 5marks

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6 GENERAL MICROBIOLOGY

a) AIMS:

Introduce the students to the exciting world of microbes. To make the students aware of various branches of microbiology and the role of microbes in human diseases. The objectives of teaching microbiology can be achieved by various teaching techniques such as:

Lectures

Lecture Demonstrations

Practical exercises

Audio visual aids

Small group discussions with regular feedback from the students to be arranged.

b) OBJECTIVES:

i. Knowledge and Understanding

At the end of the Microbiology course the student is expected to:

(1) Understand the basics of various branches of microbiology and able to apply the knowledge relevantly.

(2) Apply the knowledge gained in related medical subjects like General Medicine and General Surgery and Dental subjects like Oral Pathology, Public Health Dentistry, Periodontics, Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes.

(3) Understand and practice various methods of Sterilisation and disinfection in dental clinics.

(4) Have a sound understanding of various infectious diseases and lesions in the oral cavity.

ii. Skills

(1) Student should have acquired the skill to diagnose, differentiate various oral lesions.

(2) Should be able to select, collect and transport clinical specimens to the laboratory.

(3) Should be able to carry out proper aseptic procedures in the dental clinic.

c) COURSE CONTENT:

A brief syllabus of Microbiology is given as follows:

i. General microbiology:

(1) History, Introduction, Scope, Aims and Objectives.

(2) Morphology and Physiology of bacteria.

(3) Detail account of Sterlisation and Disinfection.

(4) Brief account of Culture media and Culture techniques.

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(5) Basic knowledge of selection, collection, transport, processing of clinical specimens and identification of bacteria.

(6) Bacterial Genetics and Drug Resistance in bacteria.

ii. Immunology:

(1) Infection - Definition, Classification, Source, Mode of transmission and types of Infectious disease.

(2) Immunity

(3) Structure and functions of Immune system

(4) The Complement System

(5) Antigen

(6) Immunoglobulins - Antibodies - General structure and the role played in defense mechanism of the body.

(7) Immune response

(8) Antigen - Antibody reactions - with reference to clinical utility.

(9) Immuno deficiency disorders - a brief knowledge of various types of immuno deficiency disorders - A sound knowledge of immuno deficiency disorders relevant to dentistry.

(10) Hypersensitivity reactions

(11) Autoimmune disorders - Basic knowledge of various types - sound knowledge of autoimmune disorders of oral cavity and related structures.

(12) Immunology of Transplantation and Malignancy

(13) Immune haematology

iii. Systematic bacteriology:

(1) Pyogenic cocci - Staphylococcus, Streptococcus, Pneumococcus, Gonococcus and Meningococcus - brief account of each coccus - detailed account of mode of spread laboratory diagnosis, Chemo therapy and prevention.

(2) Detailed account of Cariogenic Streptococci

(3) Corynebacterium diphtheriae - mode of spread, important clinical feature, Laboratory diagnosis, Chemotherapy and Active immunisation.

(4) Mycobacteria - Tuberculosis and Leprosy

(5) Clostridium - Gas gangrene, food poisoning and tetanus.

(6) Non-sporing Anaerobes - in brief about classification and morphology, in detail about dental pathogens - mechanism of disease production and prevention.

(7) Spirochaetes - Treponema pallidum - detailed account of Oral Lesions of syphilis, Borrelia vincentii, Actinomycetes.

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iv. Virology:

(1) Introduction

(2) General properties, cultivation, host - virus interaction with special reference to Interferon.

(3) Brief account of Laboratory diagnosis, Chemotherapy and immuno prophylaxis in general.

(4) A few viruses of relevance to dentistry.

a) Herpes Virus

b) Hepatitis B Virus - brief about other types

c) Human Immunodeficiency Virus (HIV)

d) Mumps Virus

e) Brief- Measles and Rubella Virus

(5) Bacteriophage - structure and Significance

v. Mycology:

(1) Brief Introduction

(2) Candidosis - in detail

(3) Briefly on oral lesions of systemic mycoses.

vi. Parasitology:

(1) Brief introduction - protozoans and helminthes

(2) Brief knowledge about the mode of transmission and prevention of commonly seen parasitic infection in the region.

d) Theory: 65 Hours

Topics		Hours
I.GENERALBACTERIOLOGY		
1.	Introduction, History and classification.	02
2.	Morphology, Physiology of Bacterial cell.	02
3.	Bacterial Genetics	02
4.	Infection	02
II.IMMUNOLOGY		
1.	Immunity	02
2.	Antigen	01
3.	Antibodies	01
4.	Structures and functions of Immune system	01
5.	Immune response	01
6.	Antigen and antigen reactions &compliment	04
7.	Hypersensitivity	02
8.	Autoimmunity	01

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9.	Immunology of transplantation	01
III.SYSTEMATICBACTERIOLOGY		
1.	Staphylococci	01
2.	Streptococci (Dental Caries)	02
3.	Pneumococci	01
4.	Meningococci &Gonococci	01
5.	Corynebacterium diphtheria	02
6.	Bacillus	01
7.	Clostridia	02
8.	Non sporing Anaerobes	02
9.	Mycobacteria	03
10.	Spirochaetes (Treponema, leptospira and Borrelia)	03
11.	Normal bacterial flora of the Oral Cavity	01
IV.VIROLOGY		
1.	General properties of viruses	03
2.	Herpes viruses	02
3.	Measles and Mumps	01
4.	Rabies virus.	01
5.	Hepatitis viruses	02
6.	Human Immunodeficiency Virus(HIV)	01
7.	Oncogenic viruses &Poliomyelitis	02
V. PARASITOLOGY		
1.	Introduction to parasitic diseases	01
2.	Entamoeba histolytica, Malaria, Leishmania	03
VI. MYCOLOGY		
1.	Candidiasis (in detail)	02
2.	Rhinosporidiosis	02
VII.APPLIEDMICROBIOLOGY		
1.	Immunisation schedule, Collection of materials, Experimental animals &hospital infections – in brief	02

vii. Practicals/Demonstrations: 50 Hours

(1) Demonstrations:

a) Morphological forms of microbes

b) Different morphological forms of bacteria, viruses, fungi, parasites.

c) Sterilization Methods – Specified techniques – their uses.

d) Culture Media – transport media

e) Special staining techniques, stained preparations – dark ground microscopy.

f) Demonstration of bacteria in stained clinical material.

g) Demonstration of viruses – Permanent preparations morphology, inclusion bodies.

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h) Demonstration of parasite – in blood smear – in stool – in urine.

i) Demonstration of common fungi – candida – Dermatophytes.

(2) Practicals:

a) Simple staining of bacteria

b) Gram's staining – isolated bacteria – Clinical materials.

c) Ziehl-Neelsen staining – prepared and fixed smears.

d) Collection of materials for culture – pus, blood.

(3) List of practical materials slides f*or demonstration:*

a) Staphylococcus

b) Streptococcus

c) Gonococcus

d) Pneumococcus

e) Mycobacterium Tuberculosis

f) Mycobacterium leprae

g) Anthrax

h) Cl. Tetani

i) Spirochaetes

j) Gram Negative Bacilli

k) Candida

l) Actinomyces

(4) **Slides for practical exercises:**

a) Grams stains

(i) Staphylococci

(ii) Gram negative bacilli

(iii) Mixture of any two organisms

(iv) Gram stain of the oral cavity

b) Albertsstain–Kleb's Loffeler's Bacilli(KLB)culture, slide

c) Ziehl-Neelson'sstain -Sputum positive for AFB

(5) **Media for demonstration:**

i. Un-inoculated media:

(i) Nutrient agar plate

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(ii) Blood agar plate

(iii) Chocolate agar plate

(iv) Macconkey agar plate

(v) Glucosecitrate broth(Blood culture bottle)

(vi) Lowenstein Johnson's Mediaslope

(vii) Loefflers serum slope

(viii) Sabourauds slope

(ix) Milk agar plate

(x) Robert Cooked Meat broth

ii. Inoculated media:

(i) Nutrient agar with staphylococci

(ii) Blood Agar with Alpha Haemolytic Streptococci

(iii) Blood Agar withBeta Haemolytic Streptococci

(iv) Potassium Tellurite with growth of C.diphtheriae

(v) Milk agar with staphylococci

(vi) Antibiotic sensitivity plate

iii. Animals:

(i) Guinea pig

(ii) Rabbit

(iii) Mice

iv. Instruments:

(i) VDRL slide

(ii) Tuberculin syringe

(iii) Sterile swab

(iv) Seitz filter

(v) MacIntosh Fildes jar

(vi) Widal rack with tubes

(vii) Microtitre plate

(viii) Disposable syringe

(ix) Surgical gloves

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e) SCHEME OF EXAMINATION

i. Theory

Distribution of Topics and Type of Questions for University written examination:

Contents	Type of Questions and Marks	Marks
One Long Essay question from Systematic Bacteriology	Structured Essay 1 x 10marks	10
One question from General bacteriology One question from Immunology One question from Mycology One question from Parasitology / Oral Microbiology One question from Systematic Bacteriology	Short notes 2 x 5marks	10
One question from General bacteriology One question from Immunology One question from Systematic Bacteriology Two questions fromVirology	Brief Notes 5x3marks	15
	Total	**35**

iii. *Theory:*

University written Examination: **35Marks**
University Viva: **10Marks**
Internal Assessment: **5 Marks**
Total: 50 Marks

iv. Practicals:

Internal Assessment: **10 Marks**
University Practicals: **40Marks**
Total: 50 Marks
Grand Total 100Marks

Mark distribution for University practical examination

Spotters

Slides	5x 2 Marks
Media	3x2 Marks
Instruments	2x2 Marks
Gram's Stain	7 Marks
Ziehl-Neelsen's Stain	8 Marks
Practical work record	5 Marks

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7 DENTAL MATERIALS

a) INTRODUCTION:

The science of Dental Material has undergone tremendous changes over the years. Continued research has led to new material systems and changing concepts in the dental field. Interlinked with various specialized branches of chemistry, practically all engineering applied sciences and biological characteristics, the science of dental material emerged as basic sciences in itself with its own values and principles.

b) AIMS:

Aim of the course is to present basic chemical and physical properties of Dental materials as they are related to its manipulation to give a sound educational background so that the practice of the dentistry emerged from art to empirical status of science as more information through further research becomes available. It is also the aim of the course of Dental materials to provide with certain criteria of selection and which will enable to discriminate between facts and propaganda with regards to claims of manufactures.

c) OBJECTIVES:

To understand the evolution and development of science of dental materials. Impart knowledge of physical and chemical properties and advantages and disadvantages of various materials used in dentistry. Acquire knowledge of biomechanical requirements of particular restorative material and its application & limitations. Laying down standards or specifications of various materials to guide to manufacturers as well as to help professionals. Search for newer and better materials which may answer our requirements with greater satisfaction. To understand and evaluate the claims made by manufactures of dental materials.

At the end of the course the student should have the knowledge about the composition, properties, manipulative techniques and their various commercial names. The student should also acquire skills to select and use the materials appropriately for laboratory and clinical use.

d) NEED FOR THE COURSE:

The profession has to raise from an art to a science, the need for the dentist to possess adequate knowledge of materials to exercises his best through knowledge of properties of different types of materials. There is growing concern of health hazards due to mercury toxicity, inhalation of certain vapors or dust materials, irritations and allergic reaction to skin due to contact of materials. The Dentist must acquire wider knowledge of physical, chemical and biological properties of the various materials used in the mouth because they may cause irritation of oral tissues. pH of some of the restorative materials causes inflammation and

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necrosis of pulp which is a concern and the patient should be protected from these. Certain criteria of selection are provided that will enable the dentist to discriminate between facts and propaganda, which will make a material biologically acceptable.

e) SCOPE:

Dental materials are employed in mechanical procedures including restorative dentistry such as Prosthodontics, Endodontics, Periodontics and Orthodontics. There is scarcely a dental procedure that does not make use of dental materials in one form or another and therefore the application of dental material is not limited to any one branch of dentistry. Branches such as minor surgery and Periodontics require less use of materials but the physical and chemical characters of materials are important in these fields. The toxic and tissue reaction of dental materials and their durability in the oral cavity where the temperature is between 32 & 37 degree centigrade, and the ingestion of hot or cold food ranges from 0-70 degree centigrade. The acid an alkalinity of fluids shown pH varies from 4 to 8.5. The load on 1 sq. mm of tooth or restorative materials can reach to a level as high as many kilograms. Thus the biological properties of dental materials cannot be separated from their physical and chemical properties.

f) THEORY: 80 HOURS (20 hours in First BDS & 60 hours in second BDS)

Section A- Prosthodontics, Section B- Conservative Dentistry

Sl. No	Topic	Hours
1.	**Introduction - Section A Prosthodontics & Section B Conservative Dentistry**	**2**
2.	Structure of matter and principles of adhesion- Section A Change of state, inter atomic primary bonds, inter atomic secondary bonds, inter atomic bond distance and bonding energy, thermal energy, crystalline structure, non crystalline structures, diffusion, adhesion and bonding and adhesion to tooth structures.	**2**
3.	**Important physical properties applicable to dental materials - Section B** Physical properties are based on laws of mechanics, acoustics, optics, thermodynamics, electricity, magnetism, radiation, atomic structure or nuclear phenomena. Hue, value, chroma and translucency physical properties based on laws of optics, dealing with phenomena of light, vision and sight. Thermal conductivity & coefficient of thermal expansion are physical properties based on laws of thermodynamics. Stress, strain, proportional limit, elastic limit yield strength, modulus of elasticity, flexibility, resilience, impact, impact strength, permanent deformation, strength, flexure strength fatigue, static fatigue, toughness, brittleness, ductility & malleability, hardness, abrasion	**6**

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	resistance, relaxation, rheology, Thixotropic, creep, static creep, dynamic creep, flow, colour, three dimensional colour - hue, values, chroma, Munsell system, metamersim, fluorescence, physical properties of tooth, stress during mastication.	
4.	**Biological considerations in use of dental materials- Section B** Materials used are with the knowledge of appreciation of certain biological considerations for use in oral cavity. Requirement of materials with biological compatibility. Classification of materials from perspective of biological compatibility, eg. Contact with soft tissues, affecting vitality of pulp, used for root canal fillings, affecting hard tissues of teeth, laboratory materials that could be accidentally be inhaled or ingested during handling. Hazards associated with materials: pH-effecting pulp, polymers causing chemical irritation, mercury toxicity, etc. Microleakage, Thermal changes, Galvanism, toxic effect of materials. Biological evaluation for systemic toxicity, skin irritation, mutagenecity and carcinogenicity. Disinfection of dental materials for infection control.	**2**
5.	**Gypsum & gypsum products- Section A** Gypsum - its origin, chemical formula, Products manufactured from gypsum. Dental plaster, Dental stone, Die stone, high strength, high expansion stone. Application and manufacturing procedure of each, macroscopic and microscopic structure of each. Supplied as and Commercial names. Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of set material. Setting time: working time and setting time, Measurement of setting time and factors controlling setting time. Setting expansion, Hygroscopic setting expansion - factors affecting each. Strength: wet strength, dry strength, factors affecting strength, tensile strength Slurry - need and use. Care of cast. ADA classification of gypsum products Description of impression plaster and dental investment Manipulation including recent methods or advanced methods. Disinfection: infection control, liquids, sprays, radiation Method of use of disinfectants Storage of material - shelf life.	**4**
6.	**Impression materials used in dentistry- Section A** Impression plaster, Impression compound, Zinc oxide Euginol impression paste & bite registration paste incl., non Euginol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, Condensation silicones, Addition silicones, Polyether, Visible light cure polyether urethane dimethacrylate. Historical background & development of each impression material, Definition of impression, Purpose of making impression, Ideal properties required and application of material.	**10**

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	Classification as per ADA specification, general & individual impression material. Application and their uses in different disciplines. Marketed as and their commercial names, Mode of supply & mode of application bulk/wash impression. Composition, chemistry of setting, Control of setting time, Type of impression trays required, Adhesion to tray, manipulation, instruments & equipments required. Techniques of impression, storage of impression, (Compatibility with cast and die material). Any recent advancement in material and mixing devices. Study of properties: Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, and compatibility with cast & die materials incl., electroplating Biological properties: tissue reaction, Shelf life & storage of material. Infection control - disinfection Advantages & disadvantages of each material.	
7.	**Synthetic resins used in dentistry - Section A** Historical background and development of material, Denture base materials and their classification and requirement. Classification of resins, Dental resins - requirements of dental resins, applications, polymerisation, polymerisation mechanism stages in addition polymerisation, inhibition of polymerisation, co-polymerization, molecular weight, crosslinking, plasticizers, Physical properties of polymers, polymer structures types of resins.	**3**
	Acrylic resins: - Section A Mode of polymerisation: Heat activated, Chemically activated, Light activated Mode of supply, application, composition, polymerisation reaction of each. Technical considerations: Methods of manipulation for each type of resin. Physical properties of denture base resin. Miscellaneous resins & techniques: Repair resins, Relining and rebasing. Short term and long-term soft-liners, temporary crown and bridge resins, Resin impression trays, Tray materials, Resin teeth, materials in maxillofacial prosthesis, Denture cleansers, Infection control in detail, Biological properties and allergic reactions.	**3**
	Restorative resins: - Section B Historical background, Resin based restorative materials, unfilled & filled, Composite restorative materials, Mode of supply, Composition, Polymerisation mechanisms: Chemically activated, Light activated, Dual cure: Degree of conversion, Polymerisation shrinkage. Classification of Composites: Application, composition and properties of each, Composites of posterior teeth, Prosthodontics resins for veneering. Biocompatibility - microleakage, pulpal reaction, pulpal protection Manipulation of	**4**

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	composites: Techniques of insertion of Chemically activated, light activated, dual cure Polymerisation, Finishing and polishing of restoration, Repair of composites. Direct bonding, Need for bonding, Acid - etch technique, Enamel bonding, Dentin bonding agents. Mode of bonding, Bond strength, Sandwich technique its indication and procedure Extended application for composites: Resins for restoring eroded teeth, Pit and fissure sealing, Resin inlays system - Indirect & direct, Core build up, Orthodontic applications.	
8.	**Metals and alloys - Section B** Structure and behaviour of metals, Solidification of metals, mechanism of crystallisation amorphous & crystalline. Classification of alloys, Solid solutions, and Constitutes or equilibrium phase diagrams: Electric alloys, Physical properties, Peritectic alloys, Solid state reaction other binary systems: Metallography & Heat treatment Tarnish and corrosion Definition, causes of corrosion, protection against corrosion, Corrosion of dental restorations, clinical significance of galvanic current. Dental amalgam- Section B History, Definition of dental amalgam, application, Alloy classification, manufacture of alloy powder composition - available as. Amalgamation: setting reaction & resulting structure, properties, Micro leakage Dimensional stability, Strength, Creep, Clinical performance Manipulation: Selection of alloy, proportioning, mechanism of trituration, condensation, carving & finishing. Effect of dimensional changes, Marginal deterioration. Repair of amalgam, mercury toxicity, mercury hygiene. Direct filling gold- Section B Properties of pure gold, mode of adhesion of gold for restoration forms of direct filling gold for using as restorative material. Classification: Gold Foil, Electrolytic precipitate, powdered gold Manipulation: Removal of surface impurities and compaction of direct filling gold. Physical properties of compacted	**10**
9.	**Dental casting alloys - Section B** Historical background, desirable properties of casting alloys. Alternatives to cast metal technology: direct filling gold, amalgam, mercury free condensable intermetallic compound - an alternative to metal casting process. CAD-CAM process for metal & ceramic inlays - without need of impression of teeth or casting procedure, pure titanium, most bio compatible metal which are difficult to cast can be made into crowns with the aid of CAD- CAM technology . Another method of making copings - by copy milling (without casting procedures). Classification of casting alloys: By function &	**6**

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	description. Recent classification, High noble (HN), Noble (N) and predominantly base metal (PB) Alloys for crown & bridge, metal ceramic & removable partial denture. Composition, function, constituents and application, each alloy both noble and base metal, Properties of alloys: Melting range, mechanical properties, hardness, elongation, modulus of elasticity, tarnish and corrosion. Casting shrinkage and compensation of casting shrinkage. Biocompatibility - Handling hazards & precautions of base metal alloys, casting investments used. Heat treatment: Softening & hardening heat treatment. Recycling of metals. Titanium alloys & their application, properties & advantages. Technical considerations in casting. Heat source, furnaces, gold, Clinical performance.	
10	**Dental waxes including inlay casting wax - Section B** Introduction and importance of waxes: Sources of natural waxes and their chemical nature. Classification of Waxes: Properties: melting range, thermal expansion, mechanical properties, flow & residual stresses, ductility. Dental Wax: Inlay wax: Mode of supply: Classification & composition, Ideal requirements: Properties of inlay wax: Flow, thermal properties Wax distortion & its causes. Manipulation of inlay wax: Instruments & equipment required, including electrically heated instruments metal tips and thermostatically controlled wax baths. Other waxes: Applications, mode of supply & properties. Casting Wax, Base plate wax, Processing wax, Boxing wax, Utility wax, Sticky wax, Impression wax for corrective impressions Bite registration wax.	**2**
11	**Dental casting investments - Section A** Definition, requirements, classification Gypsum bonded - classification. Phosphate bonded, Silica bonded Mode of Supply: Composition, application, setting mechanism, setting time & factors controlling. Expansions: Setting expansion, Hygroscopic Setting expansion, & thermal expansion: factors affecting. Properties: Strength, porosity, and fineness & storage. Technical considerations: For Casting procedure Preparation of die, Wax pattern, spruing, investing, control of shrinkage compensation, wax burnout, and heating the invested ring, casting. Casting machines, source of heat for melting the alloy. Defects in casting.	2
12	**Soldering, brazing and welding - Section B(Classes to be handled by orthodontics department)** Need of joining dental appliances, Terms & Definition, Solders: Definition, ideal requirement, types of solders - Soft & hard and their fusion temperature, application. Mode of supply of solders, Composition and selection, Properties. Tarnish & corrosion	**2**

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	resistance mechanical properties, microstructure of soldered joint. Fluxes & Anti fluxes: Definition, Function, Types, commonly used fluxes & their selection Technique of Soldering & Brazing: free hand soldering and investment, steps and procedure. Welding,: Definition, application, requirements, procedure, weld decay - causes and how to avoid it. Laser welding.	
13	**Wrought base metal alloys - Section A (Classes to be handled by orthodontics department)** Applications and different alloys used mainly for orthodontics purpose Stainless steel Cobalt chromium nickel Nickel titanium Beta titanium Properties required for orthodontic wires, working range, springiness, stiffness, resilience, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, bio compatibility Stainless steels: Description, type, composition & properties of each type. Sensitisation & stabilisation, Mechanical properties - strength, tensile, yield strength, KHN. Braided & twisted wires their need, Solders for stainless steel, Fluxes, Welding. Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, physical properties. Nickel - Titanium alloys, shape, memory & super elastic Titanium alloys, application, composition, properties, welding, Corrosion resistance	**3**
14	**Dental cements- Section B** Definition & Ideal requirements of Dental Cements: Silicate, Glass ionomer, metal modified glass ionomer, resin modified glass ionomer, zinc oxide Euginol, modified zinc oxide Euginol, zinc phosphate, zinc silico phosphate, zinc poly carboxylate Cavity liners and cement bases Varnishes Calcium hydroxide. Gutta percha Application, classification (general and individual), setting mechanism, mode of supply, Properties, factors affecting setting, special emphasis on critical procedures of manipulation and protection of cement, mode of adhesion, biomechansim of caries inhibition. Agents for pulpal protection, Modifications and recent advances, Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.	**5**
15	**Dental ceramics - Section A** Historical background & General applications of Dental ceramics: definition, classification, application, mode of supply, manufacturing procedure, methods of	**8**

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	strengthening. Properties of fused ceramic: Strength and factors affecting, modulus of elasticity, surface hardness, wear resistance, thermal properties, specific gravity, chemical stability, esthetic properties, biocompatibility, technical considerations. Metal Ceramics (PFM): Alloys - Types and composition of alloys Ceramic - Type and Composition. Metal Ceramic Bond, Nature of bond. Bonding using electro deposition, foil copings, bonded platinum foil, swaged gold alloy foil coping. Technical considerations for porcelain and porcelain fused metal restorations. Recent advances - all porcelain restorations, Manganese core, injection moulded, castable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veneers, inlays and onlays, and CAD - CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.	
16	**Abrasion & polishing agents - Section A** Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives: Finishing, polishing & cleaning. Types of abrasives: Diamond, Emery, aluminum oxides garnet, pumice, Kieselgurh, tripoli, rouge, tin oxide, chalk, chromic oxide, sand, carbides, diamond, zirconium silicate Zinc oxide. Abrasive action. Desirable characteristics of an abrasive, Rate of abrasion, Size of particle, pressure and speed. Grading of abrasive & polishing agents. Binder, Polishing materials & procedures used. Technical consideration, Material and procedure used for abrasion and polishing Electrolytic polishing and burnishing.	**1**
17	**Die and counter die materials including electroforming and electro polishing - Section A** Types - Gypsum products, Electroforming, Epoxy resin, Amalgam	**1**
18	**Dental implants - Section A** Evolution of dental implants, types and materials.	**2**
19	**Mechanics of cutting - Section B** Burs and points.	**1**
20	**Waste disposal - Section B** At the end of the course the student should have the knowledge about the composition, properties, manipulative techniques and their various commercial names. The student should also acquire skills to select and use the materials appropriately for laboratory and clinical use. (1) Qualitative observation of restorative dental resins. (2) Determination of setting time of chemically activated composite resins.	**1**

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g) PRACTICALS: 240 Hours (40 hours in First BDS & 200 Hours in second BDS)

Demonstration of manipulation of all materials (for a batch not more than 8 students).

Exercises to be done by each student:

Impression material

Manipulation, making impressions, identifying setting time and defects. (Comparative studies included)

Gypsum products

Manipulation, pouring impressions-identify setting time and working time and relation of working time with reference to proportion of water, change in temperature and spatulation time.

Self-cure and heat cure acrylic resin-manipulation and curing.

Cements-manipulation and studying setting time and working time for luting, base and restoration.

Silver Amalgam-manipulation, trituration, condensation and studying setting and working time.

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h) SCHEME OF EXAMINATION:

The University Theory examination will have two sections of 35 marks each Section A Prosthodontics & Section B Conservative Dentistry *(overlapping of topics may occur)*

For Dental Materials University Practical Examination, if internal examiner is from Prosthodontics, External examiner should be from Conservative Dentistry and vice versa

Distribution of Topics and Type of Questions for written examination

Section A: Prosthodontics

Contents	Types of Questions and Marks	Marks
Question from any Prosthodontic topic preferably included in Section A	Structured Essay 1x 10marks	10
Questions from any Section A topic including orthodontics. Avoid questions in the topic from which long essay question is set	Short Notes 2 x 5marks	10
	Brief Notes 5x3marks	15
	Total	**35**

i. ***Theory:***

University written Examination: **35Marks**
University Viva: **10Marks**
Internal Assessment: **5 Marks**
Total: 50 Marks

ii. ***Practicals:***

Internal Assessment: **10 Marks**
University Practicals: **40Marks**
Total: 50 Marks
Grand Total 100Marks

Spotters (*5x 2Marks)* *10 Marks*

Manipulation of Any one of the following Dental materials: *25 Marks*

Gypsum products

Irreversible Hydrocolloid

Impression Compound

Rubber base impression Material

Zinc Oxide Impression Material

Heat cured PMMA

Practical Work Record *5 Marks*

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Distribution of Topics and Type of Questions for University Written examination:

Section B: Conservative Dentistry

Contents	Types of Questions and Marks	Marks
Question from Any Conservative Dentistry topic preferably included in Section B	Structured Essay 1x 10marks	10
Questions from any Section B topic including orthodontics. Avoid questions in the topic from which long essay question is set	Short Notes 2 x 5marks	10
	Brief Notes 5x3marks	15
	Total	**35**

i. ***Theory:***

University written Examination: **35Marks**
University Viva: **10Marks**
Internal Assessment: **5 Marks**
Total: 50 Marks

ii. ***Practicals:***

Internal Assessment: **10 Marks**
University Practicals: **40Marks**
Total: 50 Marks
Grand Total 100Marks

Spotters (*5x 2Marks)* *10 Marks*

Manipulation of Any one of the following Dental Cements: *25 Marks*

ZnO Euginol (Luting/Filing Consistency)

Zinc Phosphate Cement (Luting/base Consistency)

Glass Ionomer Cement Type I/II (Luting/Filling Consistency)

Polycarboxylate Cement (Luting Consistency)

Amalgam Trituration

Practical Work Record *5 Marks*

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8. GENERAL AND DENTAL PHARMACOLOGY AND THERAPEUTICS

a) GOAL:

The broad goal of teaching under graduate students in pharmacology is to inculcate rational and scientific basis of therapeutics keeping in view of dental curriculum and Profession.

b) OBJECTIVES:

At the end of the course the student shall be able to:

i. Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular,

ii. List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason,

iii. Tailor the use of appropriate drugs in disease with consideration to its cost, efficacy, safety for individual and mass therapy needs,

iv. Indicate special care in prescribing common and essential drugs in special medical situations such as pregnancy, lactation, old age, renal, hepatic damage and immuno compromised patients,

v. Integrate the rational drug therapy in clinical pharmacology,

vi. Indicate the principles underlying the concepts of "Essential drugs".

vii. Recognise and report adverse drug reaction to suitable authorities.

c) SKILLS:

At the end of the course the student shall be able to:

i. Prescribe drugs for common dental and medical ailments.

ii. To appreciate adverse reactions and drug interactions of commonly used drugs.

iii. Observe experiments designed for study of effects of drugs.

iv. Critically evaluate drug formulations and be able to interpret the clinical pharmacology of marketed preparations commonly used in dentistry.

d) INTEGRATION:

Practical knowledge of use of drugs in clinical practice will be acquired through integrated teaching with clinical departments.

e) THEORY: 70 HOURS

1. **General Pharmacology :**	
a. Definitions: Pharmacology, drug, Pharmacy, sources of drugs with examples.	1
b. Pharmacokinetics with clinical implications.	2
c. Routes of administration: oral, inhalation, intradermal, Subcutaneous, intramuscular, intravenous, intrathecal, perineural &Newer drug regimes. (Advantages and disadvantages with the examples of drugs administered).	1
d. Pharmacodynamics: mechanism of action ,factors modifying drug actions	2

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with emphasis on factors like-age, sex, dose ,frequency & route of administration, presence of other drugs, Pharmacogenetics and Pathological conditions.	
e. Therapeutics: Principles of drug therapy, Adverse drug reactions and drug interactions.	3
2.ANS drugs: Clinically used examples, their important pharmacological actions (which form the basis for the uses),clinical uses along with dental uses if any and specific adverse effect s of-	
a. Sympathomimetics	1
b. Sympatholytics-alphablockers, Beta -blockers.	2
c. Cholinomimetics.	2
d. Anticholinergics & Skeletal muscle relaxants	2
3. Detailed pharmacology of:	
a.Clinically used opioid and non-opioid analgesics.	2
b. Clinically used local anesthetics.	2
Detailed Pharmacology &Enumeration of clinically used agents, their brief Pharmacology, clinical uses along with dental uses if any, and specific adverse effects of:	
a. Ethylalcohol- actions, uses and drug interactions.	1
b. General anesthetics & Pre-anaesthetic medication	2
c. Antipsychotics, antidepressants, anxiolytics	2
d. Sedativehypnotics	2
e. Antiepileptics	1
CVS drugs: Enumeration/Classification of clinically used agents their important pharmacological actions(that form the basis of their uses)Clinical uses along with dental uses if any, and specific adverse effects of	
a. Cardiac glycosides	1
b. Antiangina drugs	1
c. Antihypertensives.	1
d. Diuretics	1
e. Pharmacotherapy of shocks-anaphylactic, cardiogenic hypovolemic &Septic.	1
Drugs acting on blood: Detailed pharmacology of:	
a. Coagulants, anticoagulants, fibrinolytics, antiplatelet drugs and styptics	3
b. Hematinics: Iron preparationVit.B12,FolicacidVit.C	3
c. Vit.D and calcium preparations	1
Endocrines: Enumeration/Classification of clinically used agents and their preparations, Mechanism of action, clinical uses along with dental uses if any and specific adverse effects of:	
a. Drugs used in diabetes mellitus	2
b. Corticosteroids	2
Chemotherapy: Enumeration/Classification of clinically used Agents, their mechanism of	

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action clinical uses along with dental uses if any and specific adverse effects of:	
a. Sulfonamides	1
b. Beta-lactum antibiotics	2
c. Macrolides and aminoglycosides	1
d. Broad spectrum antibiotics	1
e. Antifungal and antiviral (acyclovir) agents	2
f. Metronidazole and fluoroquinolones	1
g. Antineoplastic Drugs: Alkylating agents, Antimetabolities, Radioactive Isotopes, Vinka Alkaloids, Anticancer antibiotics.	2
h. Drug Therapy of Tuberculosis, Leprosy & Malaria	3
Other drugs: Enumeration o clinically used agents, general uses along with dental uses if any and specific adverse effects of:	
a. Antihistamines and anti emetics	2
b. Drugs used in bronchial asthma and cough	1
c. Drugs used in peptic ulcer	2
d. Chelating agents-BAL, EDTA & Penicillamine	1
e. Antihelminthics	2
Dental Pharmacology	
a. Fluoride pharmacology	1
b. Antiseptics, astringents & Sialogogues	1
c. Obtundents, Mummifying agents and disclosing agents	1
d.***Prevention and drug therapy of emergencies in dental practice***	2
1. Seizures	
2. Anaphylaxis	
3. Severe bleeding	
4. Shock	
5. Tetany	
6. Status asthmaticus	
7. Acute addisonian crisis	
8. Diabetic Ketoacidosis	

f) PRACTICALS AND DEMONSTRATIONS: 20 HOURS

To familiarise the student with the methodology: prescription writing and dispensing.

Rationale of drug combinations of marketed drugs.

Sl. No.	Procedure	Hours
1	Introduction-equipments used in dispensing pharmacy, prescription-parts and model prescription.	2
2	Demonstration of common dosage forms used in clinical practice	
3	Mixtures-one example(Expectorant/Salicylate)of simple and diffusible (Bismuth Kaolin/chalk)mixtures	2

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4	Emulsion-Types and example(Liniment turpentine/Shark liver oil) of emulsion	2
5	Powders-toothpowder	2
6	Mandl's paint/Gum paint percentage dilution-concept and calculations with suitable examples.	2
7	Mouthwashes-Alkaline, antiseptic, astringent	2
8	Toothpastes	2
9	Prescription writing for15 general conditions commonly encountered in clinical practice. eg. Bronchial asthma, hypertension congestive heart failure, angina pectoris, peptic ulcer, bacillary dysentery,diabetes mellitus, diabetic coma, osteoarthritis, anaphylaxis, status asthmaticus, Status epilepticus, iron deficiency & pernicious anaemia	2
10	Dental prescriptions for about fifteen dental conditions commonly encountered in practice eg. Acute necrotising ulcerative gingivitis, acute herpetic gingivitis/stomatitis, acute gingival abscess, pericoronal abscess (impacted teeth), dental caries, aphthous ulcers, hypersensitive dentine, dentoalveolar abscess, xerostomia, acute toothache, post-operative pain, post extraction pain with swelling, oral candidiasis, acute tonsillitis/ pharyngitis,common cold,scurvy etc.	2

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g) SCHEME OF EXAMINATION

Distribution of Topics and Type of Questions for University Written examination:

Contents	Types of Questions and Marks	Marks
Questions from Pharmacokinetics, pharmacodynamics, antibiotics, NSAID's, Local Anaesthetics, Anticoagulants, Beta blockers, Glucocorticoids, Calcium Channel blockers, ACE inhibitors, Opioid analgesics, Sympathomimetics, Anti-Cholinergics, Cardiac Glycosides, Dental Pharmacology.	Structured Essays 2x 10marks	20
Questions should Preferably be set from all other chapters excluding the one from which a Long Essay Question has been set	Short notes 4 x 5marks	20
	Brief Notes 10x3marks	30
	Total	**70**

i. Theory

University Written **70Marks**

Internal Assessment **20 Marks**

Viva Voce **10 Marks**

ii. Practicals:

University Practical Examination: **80 Marks**

Spotters *10x 1Mark* *10 Marks*

Prescriptions (1 Medical & 1 Dental) *2x10Marks* *20 Marks*

Preparations (1 Medical & 1 Dental) 2x20Marks *40 Marks*

Practical Work Record *10 Marks*

Internal Assessment **20 Marks**

Grand Total 200Marks

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9. PRE CLINICAL CONSERVATIVE DENTISTRY

a) LABORATORY EXERCISES

Sl.No.	Practical exercise	Hours
1	Identification and study of hand cutting instruments chisels, gingival margin trimmers, excavators and hatchet.	3
2	Identification and use of rotary cutting instruments in contra angle hand pieces burs (Micromotor)	2
3	Preparation of class I and extended class I and class II and MOD's and class V amounting to 10 exercises in plaster models	30
4	Exercises on phantom head models(Typhodonts) which includes tooth preparation, base and varnish application, matrix and wedge placement followed by amalgam restoration	95
	Class I 5 Class I with extension 2 Class II 10 Class II MODS 2 Class V and III for glass ionomer 4 Class V for amalgam 2	
5	10 exercises on mounted extracted teeth .Tooth preparation, base application, matrix and wedge placement, and restoration with amalgam.	20
	Class I 2 Class I with extension 2 Class II 4 Class V 2	
	Polishing of above restorations	
6	Management of deep caries a. Pulp capping : Direct/ Indirect on extracted teeth	3
7	Demonstration of Light cure composite and Glass Ionomer Restorations.	
8	Cast Restoration –Inlay preparation:	20
	Class I 1 To prepare Wax patterns	
	Class II 2+1 MOD To prepare wax patterns	
	Class V 1 (posterior)	

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9	Pulpotomy on extracted posterior teeth	
10	Endodontic exercises. Root canal access preparation on Upper Extracted Central incisor. Determination of working length Demonstration of Instrumentation and Obturation of root canal space. Restoration of access preparation	27

To appear for IIBDS preclinical Conservative Dentistry examination it is Mandatory that Laboratory exercises from No. 1to No. 7 mentioned in the table above is completed.

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b) SCHEME OF EXAMINATION

i. Practicals

University practical examination	60
University Viva Voce	20
Internal Assessment	20
Grand Total	**100**

Distribution of Marks for Preclinical Conservative Dentistry University Practical Examination

(1) Tooth Preparation and Restoration *45 Marks*

(2) Spotters (5 x 2 Marks) *10 Marks*

(3) Preclinical Practical Work Record *05 Marks*

Total: 60 Marks

Practical Exercise No*. (1):* 45 Marks

Class II Conventional / Conservative preparation for Silver Amalgam restoration on Maxillary or Mandibular first or second Molar typhodont tooth.

Cavity preparation	*45 Minutes*	*20 Marks*
Base and Matrix	*15 Minutes*	*10 Marks*
Amalgam restoration and carving	*30 Minutes*	*15 Marks*

Practical Exercise No. *(2):*

Spotters: Time: (2 minutes each x *5)* *10 Minutes* *10Marks*

Type of Spotters:

Hand instruments used for tooth preparation and restoration

Identification of Root Canal Instruments

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10. PRE CLINICAL ORTHODONTICS

a) SCHEME OF STUDY

The undergraduate study of orthodontics spans over second year, third year and fourth year. In second year the emphasis is given for basic and preclinical wire bending exercises and appliance fabrication.

b) AN OUTLINE OF THE COURSE CONTENT:

Preclinical basic wire bending exercises enable the candidate to get accustomed with the orthodontic wire, learn the basic skills of wire bending, learn how to construct various components of removable appliances and to acrylise various removable appliances.

c) PRATICAL TRAINING DURING SECOND YEAR B.DS

Sl .No.	Topic	Hours
1	Basic wire bending exercises • Straightening of wire • Equilateral triangle • Square • Rectangle • Circle • U – V	40
2	Pre clinical wire bending exercises (Mandatory) • C – clasp • Full clasp • Triangular clasp • Adams clasp • Finger spring • Double cantilever spring • Coffin spring • Short labial bow • Long labial bow • Split labial bow	60

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	• U loop buccal canine retractor • Helical canine retractor • Self supported canine retractor Pre clinical wire bending exercises (Desirable) • Palatal canine retractor • T spring • Reverse labial bow • Roberts retractor	
3	Appliance fabrication • Hawley's appliance • any one of the habit breaking appliance - a. Tongue guard appliance b. Oral screen • Desirable appliances a) Hawley' s appliance with Anterior bite plane b) Hawley 's appliance with PBP and Z spring c) Catalans appliance d) Expansion appliance	60

Theory topics listed below to be covered in second BDS. Lecture hours should be adjusted with the practical classes.

a) Introduction to orthodontics
b) Removable appliances - parts, uses, modifications, advantages, disadvantages etc.
c) Wrought wire alloys
d) Soldering and welding

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d) SCHEME OF EXAMINATION

i. Practicals

University practical examination	***60***
University Viva Voce	***20***
Internal Assessment	***20***
Grand Total	***100***

Distribution of Marks for Preclinical Orthodontics University Practical Examination

(1) Wire bending exercises *55 Marks*

(2) Preclinical Practical Work Record *05 Marks*

Wire bending exercises and their mark distribution should be as follows:

a) Labial bow 20 Marks

b) Clasp 20 Marks

c) Spring 15Marks

Note: Preclinical viva should be limited to, Orthodontic material science (orthodontic wire alloys, impression materials, acrylic, Gypsum products), removable appliances, study models, soldering and welding

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11. PRECLINICAL PROSTHODONTICS AND CROWN & BRIDGE

a) LABORATORY EXERCISES: Total 380 Hours (I yr. 100, II yr. 200, IIIyr.80)

Sl.No.	Practical Exercise	Hours
	Laboratory steps related to complete denture	
1	Impression and model preparation	
2	Preparation of special trays in shellac base plates – trimmed margin. Maxillary & Mandibular	
3	Special tray in self cured acrylic resin. Maxillary & Mandibular	
4	Preparation of heat cured acrylic permanent bases. Maxillary & Mandibular	
5	Preparation of Self cured acrylic temporary bases Maxillary & Mandibular	**150**
6	Preparation of occlusion rims	
7	Articulating the model in Mean value articulator	
8	Teeth arrangement in Mean value articulator (Class I) - 5 Numbers	
9	Processing trial denture in heat cured acrylic- 1	
10	Repair of fractured Denture	
	Laboratory steps related to partial denture	
11	Fabrication of heat cured acrylic Partial Dentures – (Kennedy class I, class II, class III &class IV)	
12	Surveying a model (demo only)	**100**
13	Preparation of wax pattern on models for cast RPD (Kennedy class I &class II,)	
14	Preparation of wax pattern on models for cast RPD (Kennedy class III & class IV,)demo only	
	Maxillofacial Prosthesis	
14	Preparation of Obturators	**50**
	Fixed Prosthodontics	
16	Preparation of full crowns on large sized teeth – anterior all ceramic & posterior PFM.	**80**
17	Preparation of full crowns on Typhodont anterior teeth on phantom head.	

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A work record should be maintained by all students and should be submitted at the time of examination after due certification from the Head of the Department.

To appear for IIBDS preclinical Prosthodontics examination it is Mandatory that Laboratory exercises from Nos. 1 to 11 mentioned in the table above are completed.

b) SCHEME OF EXAMINATION

i. Practicals

University practical examination	***60***
University Viva Voce	***20***
Internal Assessment	***20***
Grand Total	***100***

Distribution of Marks for Preclinical Prosthodontics University Practical Examination

(1) Arrangement of teeth in class I relation, Waxing, Carving & Polishing: 35 Marks

(2) Drawing the Design for a Cast Partial Denture and marking its components 15 Marks

(3) Preclinical Practical Work Record 10 Marks

Note: Preclinical viva should be limited to, Laboratory Procedures related to Complete Denture Fabrication, Articulators, Anatomical landmarks, Impression Procedures, Introduction to jaw relation recording, Selection & arrangement of teeth, Complete Denture Occlusion, Try in Procedures and Components of RPD & FPD.

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12. GENERAL MEDICINE

a) GUIDELINES:

Special emphasis should be given throughout on the importance of various diseases as applicable to dentistry.

i. Special precautions/ contraindication for anaesthesia in oral and dental procedures in different systemic diseases.

ii. Oral manifestations of systemic diseases.

iii. Medical emergencies in dental practice.

A dental student should be taught in such a manner that he/she is able to record the arterial pulse, blood pressure and be capable of suspecting by sight and superficial examination of the body, diseases of the heart, lungs, kidneys, blood etc. He should be capable of handling medical emergencies encountered in dental practice.

b) THEORY: 60 HOURS

CORE TOPICS	Hours
1. Aims of medicine, definitions of diagnosis, treatment & prognosis. History taking, Physical examination of the patient, diagnosis and management of disease. Genetics and disease, Medical Ethics.	2
2.Infections: Enteric fever, HIV, Herpes simplex, Herpes zoster, Syphilis ,Diphtheria, Malaria, Actinomycosis, Viral hepatitis, Tuberculosis. Infectious mononucleosis Mumps, Measles, Rubella, Leprosy, Organisation and functions of the immune systems.	5
3. G.I.T: Stomatitis, Gingival hyperplasia, Dysphagia, Acid peptic disease, Jaundice, Acute and chronic hepatitis, Cirrhosis of liver, Ascitis, Amoebiasis, Tender hepatomegaly, Hepatotoxic drugs, Portal hyper tension. Diarrhoea and Dysentery including Malabsorbtion syndromes,Helicobacter pylori.	5
4. CVS :Acute rheumatic fever Valvular heart disease, Hypertension, Ischemic heart disease (myocardial infarction), Infective endocarditis, Common arrhythmias, Classification of congenital heart disease, Congestive cardiac failure. Heart failure, Fallot's tetralogy, ASD, VSD.	7
5.Respiratory System: Applied Anatomy and physiology of RS, Pneumonia, COPD, Pulmonary tuberculosis, Bronchial asthma, Pleural effusion, Acute respiratory tract infections, Pulmonary embolism, Suppurative lung diseases, and Lung abscess. Pneumothorax, Bronchiectasis Lung Cancer, Empyema, Sleep apnea, ARDS, Respiratory failure.	6
6.Hematology: Hematopoiesis, Anaemias, Bleeding & Clotting disorders, Acute and chronic myeloid leukemias, Agranulocytosis and Neutropenia, Thrombocytopenia , Splenomegaly Lymphomas, Oral manifestations of haematological disorders, Generalized Lymphadenopathy. Principles of blood and blood products transfusion, Thromboembolic disease, Oncogenesis, Haemolytic anemia, DIC (Disseminated Intravascular	**7**

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Coagulation).	
7.Renal System :Acute nephritis and Nephrotic syndrome, U.T.I Renal function tests ,CRF	**5**
8. Nutrition: Balanced diet, PEM, Vitamin deficiency disease, Calcium and phosphate metabolism, Flurosis, Osteomalacia, Osteoporosis.	4
9. CNS: Facial palsy, Facial pain Trigeminal neuralgia, Epilepsy, Headache including migraine. Meningitis (Acute and Chronic) Anticonvulsants, Examination of comatose patient, Examination of cranial nerves.	7
10. Endocrine: Diabetes mellitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids. Addison's disease, Cushing's syndrome, Parathyroid disease and calcium metabolism, Preoperative assessment of diabetic patients, Acute adrenal deficiency.	**6**
11. Critical care: Syncope, Cardiac arrest, Cardio Pulmonary Resuscitation (CPR), Cardiogenic shock, Anaphylaxis, Allergy, Angio -neurotic edema. Acute LVF, ARDS, Coma.	**4**
Miscellaneous: Adverse drug reactions, Drug interactions. Rheumatoid disease, Osteoarthritis, Scleroderma.	

c) CLINICAL TRAINING: 90 HOURS (posting in a general hospital)

The student must be able to take history, do general physical examination (including build, nourishment, pulse, BP, temperature, edema, respiration, clubbing, cyanosis, jaundice, lymphadenopathy, and oral cavity) and be able to examine CVS, RS, abdomen and facial nerve and signs of meningeal irritation.

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d) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Types of Questions and Distribution of Marks	Total Marks
Structured Essays 2x 10marks	20
Short notes 4 x 5marks	20
Brief notes 10x3marks	30
Total	**70**

i. Theory

University Written **70 Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

ii. Clinical:

University Clinical Examination: **80 Marks**

Case History	*15 Marks*
Clinical Examination	*30 Marks*
Investigation	*10Marks*
Diagnosis & D.D	*15 Marks*
Management	*10 Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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13. GENERAL SURGERY

a) AIMS:

To acquaint the student with various diseases which may require surgical intervention. And to train the student to analyze the disease history and be able to do a thorough physical examination of the patient. The diseases as related to head and neck region are to be given due importance, at the same time other relevant surgical problems are also to be addressed. At the end of one year of study the student should have a good theoretical knowledge of various ailments, and be practically trained to differentiate benign and malignant diseases and be able to decide which patient requires further evaluation.

b) OBJECTIVES:

Skills to be developed by the end of teaching are to examine a routine swelling, ulcer and other related diseases and to perform minor surgical procedures such as draining an abscess, taking a biopsy etc.

c) THEORY: 60 HOURS

Sl. No.	Topic	Hours
1	HISTORY OF SURGERY: The development of surgery as a specialty over the years, will give the students an opportunity to know the contributions made by various scientists, teachers and investigators. It will also enable the student to understand the relations of various specialties in the practice of modern surgery.	1
2	GENERAL PRINCIPLES OF SURGERY: Introduction to various aspects of surgical principles as related to orodental diseases. Classification of diseases in general. This will help the student to understand the various diseases, their relevance to routine dental practice.	2
3	PRINCIPLES OF OPERATIVE SURGERY: Principles as applicable to minor surgical procedures including detailed description of asepsis, antiseptics, sterilisation, principles of anaesthesia and principles of tissue replacement. Knowledge of sutures, drains, diathermy, cryosurgery and use of Laser in surgery.	1
4	WOUNDS: Their classification, wound healing, repair, treatment of wounds, skin grafting, medicolegal aspects of accidental wounds and complications of wounds.	3

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5	INFLAMMATION: Of soft and hard tissues. Causes of inflammation, varieties, treatment and sequelae.	1
6	INFECTIONS: Acute and chronic abscess skin infections, cellulitis, carbuncle, and erysipelas. Specific infections such as tetanus, gangrene, syphilis, gonorrhoea, tuberculosis, Actinomycosis, Vincents angina, cancrum oris. Pyaemia, toxaemia and septicaemia.	5
7	TRANSMISSABLE VIRAL INFECTIONS: HIV and Hepatitis B with special reference to their prevention and precautions to be taken in treating patients in a carrier state.	2
8	SHOCK AND HAEMORRHAGE: Classification, causes, clinical features and management of various types of shock. Syncope, Circulatory collapse. Haemorrhage -different types, causes, clinical features and management. Blood groups, blood transfusion, precautions and complications of blood and their products. Hemophilia's, their transmission, clinical features and management especially in relation to minor dental procedures.	5
9	TUMOURS, ULCERS, CYSTS, GANGRENE, SINUS, AND FISTULAE: Classification, clinical examination and treatment principles in various types of benign and malignant tumours, ulcers, cysts, gangrene, sinus and fistulae.	9
10	DISEASES OF LYMPHATIC SYSTEM: Especially those occurring in head and neck region. Special emphasis on identifying diseases such as tubercular infection, lymphomas, leukaemias, metastatic lymph node diseases.	1
11	DISEASES OF THE ORAL CAVITY: Infective and malignant diseases of the oral cavity and oropharynx including salivary glands with special emphasis on preventive aspects of premalignant and malignant diseases of the oral cavity.	2
12	NECK SWELLINGS – Midline and Lateral swellings, Cystic and Solid swellings –Classification, Differential diagnosis, Treatment	1
13	DISEASES OF LARYNX, NASOPHARYNX: Infections and tumours affecting these sites. Indications, procedure and complications of tracheostomy.	2
14	NERVOUS SYSTEM: Surgical problems associated with nervous system with special reference to the principles of peripheral nerve injuries, their regeneration and principles of treatment. Detailed description of afflictions of facial nerve And its management. Trigeminal neuralgia, its	1

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	presentation and treatment.	
15	FRACTURES: General principles of fractures, clinical presentation and treatment with additional reference to newer methods of fracture treatment. Special emphasis on fracture healing and rehabilitation.	1
16	HEAD INJURY MANAGEMENT	1
17	MANAGEMENT OF SEVERELY INJURED PATIENT – RESUSCITATION	1
18	DISEASES OF ARTERIES AND VEINS IN GENERAL –Varicose veins, Atherosclerosis, Aneurysm, Carotid Body tumours	1
19	ANOMALIES OF DEVELOPMENT OF FACE: Surgical anatomy and development of face. Cleft lip and cleft palate—principles of management.	1
20	DISEASES OF THYROID AND PARATHYROID: Surgical anatomy, pathogenesis, clinical features and management of dysfunction of thyroid and parathyroid glands. Malignant diseases of the thyroid—classification, clinical features and management.	2
21	SWELLINGS OF THE JAW: Differential diagnosis and management of different types of swellings of the jaw, Osteomyelitis of mandible	2
22	BIOPSY: Different types of biopsies routinely used in surgical practice.	1
23	BURNS AND SCALDS	1

Desirable to know: Introduction to oncology, radiotherapy, surgery and genetic engineering

E.N.T: Ear: Middle ear infection; Nose: Para nasal sinuses; Throat: Tonsillitis & Peritonsillar Abscess

d) CLINICALS: 90 HOURS (posting in a general hospital)

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e) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written examination:

Types of Questions and Distribution of Marks	Total Marks
Structured Essays 2x 10marks	20
Short Notes 4 x 5marks	20
Brief Notes 10x3marks	30
Total	**70**

i. Theory

University Written **70 Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

ii. Clinical:

University Clinical Examination: **80 Marks**

Long Case

Case History	*15 Marks*
Clinical Examination	*30 Marks*
Suggested Investigations	*10Marks*
Diagnosis & D.D	*15 Marks*
Management	*10 Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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14. ORAL PATHOLOGY & ORAL MICROBIOLOGY

a) OBJECTIVES:

At the end of Oral Pathology & Microbiology course, the student should be able to:

i. Comprehend the different types of pathological processes that involve the Orofacial tissues.

ii. Comprehend the manifestations of common diseases, their diagnosis & correlation with clinical pathological processes.

iii. Understand the oral manifestations of systemic diseases and correlate with the systemic physical signs & laboratory findings.

iv. Understand the underlying biological principles governing treatment of oral diseases.

v. Understand the principles of certain basic aspects of Forensic Odontology.

b) SKILLS:

The Following skills are to be developed:

i. Microscopic study of common lesions affecting oral tissues through microscopic slides & projection slides

ii. Study of the disease process by surgical specimens

iii. Study of teeth anomalies/polymorphisms through tooth specimens & plaster casts.

iv. Microscopic study of plaque pathogens

v. Study of haematological preparations (blood films) of anaemias & leukemias

vi. Basic exercises in Forensic Odontology such as histological methods of age estimation and appearance of teeth in injuries.

c) THEORY: 145 Hours (II yr. 25 hrs. III yr. 120 hrs.)

Sl. No:	Topics for II year	Description	Hours
1	**Introduction**	Scope and Outline of Oral Pathology, Broad divisions, Interrelationship with medical specialities	1
2	**Developmental disturbances of oral & paraoral structures**	a) Developmental disturbances of Jaws - Agnathia, Micrognathia, Macrognathia, Facial Hemihypertrophy, Facial Hemiatropy b) Developmental Disturbances of lips and palate - Congenital Lip pits and Commissural pits and fistulas	

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		- Double lip, Cleft lip, cleft Palate, Chelitis Glandularis, Chelitis Granulomatosa, Hereditary Intestinal Polyposis, Hereditary Melanotid Macule c) Developmental disturbances of Oral Mucosa - Fordyce's Granules - Focal epithelial Hyperplasia d) Developmental disturbances of gingiva - Fibromatosis Gingiva, Retrocuspid Papilla e) Developmental Disturbances of Tongue - Macroglossia, Microglossia, Ankyloglossia, Cleft Tongue, Fissured Tongue, Median Rhomboid Glossitis, Benign Migratory Glossitis, Hairy Tongue. f) Development disturbances of oral lymphoid tissue: - Reactive lymphoid aggregates - Lymphoid hamartoma - Angiolymphoid Hyperplasia - Lympho-epithelial cyst g) Developmental disturbances of salivary glands: - Aplasia, Xerostomia, Hyperplasia of the palatal glands, Atresia, Abberrancy, Stafine's cyst h) Developmental disturbances in size of teeth: - Microdontia, Macrodontia i) Developmental disturbances in the shape of the teeth: 79 - Fusion, Germination, Concrescence, Dilacerations, Talon's Cusp, Dens in Dente, Dens Evaginatus, Taurodontism, Supernumerary Roots, Enameloma j) Developmental Disturbances in number of teeth - Anodontia, Supernumerary teeth, Predecidious and Post	14

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		Permanent dentition k) Developmental Disturbances in Structure of Teeth: - Amelogenesis Imperfecta, Enamel Hypoplasia, Dentinogenesis Imperfecta, Dentinal dysplasia, Regional Odontodysplasia, Shell Teeth. l) Developmental Disturbances in eruption of teeth: - Premature Eruptions, Eruption Sequestrum, Delayed Eruption, Multiple Unerupted teeth, Submerged Teeth. m) Developmental / Fissural cysts of the Oral cavity - Median palatal cyst, Globulomaxillary cyst, Median Mandibular cyst, Naso-alveolar cyst, Palatal cyst of neonates, Thyroglossal duct cyst, Epidermoid, and Dermoid cyst, Nasopalatine cyst.	
3	**Dental caries**	Theories, Clinical features, Classification, Histopathology, Microbiology of Dental caries ,Immunology, Caries activity tests, Factors influencing caries	4
4	**Diseases of the Pulp & Periapical tissues**	a) Diseases of the Dental Pulp - Pulpitis, Focal Reversible Pulpitis, Chronic Pulpitis, Pulp Polyp. b) Diseases of the Periapical Tissues - Periapical Granuloma, Periapical Abscess, Periapical Cyst c) Osteomyelitis - Acute Suppurative Osteomyelitis, Chronic Focal and Diffuse Sclerosing Osteomyelitis, Garre's Ostemyelitis Sequelae of periapical abscess - summary of space infections, systemic complications & significance Cellulitis, Ludwig's angina, Intra cranial complication of dental infection, Maxillary sinusitis, Focal infection and foci of infection	6
	Topics for III Year	**Description**	
1	Benign and	Classification of Odontogenic, Non-Odontogenic & Salivary	

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	malignant tumours of Oral cavity	Gland Tumours. Etiopathogenesis, clinical features, histopathology, radiological features & laboratory diagnosis (as appropriate) of the following common tumours :- 1.Odontogenic tumours -Classification Benign a.Odontogenic epithelium without odontogenic ectomesenchyme-Ameloblastoma, Calcifying Epithelial Odontogenic Tumour, Adenomatoid Odontogenic Tumour, Squamous Odontogenic tumour b.Odontogenic epithelium with Odontogenic ectomesenchyme-Ameloblastic Fibroma ,Ameloblastic fibro odontoma, Odontoma,Dentinogenic Ghost cell Tumour c.Odontogenic ectomesenchyme with or without included odontogenic epithelium-Peripheral and Central odontogenic fibroma, Odontogenic Myxoma, Benign cementoblastoma Malignant a.Odontogenic carcinomas: Metastasizing ameloblastoma, Ameloblastic carcinoma 2. Non-odontogenic a. Benign tumours of epithelial tissue origin -Papilloma, Keratoacanthoma,Nevus b. Premalignant lesions and conditions -Definition, Classification -Epithelial dysplasia -Leukoplakia, Carcinoma in situ, Erythroplakia, Oral submucous fibrosis c. Malignant tumours of epithelial tissue origin -Basal cell carcinoma, Epidermoid carcinoma (Epidemiology, etiology, clinical & histological features, Grading and TNM staging), Verrucous carcinoma ,Malignant melanoma, Recent advances in diagnosis , management and prevention of Oral cancer d. Benign tumours of Connective tissue origin -Fibroma, Giant cell fibroma, Peripheral and Central ossifying fibroma,	1 9 30

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		Lipoma, Haemangioma(different types), Lymphangioma, Chondroma, Osteoma, Osteoid osteoma, Benign osteoblastoma, Tori and Multiple exostoses e. Tumour like lesions of Connective tissue origin- -,Peripheral ossifying fibroma f. Malignant tumours of Connective tissue origin -Fibrosarcoma, Chondrosarcoma, Kaposi's sarcoma, Ewing's sarcoma, Osteosarcoma ,Hodgkin's and Non Hodgkin's lymphoma, Burkitt's lymphoma, Multiple myeloma, Solitary Plasma cell myeloma g. Benign tumours of Muscle tissue origin -Leiomyoma, Rhabdomyoma, Congenital Epulis of new born, Granular cell tumour h. Benign and Malignant tumours of Nerve tissue origin -Neurofibroma and Neurofibromatosis, Schwannoma, Melanotic neuroectodermal tumour of infancy, Malignant Schwannoma. i. Metastatic tumours of Jaws and Soft tissues of Oral cavity 3. Salivary Gland Benign neoplasms - Pleomorphic Adenoma, Warthin's tumour, & Oncocytoma. Malignant neoplasms –Malignant Pleomorphic adenoma Adenoid Cystic Carcinoma, Mucoepidermoid Carcinoma, Acinic Cell Carcinoma & Adenocarcinomas.	8
2	**Cysts of the Oral & Paraoral region**	Classification, etiopathogenesis, clinical features, histopathology, laboratory & radiological features (as appropriate) of Odontogenic cysts- Odontogenic keratocyst, Dentigerous cyst, Primordial cyst, Dental lamina cyst of newborn ,Gingival cyst of adults, Lateral periodontal cyst, Calcifying odontogenic cyst, Radicular cyst N on-Odontogenic cysts- Pseudocysts of jaws, Aneurysmal bone cyst, Traumatic bone cyst & soft tissue cysts of oral & paraoral region.	8
3.	**Non neoplastic Salivary Gland**	Sialolithiasis,Sialosis, Sialadenitis, Xerostomia & Ptyalism. Sjogren's syndrome ,Benign lymphoepithelial lesion,	2

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	Diseases :	Necrotizing sialometaplasia	
4.	**Traumatic, Reactive & Regressive lesions of Oral Cavity :**	Pyogenic granuloma, Peripheral& Central Giant cell granuloma, exostoses Fibrous Hyperplasia, Traumatic Ulcer, mucocele & Traumatic Neuroma. Attrition, Abrasion, Abfraction Erosion, Bruxism, Hypercementosis, Dentinal changes, Pulp calcifications & Resorption of teeth. Radiation effects of oral cavity, Allergic reactions of the oral cavity. -Angioedema, Stomatitis medicamentosa, Stomatitis venenata	5
5.	**Microbial infections of oral soft tissues :**	Microbiology, defense mechanisms including immunological aspects, oral manifestations, histopathogy and laboratory diagnosis of common bacterial, viral & fungal infections namely :- Bacterial: Scarlet fever, Diphtheria, Tuberculosis, Syphilis, Actinomycoses & its complications - Cancrum Oris, Tetanus, Noma. Viral: Herpes Simplex, Varicella zoster, Measles, Mumps & HIV infection and Oral manifestation of AIDS. Fungal : Candidiasis, Histoplasmosis Immunological diseases: Reccurent Aphthous stomatitis, Bechet's syndrome, Reiter's syndrome, Sarcoidosis.	10
6.	**Common non-inflammatory diseases involving the jaws**	Etiopathogenesis, clinical features, radiological & laboratory values in diagnosis of: Fibrous dysplasia, Cherubism, Osteogenesis Imperfecta, Paget's bone disease, Cleidocranial dysplasia, Rickets, Achondroplasia, Marfan's syndrome , Down's syndrome and Histiocytosis X disease.	6
7.	**Biopsy, Cytology and Healing of Oral wounds**	Factors affecting healing of wounds -healing of extraction wound and Dry socket Biopsy-techniques, Healing of biopsy wound -Exfoliative cytology-Indications, Staining and Interpretation	4
8.	**Systemic Diseases**	Brief review & oral manifestations, diagnosis & significance of common Blood, Nutritional, Hormonal & Metabolic diseases of	4

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	involving Oral cavity	Oral cavity. a. Blood dyscrasias-Clinico-pathological aspects and oral manifestations of Anemias,Polycythemia,Leukopenia,Neutropenia,Agranulocytosis,Chediak-Higashi syndrome, Leukocytosis, Infectious mononucleosis, Leukemias , Purpura Haemophilia b. Oral aspects of Disturbances in mineral metabolism c. Oral aspects of Avitaminosis and Hypervitaminoses d. Oral Aspects of Endocrine dysfunction	5
9.	**Mucocutaneous lesions :**	Etiopathogenesis, clinical features & histopathology of the following common lesions. Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid lesions, Erythema Multiforme, Psoriasis, Scleroderma, Ectodermal Dysplasia, Epidermolysis bullosa & White sponge nevus.	10
10.	**Periodontal Diseases :**	Stains, Calculus, Dental plaque Etiopathogenesis, microbiology, clinical features, histopathology & radiological features (as appropriate) of gingivitis, gingival enlargement, ANUG, chronic desquamative gingivitis periodontitis and juvenile periodontitis. Basic immunological mechanisms of periodontal disease to be highlighted.	4
11.	**Diseases of TM Joint**	Ankylosis, luxation and subluxation, summary of different types of arthritis & other developmental malformations, traumatic injuries & myofascial pain dysfunction syndrome.	2
12.	**Diseases of the Nerves :**	Facial neuralgias – Trigeminal, Sphenopalatine & Glossopharyngeal neuralgias, VII nerve paralysis, Causalgia Psychogenic facial pain & Burning mouth syndrome.	2
13.	**Pigmentation of Oral tissues**	Pigmentation of Oral & Paraoral region & Discolouration of teeth : Causes & clinical manifestations.	2
14.	**Diseases of Maxillary Sinus**	Traumatic injuries to sinus, Sinusitis, Cysts & Tumours involving antrum	2
	Principles of Basic Forensic	Introduction, definition, aims & scope. Sex and ethnic (racial) differences in tooth morphology and	

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15.	**Odontology**	histological age estimation Determination of sex & blood groups from buccal mucosa / saliva. Dental DNA methods Bite marks, rugae patterns &lip prints Dental importance of poisons and corrosives Overview of forensic medicine and toxicology	6

d) LABORATORY/PRACTICAL REQUIREMENTS

Students have to maintain records of laboratory procedures/work done/report of practical:

i. Oral Pathology and Microbiology

Identification of the hard tissue anomalies:

Microdontic tooth

Macrodontic tooth

Gemination of tooth

Fused teeth

Concrescence of tooth

Dilaceration

Dens in dente

Dens evaginatus

Supernumerary root

Hypoplastic enamel

Fluorosis

Abrasion

Attrition

Fracture tooth

Stained tooth

Hypercementosis

Complex &Compound Odontomes

Examination of the following gross specimens:

Papilloma

Fibroma

Torus

Carcinoma of oral structures

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Salivary Gland Tumours

Ameloblastoma

Periapical Granuloma

Dentigerous Cyst

Pulp Polyp

Histopathologic review of:

Peripheral Giant Cell Granuloma

Leukoplakia

Carcinoma in situ

Oral Submucous Fibrosis

Carcinoma of Oral Mucosa

Pleomorphic Adenoma

Malignant Pleomorphic Adenoma

Mucous extravasation cyst

Mucous retention cyst

Warthin's tumour

Adenoid cystic carcinoma

Periapical cyst

Dentigerous Cyst

Odontogenic Keratocyst

Ameloblastoma

Gingival Hyperplasia

ANUG

Lichen Planus

Pemphigus

Dental Caries

ii. **Forensic Pathology**

Age determination from skull.

Gustafson's method of age determination- using incisors

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e) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
One or both questions can be from Oral pathology.	Essays 2x 10marks	20
A. Oral Pathology - three questions B. Oral Microbiology - one question	Short Notes 4x5marks	20
A. Oral Pathology - eight questions B. Forensic Odontology - two questions	Brief Notes 10x3marks	30
	Total	**70**

i. Theory

University Written **70 Marks**

Viva Voce **20Marks**

Internal Assessment **10 Marks**

ii. Clinical:

University Clinical Examination: **80 Marks**

Spotters (Specimen-identification & points in support-5x 4 Marks) *20 Marks*

Histopathology slides(Diagram, Labelling and salient features) 10x4 *40Marks*

Forensic Odontology (Estimation of age from ground sections) 10 Marks

Clinical Work Record & Seminar *10 Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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15. PUBLIC HEALTH DENTISTRY

a) *GOAL:*

To prevent and control oral diseases and promote oral health through organized community efforts

b) OBJECTIVES:

i. ***Knowledge:***

At the conclusion of the course the student shall have a knowledge of the basis of public health, preventive dentistry, public health problems in India, palliative care, Nutrition, Environment and their role in health, basics of dental statistics, epidemiological methods, National oral health policy with emphasis on oral health policy.

ii. ***Skill and Attitude:***

At the conclusion of the course the students shall have acquired the skill of identifying health problems affecting the society, conducting health surveys, conducting health education classes and deciding health strategies. Students should develop a positive attitude towards the problems of the society and must take responsibilities in providing health and palliative care.

iii. ***Communication abilities:***

At the conclusions of the course the student should be able to communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral disease.

PALLIATIVE CARE:

Objective of including palliative care in to the curriculum of BDS:

Objective of the curriculum is to train future dental surgeons in the basics of Palliative Medicine. Palliative medicine is the branch of medicine involved in the treatment of patients with advanced, progressive, life-threatening disease for whom the focus of care is maximising their quality of life through expert symptom management, psychological, social and spiritual support as part of a multi-professional team. Government of Kerala has declared palliative care as part of Primary Health Care. Dental surgeons come across many patients with chronic and incurable diseases like cancer, HIV-AIDS etc. Also learning the symptom, control and communication will help them to provide better care to the patients coming under their care.

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Structure of the Training:

The palliative care training will be given in the third academic year. The training to include didactic sessions, role plays, discussions, case presentations

Theory*: Introduction (3 hours), Communication (5 hours), Pain management (3 hours), Nursing care (3 hours). Total 14 hours

**Classes in Palliative care to be handled by faculty in Public Health Dentistry who have undergone training in palliative care from KUHS recognised centres.*

1: Introduction to palliative care

Learning Outcomes:

The trainee will be able to discuss the philosophy and definitions of palliative care. The trainee will demonstrate that this knowledge and understanding improves his/ her clinical practice, decision-making and management of practice.

The trainee will demonstrate the knowledge, attitudes and skills required to foster timely and efficient communication between services necessary for a smooth continuum of patient care

The trainee will demonstrate the skilful application of knowledge and understanding to prepare individuals for bereavement, to support the acutely grieving person/family. This will include the ability to anticipate / recognise abnormal grief and access specialist help

The trainee will demonstrate an understanding of the theoretical basis for applied ethics in clinical practice, and be able to evaluate personal attitudes, beliefs and behaviours.

The trainee will demonstrate an awareness of, and respect for, the social and cultural values and practices of others

The trainee will recognise differences in beliefs and personal values. The trainee will be able to deal with conflicts in the beliefs and values within the clinical team. The trainee will recognise the psycho social and spiritual components of problems in advanced diseases and understand the role of non-professional members of the community in addressing them.

Block 1: Philosophy and Principles of palliative care.

Unit 1: Definitions- hospice, palliative care and terminal care, Principles of palliative care. Quality of Life (QOL), concepts of 'Good Death', grief, bereavement team work, inter and multidisciplinary teams. Role of family and community, ethics, spirituality

- Definitions of: palliative care approach; general palliative care; specialist palliative care; hospice; specialist palliative care unit; palliative medicine; supportive care

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- Evolving nature of palliative care over the course of illness, including integration with active treatment, and the significance of transition points
- Differing concepts of what constitutes quality of life (including measurement) and a "good death"
- Re-adaptation and rehabilitation
- Shared care with other members of the team and community as a doctor and an individual
- Communication skills relevant to negotiating these roles
- Critical analysis of current theoretical approaches to: medical ethics, including 'four principles (beneficence, non-maleficence, justice and respect for autonomy)
- Understanding the concept of spirituality

2: Psychological issues and communication

Learning Outcomes:

The trainee will demonstrate knowledge and understanding of psychological responses to illness in a range of situations, and skills in assessing and managing these in practice
The trainee will demonstrate good communication skills and use of reflective practice to ensure these skills are maintained.
The trainee will be able to identify obstacles to communication and demonstrate skills in overcoming these.
The trainee will demonstrate a professional attitude to confidentiality

Block 1: Communication.

Unit 1: Communication- Different types, barriers, how to overcome?
Unit 2: Breaking bad news, and handling uncertainty, collusion, denial, anxiety, depression, anger

- Skills in active listening, open questioning and information giving to:
- elicit concerns across physical, psychological, social and spiritual domains
- managing awkward questions and information giving, sensitively and as appropriate to wishes and needs of the individual
- facilitate decision making and promote autonomy of the individual patient
- Ensure that the patient is apprised of arrangements for the continuity of their care and whom to contact in case of need.

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- Knowledge of theories and evidence base for communication practice including breaking bad news, collusion and discussing natural death
- Awareness of different styles of communications and critical evaluation of own consulting skills
- Awareness of common barriers to communication for both patients and professionals
- Awareness of common communication problems: deafness, expression and learning disabilities
- A professional understanding of the ethical and legal aspects to confidentiality

Block 2: The family in palliative care.

Unit 1: Terminal/ Chronic illnesses- problems of families.

Unit 2: Coping with the problems - patient to family, family to palliative Care worker, patient to palliative care worker

3: Management of pain

Learning outcomes:

The trainee will have the knowledge, understanding and skills to manage pain in patients with life limiting progressive diseases

Block 1: Pharmacological Management of pain.

Unit 1: General considerations, pathophysiology, types and assessment of pain

Unit 2: WHO analgesic ladder

Unit 3: Opioids, nonopioid analgesics and adjuvants in pain management.

Unit 4: Neuropathic pain, diagnosis and management

Unit 5: Other Pains- Breakthrough pain, incident pain, end of dose pain –management

Unit 6: Relevant invasive procedures for pain management.

4: Nursing Care

Learning outcomes:

The trainee will inculcate knowledge and skills required to identify, manage and refer problems in need of specific nursing interventions during the course of palliative care

Block 1: Mouth care & nutrition

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Unit 1: Management of oral problems in advanced/terminal disease

Unit 2: Nutritional requirements in chronic /terminal disease.

Block 2: Wound care

Unit 1: Prevention and Management of Pressure sores, fungating and Painful ulcers

Unit 2: Management of bleeding from wounds.

c) ***THEORY: 74 HOURS (III yr. 24hrs, Final Yr. Part I. 50 hrs)***

Sl.No.	Topic	No. of hours
1.	Introduction to Dentistry: Definition of Dentistry, History of dentistry, Scope, aims and objectives of Dentistry.	3
2.	**Public Health:**	
	i. Health & Disease: - Concepts, Philosophy, Definition and Characteristics	4
	ii. Public Health: - Definition & Concepts, History of public health	1
	iii. General Epidemiology: - Definition, objectives, methods	3
	iv. Environmental Health: - Concepts, principles, protection, sources, purification environmental sanitation of water, disposal of waste, sanitation, their role in mass disorder	3
	v. Health Education: - Definition, concepts, principles, methods, and health education aids	2
	vi. Public Health Administration: - Priority, establishment, manpower, private practice management, hospital management	1
	vii. Ethics and Jurisprudence: Professional liabilities, negligence, malpractice, consents, evidence, contracts, and methods of, identification in forensic dentistry	3
	viii. Nutrition in oral diseases	1
	ix. Behavioral science: Definition of sociology, anthropology and psychology and their relevance in dental practice and community	3
	x. Health care delivery system: Center and state, oral health policy, primary health care, national programmes, health	2

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	organizations. Primary Health care counselling	
3.	**Dental Public Health**	
	i. Definition and difference between community and clinical health.	2
	ii. Epidemiology of dental diseases-dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer.	6
	iii. Survey procedures: Planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases	3
	iv. Delivery of dental care: Dental auxiliaries, operational and non-operational, incremental and comprehensive health care, school dental health.	2
	v. Payments of dental care: Methods of payments and dental insurance, government plans	2
	vi. Preventive Dentistry- definition, Levels, role of individual, community and profession, fluorides in dentistry, plaque control programmes.	5
4.	**Research Methodology and Dental Statistics**	
	i. Health Information: - Basic knowledge of Computers, MS Office, Window 2000, Statistical Programmes	1
	ii. Research Methodology: -Definition, types of research, designing a written protocol	1
	iii. Bio-Statistics: - Introduction, collection of data, presentation of data, Measures of Central tendency, measures of dispersion, Tests of significance, Sampling and sampling techniques-types, errors, bias, blind trails and calibration.	6
5.	**Practice Management**	
	i. Place and locality ii. Premises & layout iii. Selection of equipments iv. Maintenance of records/accounts/audit.	4
	v. Dentist Act 1948 with amendment. Dental Council of India and State Dental Councils Composition and responsibilities.	1
	vi. Indian Dental Association Head Office, State, local and	1

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	branches.	
6.	**Palliative Care**	
	i. Introduction	3
	ii. Communication	5
	iii. Pain management	3
	iv. Nursing care	3

d) ***PRACTICALS/CLINICALS/FIELD PROGRAMME IN PUBLIC HEALTH DENTISTRY:***

These exercises designed to help the student in IV and V year:

i. Understand the community aspects of dentistry

ii. To take up leadership role in solving community oral health programme

iii. To gain hands on experience on research methodology

e) PRACTICALS: 200 HOURS (III Yr.60Hrs.Final Yr. Part I 140Hrs.)

Sl.No.	Exercise	No. of hours
1.	**Short term research project:** Epidemiology & Advocacy Purpose: Apply the theory and practice of epidemiology, planning and evaluation, statistics to dental public health. Most of the students are unfamiliar with research and hence this short term project which will be divided across two years (IV and V BDS) would address this issue. Depending on the topic chosen student can incorporate a) Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, per capita income b) Incidence and prevalence of common oral diseases like dental caries, periodontal disease, oral cancer, fluorosis at national and international levels c) Preparation of oral health education material posters, models, slides, lectures, plays acting skits etc. d) Oral health status assessment of the community using indices and WHO basic oral health survey methods **e)** Exploring and planning setting of private dental clinics in rural, semi urban and urban locations, availment of finances for dental practices-preparing project report.	60
2.	**Field visits**	100

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	a) Visit to primary health center-to acquaint with activities and primary health care delivery. b) Visit to water purification plant/public health laboratory/center for treatment of western and sewage water c) Visit to schools-to assess the oral health status of school children, emergency treatment and health education including possible preventive care at school (tooth brushing technique demonstration and oral rinse programme etc.) d) Visit to institution for the care of handicapped, terminally ill, physically, mentally, or medically compromised patients **Note :** Field visits should have relevance to the short term research project as far as possible Minimum of two visits – one per year (IV and V BDS)	
3. **4.**	**Preventive dentistry**: in the department application of pit and fissure sealants, fluoride gel application procedure, A. R. T., Comprehensive health for 5 pts at least 2 patients. Statistical exercise	40

Note: *The colleges are encouraged to involve in the National Service Scheme. programme for students to carry out social work in rural areas.*

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SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
Any topic within the syllabus of Public Health Dentistry	Structured Essays 2x 10marks	20
	Short Notes 4 x 5marks	20
Any topic within the syllabus of Public Health Dentistry two questions from palliative care	Brief Notes 10x3marks	30
	Total	**70**

iii. Theory

University Written **70 Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

iv. Clinical:

University Clinical Examination: **80 Marks**

Case history taking *10 Marks*

Assessment of oral health status using any 2 relevant indices *30Marks*

Spotters (Epidemiology, biostatistics, Preventive dentistry, Bioethics) 20Marks

Oral Health Education Talk/ Presentation of oral health education material/Short term student research project presentation /statistical test 15 Marks

Record 5Marks

Internal Assessment: **20 Marks**

Grand Total 200Marks

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16. PERIODONTOLOGY

a) OBJECTIVES:

The student shall acquire the skill to:-

i. Perform dental scaling diagnostic tests of periodontal diseases

ii. To use the instruments for periodontal therapy and maintenance of the same.

The student shall develop attitude to:-

i. Impart the preventive measures namely, the prevention of periodontal diseases and prevention of the progress of the disease

ii. Perform the treatment with full aseptic precautions

iii. Shall develop an attitude to prevent iatrogenic diseases

iv. To conserve the tooth to the maximum possible time by maintaining periodontal health

v. To refer the patients who require specialist's care.

b) THEORY: 80 HOURS (III yr.30hrs,Final yr. Part I . 50 hrs)

Topic	Hours
1. Introduction, Definition of Periodontology, Periodontics, Periodontia, Brief historical background, Scope of Periodontics	**1**
2. Development of periodontal tissues, Micro-structural anatomy and biology of periodontal tissues in detail Gingiva. Junctional epithelium in detail, Epithelial-Mesenchymal interaction, periodontal ligament, Cementum, Alveolar bone	**1**
3. Defensive mechanisms in the oral cavity: Role of Epithelium, Gingival fluid, Saliva and other defensive mechanisms in the oral environment	**1**
4. Age changes in teeth and periodontal structures and their association with periodontal diseases and their significance in Geriatric dentistry	**1**
5. Classification of periodontal diseases: need for classification, Scientific basis of classification, Classification of gingival and periodontal diseases as described in World Workshopl989	**1**
6. Gingivitis: Plaque associated, ANUG, steroid hormone influenced, Medication influenced, Desquamative gingivitis, other forms of gingivitis as in nutritional deficiency, bacterial and viral infections etc.	**1**
7. Periodontitis: Adult Periodontitis, rapidly progressive Periodontitis A &B, Juvenile Periodontitis (localized, generalized, and post-juvenile), Prepubertal Periodontitis, Refractory Periodontitis	**1**
8. Gingival diseases: Localized and generalized gingivitis, Papillary, marginal	**7**

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and diffuse gingivitis aetiology, pathogenesis, clinical signs, symptoms and management of	
a) Plaque associated gingivitis	
b) Systemically aggravated gingivitis (sex hormones, drugs and systemic diseases)	
c) ANUG	
d) Desquamative gingivitis-Gingivitis associated with Lichen Planus, Pemphigoid, Pemphigus, and other Vesiculobullous lesions	
e) Allergic gingivitis	
f) Infective gingivitis-Herpetic, Bacterial and Candidial	
g) Pericoronitis	
h) Gingival enlargement (classification and differential diagnosis)	
9. Epidemiology of periodontal diseases Definition of index, incidence, prevalence, epidemiology, endemic, epidemic, and pandemic Classification of indices (Irreversible and reversible), deficiencies of earlier indices used in Periodontics, Detailed understanding of Silness & Loe Plaque Index, Loe & Silness Gingival Index, CPITN &CPL, Prevalence of periodontal diseases in India and other countries. Public health significance (All these topics are covered at length under community dentistry. Hence, the topics may be discussed briefly. However, questions may be asked from the topics for examination.)	**3**
10. Extension of inflammation from Gingiva, mechanism of spread of inflammation from gingival area to deeper periodontal structures, Factors that modify the spread	**1**
11. Pocket ,Definition, signs and symptoms, classification, pathogenesis, histopathology, root surface changes and contents of the pocket	**1**
12. Etiology	**5**
a) Dental Plaque (Biofilm), Definition, New concept of Biofilm , Types, composition, bacterial colonization, growth, maturation &disclosing agents, Role of dental plaque in periodontal diseases, Plaque microorganisms in detail and bacteria associated with periodontal diseases, Plaque retentive factors, Materia alba, Food debris	
b) Calculus, Definition, Types, composition, attachment, theories of formation, Role of calculus in disease	

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c) Food Impaction, Definition Types, Etiology, Hirschfield's classification, Signs, symptoms & sequelae of treatment	
d) Trauma from occlusion, Definition, Types, Histopathological changes, Role in periodontal disease, Measures of management in brief	
e) Habits, Their periodontal significance, Bruxism & Parafunctional habits, tongue thrusting, lip biting, occupational habits	
f) Iatrogenic factors,	
(i) Conservative Dentistry:-Restorations, Contact point, marginal ridge, surface roughness, overhanging restorations, interface between restoration and teeth	
(ii) Prosthodontics, Interrelationship, Bridges and other prosthesis, Pontics (types), surface contour, relationships of margins to the periodontium, gingival protection theory, muscle action theory& theory of access to oral hygiene.	**4**
(iii) Orthodontics, Interrelationship, removable appliances & fixed appliances, Retention of plaque, bacterial changes	
g) Systemic diseases, Diabetes, Sex hormones, nutrition (Vit.C& proteins),AIDS & periodontium, Hemorrhagic diseases, Leukemia, clotting factor disorders, PMN 1disorder	**1**
13. Risk factors, Definition, Risk factors for periodontal diseases	**1**
14. Host response: Mechanism of initiation and progression of periodontal diseases, Basic concepts about cells, Mast cells, neutrophils, macrophages, lymphocytes, immunoglobulins, complement system, immune mechanisms & cytokines in brief, Stages in gingivitis-Initial, early, established & advanced, Periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis	**2**
15. Periodontitis:	
a) Etiology, histopathology, clinical signs & symptoms, diagnosis and treatment of adult Periodontitis	**5**
b) Periodontal abscess; definition, classification, pathogenesis, differential diagnosis and treatment	
c) Furcation involvement, Glickman's classification, prognosis and	

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management	
d) Rapidly progressive Periodontitis Juvenile Periodontitis: Localized and generalized Post juvenile Periodontitis	
e) Periodontitis associated with systemic diseases ,Refractory Periodontitis	
16. Diagnosis:	
a) Routine procedures, methods of probing, 2 types of probes, (According to case history)	**3**
b) Halitosis: Etiology and treatment. Mention advanced diagnostic aids and their role in brief.	
17. Prognosis, Definition, types, purpose and factors to be taken into consideration	**1**
18. Treatment plan Factors to be considered	**1**
19. Periodontal therapy	
a) General principles of periodontal therapy. Phase I, II, III, IV therapy.	
b) Definition of periodontal regeneration, repair, new attachment and reattachment	
c) Plaque control	**5**
(i) mechanical :tooth brushes, Interdental cleaning aids, dentifrices	
(ii) Chemical: classification and mechanism of action of each & pocket irrigation	
20. Pocket eradication procedures	
a) Scaling and root planning: Indications, Aims & objectives, Healing following root planning, Hand instruments, sonic, ultrasonic & Piezo-electric Scalers	
b) Curettage: Definition Indications present concepts Aims &objectives, Procedures & healing response	**5**
c) Flap surgery: Definition, Types of flaps, Design of flaps, papilla preservation Indications & contraindications, Armamentarium, Surgical procedure & healing response	
21. Osseous Surgery:	
a) Osseous defects in periodontal disease, Definition, Classification	**6**
b) Surgery: resective, additive osseous surgery (osseous grafts with	

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classification of grafts)	
c) Healing responses	
d) Other regenerative procedures; root conditioning	
e) Guided tissue regeneration	
22. Mucogingival surgery & periodontal plastic surgery:	**5**
a) Definition, Mucogingival problems: etiology,	
b) classification of gingival recession (P.D.Miller Jr. and Sullivan and Atkins), Indications, objectives	
c) Gingival Augmentation procedures apical and coronal to recession :	
d) Frenectomy, Frenotomy	
e) Crown lengthening procedures	
f) Periodontal microsurgery in brief	
g) Splints: Periodontal splints, Purpose & classification, Principles of splinting	**1**
h) Hypersensitivity, Cause, theories & Management	**1**
i) Implants: Definition, types, scope & biomaterials used, Periodontal considerations: such as Implant-bone interface, Implant-Gingiva interface, Implant failure, Peri-implantitis &management	**1**
23. Maintenance phase (SPT):	**4**
a. Causes, Theories & management	
b. Aims, objectives, and principles	
c. Importance	
d. Procedures	
e. Maintenance of implants	
24. Pharmacotherapy:	**4**
a. Periodontal dressings	
b. Antibiotics & anti-inflammatory drugs	
c. Local drug delivery systems	
25. Periodontal management of medically compromised patients: Topics concerning periodontal management of medically compromised patients	**2**
26. Inter-disciplinary care: Pulpo-Periodontal involvement, Routes of spread of infection, Simons classification, Management	**1**
27. Systemic effects of periodontal diseases in brief: Cardiovascular diseases,	**1**

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Low birth weight babies etc.	
28. Infection control protocol: Sterilization and various aseptic procedures	**1**
29. Ethics.	**1**

c) TUTORIALS DURING CLINICAL POSTING:

i. Infection control
ii. Periodontal instruments
iii. Chair position and principles of instrumentation
iv. Maintenance of instruments (sharpening)
v. Ultrasonic, Piezoelectric and sonic scaling - demonstration of technique
vi. Diagnosis of periodontal disease and determination of prognosis
vii. Radiographic interpretation and lab investigations
viii. Motivation of patients- oral hygiene instructions
ix. Students should be able to record a detailed periodontal case history, determine diagnosis, prognosis and plan treatment.
x. Student should perform scaling, root plaining local drug delivery and SPT.
xi. Shall be given demonstration of all periodontal surgical procedures.

d) DEMONSTRATIONS:

i. History taking and clinical examination of the patients
ii. Recording different indices
iii. Methods of using various scaling and surgical instruments
iv. Polishing the teeth
v. Bacterial smear taking
vi. Demonstration to patients about different oral hygiene aids
vii. Surgical procedures- gingivectomy, gingivoplasty, and flap operations
viii. Follow up procedures, post operative care and supervision

e) MINIMUM CLINICAL REQUIREMENTS MANDATORY TO APPEAR FOR UNIVERSITY EXAMINATION:

i. Diagnosis, treatment planning, and discussion and total periodontal treatment- 10 cases (5 Long cases + 5 Short Cases)
ii. Supra gingival scaling 50 complete cases (including minimum 2 ultrasonic scaling) and oral hygiene instructions –
iii. Sub gingival Scaling and Root Plaining - 10 cases

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iv. Assistance in periodontal surgery- 2 cases

v. A work record should be maintained by all the students and should be submitted at the time of examination after due certification from the head of the department.

vi. Students should have to complete the work prescribed by the concerned department from time to time and submit a certified record for evaluation.

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f) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
Questions from any of the Periodontology Topics	Structured Essays 2x 10marks	20
	Short Notes 4 x 5marks	20
	Brief Notes 10x3marks	30
	Total	**70**

v. Theory

University Written **70 Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

vi. Clinical:

University Clinical Examination: **80 Marks**

Case History, Clinical Examination, Diagnosis &

Treatment Planning 30*Marks*

Oral prophylaxis 30 Marks

Clinical Work Record & Seminar 20 *Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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17. ORAL MEDICINE AND RADIOLOGY

a) AIM

i. To train the students to diagnose the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of oro-facial disorders with drugs and physical agents.

ii. To train the students about the importance, role, use and techniques of radiographs and other imaging methods in diagnosis.

iii. The principles of the clinical and radiographic aspects of Forensic Odontology.

b) COURSE CONTENT

i. The syllabus in ORAL MEDICINE & RADIOLOGY is divided into two main parts.

Part-I: Diagnosis, Diagnostic methods and Oral Medicine {which is again subdivided into three sections. (a) Diagnostic methods (b) Diagnosis and differential diagnosis (c) Oral Medicine & Therapeutics} and Part-II: Oral Radiology. Emphasis should be laid on oral manifestations of systemic diseases and ill-effects of oral sepsis on general health.

ii. To avoid confusion regarding which lesion and to what extent the student should learn and know, this elaborate syllabus is prepared. As certain lesions come under more than one group, there is repetition.

c) THEORY: 75 HOURS (III YR. 25 HRS, FINAL YR. PART. I. 50 HRS.)

	THEORY TOPICS FOR THIRD YEAR (25 Hrs)	
Sl No	**Oral Medicine Topics**	**Hours**
1.	Introduction to oral medicine, terminologies & Ethics (Professional liabilities, negligence, malpractice, consent etc)	1
2.	Case history and clinical examination (examination of soft tissues and hard tissues, primary & secondary lesions, lymph nodes, TMJ, muscles of mastication, salivary glands, swelling, ulcer, white & red lesions, pigmented lesions)	2
3.	Lymphatic drainage of head and neck. D/d of cervical lymphadenopathy	1
4.	Investigations in oral medicine (chair side and laboratory investigations including haematological, microbiological, immunologic, biochemical and biopsy).	2
5.	Dental therapeutics (drugs commonly used: antibiotics, anti-inflammatory, analgesics, anaesthetics, steroids, topical applications, coagulants &anticoagulants, sialogogues).	2
6.	Emergencies in dental practice	1
7.	Developmental disorders of the teeth & paradental structures	1
8.	Acute and chronic infections of the jaws (sequalae of dental infection, spread of infection, facial space infections, osteomyelitis, foci of oral infections)	1
9.	Disorders of tongue	1
Total Oral Medicine teaching hours in third year		**12**
	Radiology Topics	
1.	History of dental radiology, Radiation Physics (electromagnetic spectrum, properties of X rays)	1

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2.	Construction and working of x-ray tube, production of X-rays, factors controlling x-ray beam, interaction of x-rays with matter	2
3.	Radiation biology.	1
4.	Radiation protection.	1
5.	Films used in dental radiology, grids and intensifying screen	1
6.	Intraoral radiographic techniques (periapical, bitewing, occlusal & localization techniques).	2
7.	Processing of X-ray films.	1
8.	Qualities of an ideal radiograph.	1
9.	Infection control and Quality assurance in Dental Radiology	1
10.	Radiographic normal anatomical landmarks.	2
Total Radiology teaching hours in third year		**13**
	THEORY TOPICS FOR FINAL YEAR PART I (50 Hrs)	
Sl	**Oral Medicine Topics**	**Hours**
1.	Oro Facial pain (Classification, differential diagnosis & management)	2
2.	White & Red lesions (classification, differential diagnosis and Management).	2
3.	Vesiculobullous & Ulcerative lesions (classification, differential diagnosis, management, a	2
4.	Bacterial (Bacterial, Viral & Fungal infections)	1
5.	Viral Infections of oral and paraoral structures	2
6.	Fungal Infections of oral and paraoral structures	1
7.	Granulomatous diseases affecting orofacial region	1
8.	Nutritional deficiencies (Vitamins, Minerals)	1
9.	Pigmented lesions affecting oral mucosa (exogenous & endogenous, differential	1
10	RBC &WBC disorders (oral manifestations & dental considerations)	2
11	Bleeding & Clotting disorders (Oral manifestations & Dental considerations)	1
12	System review in oral medicine - Endocrine (Pituitary, thyroid, Parathyroid, Adrenal,	1
13	System review in oral medicine - CVS (oral manifestation & dental considerations)	1
14	System review in oral medicine - CNS , GIT & Respiratory System (oral	2
15	System review in oral medicine - Renal System (oral manifestation & dental	1
16	Saliva as a diagnostic tool and salivary gland disorders (developmental, functional,	2
17	TMJ disorders (classification, developmental disorders, degenerative disorders, disc	1
18	Benign & malignant non - odontogenic tumors of the orofacial region (epithelial,	1
19	Fibroosseous lesions of jaws	1
20	Cysts & of orofacial region (Odontogenic & Non Odontogenic).	1
21	Odontogenic Tumors	1
22	Oral Cancer (Etiology, pathogenesis, clinical features, Diagnosis, management &	2
23	Forensic odontology	2
Total Oral Medicine teaching hours in final year part I		**33**
	Radiology Topics	
1.	Principles of radiographic interpretation.	1
2.	Faulty radiographs :- Causes and rectification	1
3.	Role of radiography in diagnosis of dental caries & periodontal disease.	1
4.	Periapical radiolucencies & Generalized rarefactions of jaws	1
5.	Pericoronal radiolucencies	1
6.	Multilocular radiolucencies	1

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7.	Radiopacities in jaws	1
8.	Mixed radiopaque - radiolucent lesions of jaws.	1
9.	Panoramic Radiography	1
10	Extra oral radiography &Imaging of maxillary sinus	1
11	TMJ radiography & Radiographic features of the diseases of TMJ.	1
12	Salivary gland imaging & Radiographic features of the diseases of salivary glands	1
13	Radiography of traumatized teeth & jaws	1
14	Contrast radiography, Radioisotopes & Scintigraphy	1
15	Digital radiography.	1
16	Recent imaging modalities and its application in dentistry (CT, CBCT, MRI & USG)	1
17	Role of radiographs in Forensic odontology	1
Total Radiology teaching hours in Final year Part I		**17**

d) CLINICALS:

1. Training in:
    - Patient examination
    - Patient assessment
    - Treatment planning
    - Medications if any, with dose
    - Follow up protocols
2. In view of the above each student shall maintain a record of work done, which shall be evaluated for marks at the time of university examination.
3. The minimum clinical requirement to appear for University examination is listed below:

Minimum clinical and academic requirements (Year wise split up)

Third Year

Sl No	Procedure	Minimum requirement
1	Short cases (routine OP)	40
2	Observation of specialty cases in the PG Clinic	5
3	Observation of minor surgical procedures	2
4	*Seminar on basic topics	1

Final year Part I

Sl No	Procedure	Minimum requirement
1	Short cases (routine OP)	60
2	Long Cases	10
3	Assisting minor surgical procedures	2
4	Taking & interpretation of IOPA radiographs	20
5	Taking & interpretation of Bitewing radiographs	2
6	Taking & interpretation of Occlusal radiographs	2
7	Observation of Specialized imaging modalities like panoramic & skull radiographs, CBCT, USG etc…	4
8	Seminars	2 (One Oral Medicine & One Radiology topic)

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e) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
One question from oral medicine and one from radiology	Structured Essays 2x 10marks	20
A. Diagnostic Methods – Two questions B. Differntial Diagnosis - two questions C. Therapuetics– Two question D. Radiation Physics – One question E. Techniques – Two Questions F. Radiographic Interpretation – One Question	Short Notes 4 x 5marks	20
A. Four Questions from Oral Medicne B. Four Questions from Radiology C. Two from Forensic Odontology	Brief Notes 10x3marks	30
	Total	**70**

vii. Theory

University Written **70 Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

viii. Clinical:

University Clinical Examination: **80 Marks**

Spotters (1 mark each)	*1x 10*	*10 Marks*
Discussion Long Case	*1x30*	*30 Marks*
Taking and Interpretation of Radiograph	*1x30*	*30 Marks*
Work Record and seminar		*10 Marks*

Internal Assessment: **20 Marks**

Grand Total 200 marks

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18. ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS

a) AIM

Undergraduate programme in Orthodontics is designed to enable the qualifying dental surgeon to diagnose, analyze and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures

b) COURSE CONTENT

The undergraduate study of orthodontics spans over second year, third year and fourth year. In second year the emphasis is given for basic and preclinical wire bending exercises and appliance fabrication. In third year the student has to undergo clinical postings where patient care and appliance management is emphasized. In fourth year of study the candidate will be allotted with long cases for detailed discussion treatment plan formulation appliance construction, insertion and management. In addition they will be trained to attend routine out patients, appliance activation, cephalometric interpretation etc.

c) SKILLS

i. To diagnose a case of malocclusion and formulate a treatment plan
ii. To make a good alginate impression
iii. To fabricate a good study model
iv. To perform various model analysis and cephalometric analysis
v. To construct routine removable and myofunctional appliances using cold cure acrylic
vi. Insertion and management of appliance

d) INTEGRATION

By learning the science of Orthodontics, the student should be able to diagnose different types of malocclusion, develop a treatment plan and manage simple malocclusions. The student should acquire skills to recognize Complex malocclusions and the same may be referred to a specialist.

This insight is gained in a variety of ways:

i. Pre clinical training
ii. Lectures & small group teaching
iii. Demonstrations
iv. Spot diagnosis and discussions
v. Long case discussions
vi. Seminar presentations

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e) AN OUTLINE OF THE COURSE CONTENT:

Study of clinical Orthodontics to enable the student to understand the science and art of orthodontics

f) THEORY: 70 Hours (III yr. 20hrs, Final yr. Part. I. 50 Hrs)

Sl no	Topics for III year	Hours
1	Introduction definition historical background aims and objectives of orthodontics and need for orthodontic care	1
2	Growth and development –General principles. Definition, growth spurts and differential growth, factors influencing growth and development, methods of measuring growth, Growth theories (Genetic, Sicher's, Scott's, Moss's, Petrovic's, Multifactorial) 1.Genetic and epigenetic factors in growth 2. Cephalocaudal gradient in growth. 3.Morphologic Development Of Craniofacial Structures a. Methods of bone growth b. Prenatal growth of craniofacial structures c. Postnatal growth and development of: cranial base, maxilla, mandible, dental arches and occlusion. 4. Functional Development of Dental Arches and Occlusion a. Factors influencing functional development of dental arches and occlusion. b. Forces of occlusion c. Wolfe's law of transformation of bone d. Trajectories of forces 5. Clinical Application Of Growth And Development Normal And Abnormal Function Of Stomatognathic System	7
3	Occlusion and Malocclusion in general a. Concept of normal occlusion b.. Definition of malocclusion c. Description of different types of dental, skeletal and functional malocclusion. Classification of Malocclusion	4

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	Principle, description, advantages and disadvantages of classification of malocclusion by Angle's, Simon's, Lischer's and Ackerman and Proffitt's.	
4	Etiology of malocclusion a. Definition, importance, classification, local and general etiological factors. b.. Etiology of various types of malocclusion.	2
5	Diagnosis And Diagnostic Aids a. Definition, Importance and classification of diagnostic aids b. Importance of case history and clinical examination in orthodontics c. Study Models: - Importance and uses - Preparation and preservation of study models d. Importance of intraoral X-rays in orthodontics e. Panoramic radiographs: - Principles, Advantages, disadvantages and uses f) Cephalometrics: Its advantages, disadvantages 1. Definition 2. Description and use of cephalostat 3. Description and uses of anatomical landmarks lines and angles used in Cephalometric analysis 4. Analysis- Steiner's, Down's, Tweed's, Witts, Ricket's-E- line g. Electromyography and its uses in orthodontics h. Wrist X-rays and its importance in orthodontics	5
	Topics for Final year (Part I)	
1	Preventive orthodontics Definition and Different procedures undertaken in preventive orthodontics and their limitations	2
2	Interceptive orthodontics a. Definition b. Different procedures undertaken in interceptive orthodontics c. Serial extractions: Definition, indications, contra-indication, technique, advantages and disadvantages. d. Role of muscle exercises as an interceptive procedure	3
3	General principles in orthodontic treatment planning	2

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4	Anchorage Anchorage in Orthodontics - Definition, Classification, Types and Stability Of Anchorage	2
5	Biomechanical principles in orthodontic Tooth Movement a. Different types of tooth movements b. Age factor in orthodontic tooth movement	2
6	Biology of tooth movement Tissue response to orthodontic force application	2
7	Methods of gaining space Proximal stripping Extractions Expansions Distalisation Proclination of anteriors and de-rotation of posteriors	7
8	Orthodontic appliances – general Indications, classifications, advantages and disadvantages	2
9	Removable orthodontic appliances Components, indications, advantages and disadvantages	2
10	Fixed orthodontic appliances Historical development, various systems, components, advantages disadvantages.	2
11	Myo functional appliances Definition, classification, various appliances like activator, Frankel, Twinblock, bionator and fixed functional appliances	5
12	Orthopaedic appliances Head gear, face mask and chin cap	3
13	Cleft lip and palate – orthodontic management	2
14	Surgical orthodontics – general Minor surgical procedures Major surgical procedures Surgical decompensation	3
15	Principles of management of various malocclusions Deep bite, open bite, cross bites, midline diastema, class I, II and III malocclusion	3

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16	Adult orthodontics	2
17	Retention and relapse Schools of thought, theorems of retention, various fixed and removable retainers	2
18	Computers and recent developments in orthodontics	2
19	Genetics	1
20	Ethics	1
21	Miscellaneous topics a) Soldering and welding b) Sterilization c) Laboratory procedures.	1

g) CLINICAL TRAINING

Sl no	Training In III year	Hours
1	Model analysis • Pont's analysis • Ashley Howe's analysis • Carey's analysis • Bolton's analysis • Moyer's mixed dentition analysis	60
2	Cephalometric analysis • Down's analysis • Steiner's analysis • Tweed's analysis • Witts appraisal	
3	Short cases • Impressions • Model fabrication • Wire bending • Acrylization • Trimming and polishing • Insertion of appliance	
	Training In Final year (Part I)	
1	Long case taking • Case taking	**140**

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	• Model analysis • Discussion • Appliance fabrication and insertion	
2	Short cases • Spot diagnosis and spot discussion • Appliance fabrication and insertion	
3	Attending O P cases and appliance review	
4	Desirable exercises Modified Adam's clasp Adams clasp on anterior teeth Split labial bow, reverse labial bow, mills retractor, Roberts retractor, high labial bow with aprons spring	

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h) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
Growth and development, classification and etiology of malocclusion, diagnostic aids, interceptive orthodontics, anchorage, biomechanics, biology of tooth movement, methods of gaining space, myofunctional appliances, orthopaedic appliances, retention and relapse	Structured Essays 2x 10marks	20
Introduction and historical background, growth and development, occlusion and malocclusion – classification and etiology. Diagnostic aids, skeletal maturity indicators, preventive and interceptive orthodontics, general principles of treatment planning, anchorage, biomechanics, biology of tooth movement, methods of gaining space, orthodontic appliances – removable and fixed appliances, myo-functional and orthopaedic appliances, management of various malocclusions, management of cleft lip and palate, surgical orthodontics, adult orthodontics, retention and relapse, computers in orthodontics, genetics and ethics.	Short Notes 4 x 5marks	20
	Brief Notes 10x3marks	30
	Total	**70**

ix. Theory

University Written **70 Marks**

Viva Voce **20Marks**

Internal Assessment **10 Marks**

x. Clinical:

University Clinical Examination: **80 Marks**

Case Presentation *40Marks*

Impression Making *20 Marks*

Spotters (10 x 1 Marks) 10 Marks

Clinical Work Record/Seminar/Assignment *10 Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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19. ORAL & MAXILLOFACIAL SURGERY

a) AIM

To produce a graduate who is competent in performing extraction of teeth and minor surgeries under both local and general anaesthesia, prevent and manage related complications, acquire knowledge regarding aseptic procedures, have reasonable understanding of management of infectious patients and prevention of cross infections, learn about BLS, acquire a reasonable knowledge and understanding of the various diseases, injuries, infections occurring in the Oral & Maxillofacial region and offer solutions to such of those common conditions and has an exposure in to the in-patient management of maxillofacial problems and also to acquire reasonable knowledge regarding the surgical principals involved in implant placement and be able to communicate properly and understand medico legal responsibilities

b) OBJECTIVES:

i. Knowledge & Understanding

At the end of the course and the clinical training the graduate is expected to –

(1) Able to apply the knowledge gained in the preclinical subjects and related medical subjects like general surgery and general medicine in the management of patients with oral surgical problem.

(2) Able to diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems.

(3) Knowledge of range of surgical treatments.

(4) Ability to decide the requirement of a patient to have oral surgical specialist opinion or treatment.

(5) Understand the principles of in-patient management.

(6) Understand the principles of emergency management of maxillofacial injuries, BLS measures and the medico legal responsibilities and formalities.

(7) Understanding of the management of major oral surgical procedures and principles involved in patient management.

(8) Be able to decide the need for medical/ surgical consultations and the method of doing so.

(9) Should know ethical issues and have communication ability.

(10) Should know the common systemic and local diseases, drugs used and drug interactions

(11) Death Certification & legal aspects of forensic medicine

ii. Skills:

A graduate should have acquired the skill to:

(1) Examine any patient with an oral surgical problem in an orderly manner.

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(2) Be able to understand requisition of various clinical and laboratory investigations and is capable of formulating differential diagnosis.

(3) Should be competent in the extraction of teeth under both local and general anesthesia.

(4) Should be able to carry out certain minor oral surgical procedures under L.A. simple impactions, draining of abscesses, simple dental wiring, biopsies etc.

(5) Ability to assess, prevent and manage various complications during and after surgery.

(6) Able to provide primary care and manage medical emergencies in the dental office.

(7) Understanding of the management of major oral surgical problems and principles involved in inpatient management.

(8) Should be competent in measures necessary for homeostasis and wound closures.

c) THEORY: 70 HOURS (III Yr. 26 hrs, Final Yr. Part I. 20 hrs. Part II. 30 hrs.)

Sl. No.	Topics	Description	Hours
	Topics for III Year		
1.	Introduction	Definition, scope, aims and objectives. Diagnosis in oral surgery: History taking, Clinical examination, Investigations. Principles of infection control and cross-infection control with particular reference to HIV/AIDS and Hepatitis.	**1**
2.	Principles of Oral Surgery	1) Asepsis: Definition Measures to prevent introduction of infection during Surgery. Preparation of the patient, Measures to be taken by operator, Sterilization of instruments - various methods of sterilization etc, Principles and need for cleaning of infected/ used instruments prior to re sterilization Surgery set up. 2) Painless Surgery:	**4**

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		Pre- anesthetic considerations Pre-medication: purpose, drugs used Anesthetic considerations a) Local b) Local with IV sedations Use of general anesthetic 3) Access: Intra-oral: Mucoperiosteal flaps, principles, commonly used intraoral incisions. Bone Removal: Methods of bone removal. Use of Burs: Advantages & precautions Bone cutting instruments: Principles of using chisel & osteotome. Extra-oral. Skin *incisions - principles, various extra-oral incision to expose facial* skeleton. a) Submandibular b) Pre auricular Incision for TMJ, Access to maxilla & orbit , Bi coronal incision 4) Control of hemorrhage during surgery Normal Haemostasis Local measures available to control bleeding Hypotensive anaesthesia etc. 5) Drainage & Debridement Purpose of drainage in surgical wounds Types of drains used Debridement: purpose, soft tissue & bone debridement. 6) Closure of wounds Type wounds, Classification of wounds Suturing: Principles Suture material: Classification, ideal requirements Body response and resorbability of	

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		various materials etc. 7) Post operative care Post operative instructions Physiology of cold and heat in the control of pain and swelling Analgesics and anti-inflammatory drugs in the control of pain and swelling Control of infection – antibiotics, principles of antibiotic therapy, prevention of antibiotic abuse Long term post operative follow up - significance.	
3.	Local Anaesthesia	Introduction and Neurophysiology Concept of LA Classification of local anesthetic agents Ideal requirements, Mechanism of action, Armamentarium required Types of local anaesthesia Use of vaso constrictors in local anesthetic solution -Advantages, contra-indications, Various vaso constrictors used. Anaesthesia of the mandible -Pterygomandibular space - boundaries, contents etc. Intra oral and extra oral techniques of Inferior Alveolar Nerve Block, Mandibular Nerve Block, Mental Nerve Block, Infiltrations, etc. Anaesthesia of Maxilla – Infiltrations, Infra - orbital nerve block, Posterior superior alveolar nerve block, Infiltrations, Maxillary nerve block – Intra oral and extra oral Techniques Complications of local anaesthesia- local and systemic Disposal of sharp instruments	**5**

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4.	General Anaesthesia	Concept of general anaesthesia. Indications of general anaesthesia in dentistry. Pre-anesthetic evaluation of the patient. Pre-anesthetic medication - advantages, drugs used. Conscious sedation Commonly used anesthetic *agents.* Complication during and after G.A. I.V. sedation with Diazepam and Midazolam. Indications, mode of action, technique etc. Cardiopulmonary resuscitation Use of oxygen and emergency drugs. Tracheostomy.	**2**
5.	Exodontia	General considerations Ideal Extraction. Indications/ contra indications for extraction of teeth Extractions in medically compromised patients. Methods of extraction Forceps or intra-alveolar or closed method. Principles, types of movement, force, role of left hand etc. Trans-alveolar, surgical or open method Indications, surgical procedure. Dental elevators, uses, classification, principles in the use of elevators, commonly used elevators. Armamentarium, Complications Complications during exodontia Common to both maxilla and mandible. Post-operative complications Prevention and management of complications.	**4**
6.	Medical Emergencies in dental practice	Primary care of medical emergencies in dental practice (a) Cardio vascular (b) Respiratory (c) Endocrine	**3**

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		(d) Anaphylactic reaction (e) Epilepsy Basic Life Support	
7.	Emergency drugs & Intra muscular and I.V. Injections	Emergency drugs required in a dental clinic Applied anatomy. Sites for intra muscular and intra venous injections, techniques etc.	**1**
8.	Death Certification & legal aspects of Forensic medicine.(*classes to be handled by faculty from the department of forensic medicine of a recognized medical college)**	Legal procedure and courts	**1**
		Medicolegal Autopsy, Objective, Procedure - Exhumation	**2**
		Sudden and unexpected death	**1**
		Forensic traumatology -Mechanical injuries, Medicolegal aspect of injury, Head injury, Transportation injuries	**1**
		Dental investigation in mass disaster incidents	**1**
		Topics for Final year (Part I)	
9.	Impacted teeth	i. Incidence, definition, etiology. ii. Impacted mandibular third molar Classification, reasons for removal Assessment - both clinical & radiological. Armamentarium and surgical procedures for removal. Complications during and after removal, its prevention and management. iii. Maxillary third molar, Indications for removal, classification, Armamentarium and surgical procedure for removal, Complications during and after removal, its prevention and management. iv. Impacted maxillary canine. Reasons for canine impaction, indications for removal, Methods of management, Localization, labial and palatal approaches, Complications during and	**4**

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		after removal, its prevention and management Surgical exposure,Transplantation	
10.	Neurological Diseases	i. Trigeminal neuralgia - definition, etiology, clinical features and methods of management including medical and surgical. ii. Facial paralysis - etiology, clinical features. iii. Nerve injuries - Classification, clinical features and management, Nerve Grafting -Neuropathy etc.	**3**
11.	Implants	Concept of osseointegration, History of implants their design & surface characteristics. Knowledge of various types of implants, Bone biology, Morphology, Classification of bone and its relevance to implant placement. Bone augmentation materials. Soft tissue considerations in implant dentistry. Surgical procedure to place implants.	**2**
12.	Diseases of the maxillary sinus	Surgical anatomy and development of the sinus. Sinusitis both acute and chronic Surgical approach of sinus - Cald well-Luc procedure, Knowledge of FESS, Removal of root from the sinus. Oro-antral fistula and communications- etiology, clinical features and surgical methods for closure.	**2**
13.	Cysts of the mouth and jaws	Definition, classification, pathogenesis. Diagnosis - Clinical features, radiological, FNAC, use of contrast media and histopathology. Management - types of surgical procedures. Rationale of the techniques, indications, contraindications, procedures, complications etc.	**4**
14.	Jaw deformities	Basic forms - Prognathism, Retrognathism and open bite. Reasons for correction.	**3**

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		Diagnosis and treatment planning Outline of surgical methods carried out on mandible and maxilla-subapical, body,sagittal split osteotomy, genioplasty, anterior maxillary Osteotomy, Le fort I osteotomy Role of distraction osteogenesis in correction of jaw deformities	
15.	Pre-prosthetic Surgery	Definition Classification of procedures Corrective procedures: Alveoloplasty, Reduction of maxillary tuberosities, Frenectemies and removal of tori. Ridge extension or Sulcus extension procedures, Indications and various surgical procedures Ridge augmentation and reconstruction. Indications, use of bone grafts, hydroxyapatite etc	**2**
	Topics for Final year (Part II)		
16.	Cleft Lip and Palate	Etiology of the clefts, incidence, classification Role of dental surgeon/ maxillofacial surgeon in the cleft team. Outline of the closure procedures,	**1**
17.	Infections of the Oral cavity	Introduction, surgical anatomy of the superficial and deep fasciae of head and neck Factors responsible for infection, pathogenecity, virulence Dento-alveolar abscess - aetiology, clinical features and management. Spread of odontogenic infections through various facial spaces and its management Ludwig's angina - definition, aetiology, clinical features, management and complications Course of odontogenic infections	**6**
18.	Fungal Infections of head and neck	Candidiasis, Actinomycosis, Coccidiodmycosis, Rhinosporidosis,	**1**

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	region	Antifungal agents	
19.	Osteomyelitis of the jaws	Definition, etiology, pre-disposing factors, classification, clinical features and management.	**1**
20.	Carcinoma of the oral cavity	Lymphatic Spread. TNM classification, Staging. Biopsy-types, filling of Histopathology request form Outline of management of Squamous Cell Carcinoma: surgery, radiation and chemotherapy Role of dental surgeons in the prevention and early detection of oral cancer.	**2**
21.	Osteoradionecrosis -	Definition, etiology, theories, pre-disposing factors, classification, clinical features and management.	**1**
22.	Maxillofacial Traumatology	Emergency management in maxillofacial trauma General considerations, types of fractures, aetiology, clinical features and general principles of management. Mandibular fractures - Applied anatomy, classification. Diagnosis - Clinical and radiological features, Management - Reduction -closed and open Fixation and immobilization methods outline of rigid and semi-rigid internal fixation Fractures of the condyle - etiology, classification, clinical features, principles of management Fractures of the middle third of the face. Definition of the mid face, applied surgical anatomy, classification, clinical features and outline of management. Alveolar fractures - methods of management Fractures of the Zygomatic complex and orbit. Classification, clinical features, indications for treatment, various methods of reduction and fixation	**7**

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		Faciomaxillary Injuries in Children Complications of fractures - delayed union, non-union and malunion.	
23.	Salivary gland diseases	Surgical Anatomy of Minor and Major salivary glands Sialography, contrast media, procedure. Inflammatory conditions of the salivary glands Sialolithiasis- Sub mandibular duct and gland , parotid duct and gland ,Clinical features, management, Intraoral and extra oral Sialolithotomy. Salivary fistulae, sialocoele Autoimmune diseases of the salivary glands, diagnosis management Common tumours of salivary glands like Pleomorphic adenoma including minor salivary glands.	**3**
24.	Tumors of the Oral cavity	General considerations, surgical principles Non odontogenic benign tumours occurring in oral cavity - fibroma, papilloma, lipoma, ossifying fibroma, myxoma etc. Odontogenic tumors: both benign and malignant. Ameloblastoma - Clinical features, radiological appearance and methods of management. Osteogenic tumours of the faciomaxiliary region.	**4**
25.	Disorders of T.M. Joint	Applied surgical anatomy of the joint. Development of the TMJ Surgical approaches to TM.J Radiological investigations Hypermobilty of TMJ; Dislocation - Types, aetiology, clinical features and management. Hypomobility of TMJ; Classification, Ankylosis - Definition, aetiology, clinical features and management	**4**

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		Myo-facial pain dysfunction syndrome, etiology, clinical features, management- Non surgical and surgical. Internal derangement of the joint. Inflammatory Diseases of T.M. Joint. Arthroscopy	

d) CLINICAL AND ACADEMIC REQUIREMENTS

i. Case Taking: Detailed clinical examinations, investigations and diagnosis – 10 nos.
ii. Dental extractions under local anesthesia – 180 nos.
iii. Suturing of extraction wound -5 nos.
iv. Incision and drainage – 3 nos.
v. Arch bar wiring, eyelet wiring and intermaxillary fixation on plaster or acrylic models- 1 each
vi. IV/ IM injection technique on patients- 5 nos. each
vii. Wound dressing – 5 nos.
viii. Observing minor surgery done by staff member- 5 nos.
ix. Surgical Assistance of minor surgeries- 5 nos.
x. Observation of major surgeries in Operation Theatre- 3 nos.
xi. Observation of surgical procedures performed in casualty– 5 nos.
xii. Training in handling medical emergencies. CPR and basic life support
xiii. Seminars: 6 nos. Two in the third year, Two in the fourth year and Two in the final year

A work record should be maintained by all students detailing each of the clinical and academic requirements duly signed by the teacher in charge and should be submitted at the time of examination after due certification from the head of the department.

e) CLINICAL REQUIREMENTS YEAR WISE SPILT UP:

Sl. No.	Topic	Procedures in III Year	Quota: Must do
1	Case Taking	Detailed clinical examinations, investigations and diagnosis	2 cases
2	Dental Extraction	Extraction of anterior and mobile teeth under LA : Infiltration only	30 cases
3	Seminars	Seminars on basic subjects, local anesthesia, investigative procedures,	2 no.

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		exodontia etc	
	Injection	IV/ IM injection technique on patients-	5nos.each
4	Observation	Observing minor surgery under LA done by staff member	2 cases
Procedures in Final year (Part I)			
1	Case Taking	Detailed clinical examinations, investigations and diagnosis	3 cases
2	Dental Extraction	Extraction of anterior and posterior teeth under LA : Infiltration and blocks	90 cases
3	Suturing	Suturing of extraction wound	5 no.
4	Seminars	Seminars on oral surgery subjects, cross contamination and infection, impactions, medically compromised patients, medical emergencies etc.	2 no.
5	Observation	Observing minor surgery under LA done by staff member	3 cases
6	Assistance	Assistance of minor surgery under LA done by staff member	2 cases
7	Observation	Observation of cases managed in the casualty	2 cases
8	Skill development	Wiring procedures in models	3 nos.
Procedures in Final year (Part II)			
1	Case Taking	Detailed clinical examinations, investigations and diagnosis	5 cases
2	Dental Extraction	Extraction of anterior and posterior teeth under LA : Infiltration and blocks	60cases
3	Seminars	Seminars on oral surgery subjects like TMJ, Tumors, Maxillofacial injuries, Infections, Salivary Gland diseases and Medico-legal cosiderations	2 no.
4	Observation	Observation of major surgery under GA do in the OT	3 cases
5	Assistance	Assistance of minor surgery under LA done	3cases

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		by staff member	
6	Procedure	Incision and drainage	3
7	Procedure	Wound dressing	5
8	Observation	Observation of cases managed in the casualty	3 cases

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f) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
One Question from Local Anaesthesia One Question from Oral Surgery	Structured Essays 2x 10marks	20
Two Questions from Oral Surgery, One Question from Local Anaesthesia, , One Question from General Anaesthesia	Short Notes 4 x 5marks	20
Questions from any of the Oral & Maxillofacial Surgery topics.(at least one question from management of medical emergencies) One question from Death Certification & legal aspects of Forensic medicine.	Brief Notes 10x3marks	30
	Total	**70**

xi. Theory

University Written **70Marks**

Viva Voce **20Marks**

Internal Assessment **10 Marks**

xii. Clinical:

University Clinical Examination: **80 Marks**

Extraction of one firm tooth (Maxillary/ Mandibular)

Case History	*20 Marks*
Local Anaesthesia technique	*25 Marks*
Extraction of firm tooth & patient management	25 Marks
Clinical Work Record & Seminar	*10 Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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20. CONSERVATIVE DENTISTRY AND ENDODONTICS

a) OBJECTIVES:

i. Knowledge and Under Standing:

The graduate should acquire the following knowledge during the period of training,

(1) To diagnose and treat simple restorative work for teeth.

(2) To gain knowledge about aesthetic restorative material and to translate the same to patients needs.

(3) To gain the knowledge about endodontic treatment on the basis of scientific foundation.

(4) To carry out simple endodontic treatment.

(5) To carry out simple luxation of tooth and its treatment and to provide emergency endodontic treatment.

ii. **Skills:**

He should attain following skills necessary for practice of dentistry

(1) To use medium and high speed hand pieces to carry out restorative work.

(2) Poses the skills to use and familiarize endodontic instruments and materials needed for carrying out simple endodontic treatment.

(3) To achieve the skills to translate patients esthetic needs along with function.

iii. Attitudes:

(1) Maintain a high standard of professional ethics &conduct and apply these in all aspects of professional life.

(2) Willingness to participate in CDE programme to update the knowledge and professional skill from time to time.

(3) To help and participate in the implementation of the national oral health policy.

(4) He should be able to motivate the patient for proper dental treatment and maintenance of oral hygiene should be emphasise which will help to maintain the restorative work and prevent future damage.

b) THEORY: 160 HOURS (II yr.25hrs, III Yr. 65 hrs, Final Yr. Part I. 40 hrs. Part II. 30hrs.)

Sl.No.	Topic for II Year	Hours
1.	Introduction to Conservative Dentistry.	1
2.	Definition, Aim & Scope of Conservative Dentistry & Endodontics	
3.	Nomenclature of dentition; Tooth Numbering systems	1
4.	Restoration - Definition & Objectives	

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5.	Hand Instruments - Classification, Nomenclature, Design, Formula of hand cutting instruments, Grasps and Rests, Sterilization.	2
6.	Rotary Cutting instruments - Burs, Design, Types. Various speeds in tooth preparation. Hazards with cutting instruments.	2
7.	Dental caries – Aetiology, classification, caries terminology	1
8.	Fundamentals in Tooth preparation	4
9.	Definition, Stages and steps , Classification of Tooth preparations, Nomenclature, Concepts in tooth preparations for Silver Amalgam, Cast gold inlay, Composite resins and Glass Ionomer	
10.	Tooth preparation for amalgam restorations. Stepwise procedure for Class I, II, III, IV, V amalgam restorations. Failure of amalgam restoration.	6
11.	Contact and contour of teeth – different methods of tooth separation	1
12.	Matrices, Retainers, Wedges – methods of wedging	1
13.	Finishing & polishing of restorations.	1
14.	Chair side positions – patient and operator positions	1
15.	Management of deep carious lesions – Technique of caries excavation with hand and rotary instruments, Affected and Infected dentin, Caries detector dyes, Concept of Remaining Dentin Thickness, Pulp capping and Pulpotomy.	2
16.	Access cavity and brief introduction of root canal instruments	2
	Topic for III Year	
17.	**Nomenclature of Dentition** Tooth numbering systems: ADA, Zsigmondy- Palmer, and FDI systems	2
18.	**Gnathological concepts of Restoration** Physiology of occlusion, normal occlusion, ideal occlusion mandibular movements and occlusal analysis. Occlusal rehabilitation and restoration.	3
19.	**Dental Caries** Aetiology, classification clinical features, morphological features, microscopic features, clinical diagnosis and sequel of dental caries. Caries treatment.	6
20.	**Treatment Planning For Restorative Procedure**: Patient assessment, clinical examination, radiographic examination, tooth vitality tests, diagnosis and treatment planning, preparation of the case sheet. Patient and operator position.	3
21.	**Preventive measures in restorative practice** Plaque control, Pit and Fissure sealants, Fluorides, Dietary measures, restorative	4

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	procedures and periodontal health.	
22.	**Armamentarium for Tooth Preparation**: General classification of operative instruments. a) Hand cutting instruments Terminology and classification Design, formula and sharpening of instruments. Grasp Rest and application. b) Rotary cutting instruments Dental bur , mechanism of cutting Common design characteristics Diamond and other abrasive instruments Cutting mechanism Hazards and precautions Sterilization and maintenance of instruments. Basic Instrument tray set up.	6
23.	**Isolation of Operating Filed**: Control of moisture ,purpose and methods of isolation, rubber dam isolation in detail, antisialogogues	3
24.	**Infection Control** Routes of transmission of dental infection Personal barrier protection Control of infection from aerosol, spatter Sterilization procedures for dental equipment and instruments, monitoring sterilization, disinfection of operatory Dental water line contamination and Biofilm Disposal of waste	4
25.	**Pulp Protection** Liners, Varnishes, Bases. Affected and infected dentin, Caries detector dyes Concepts of Remaining Dentin Thickness	3
26.	**Pain control in restorative procedures**	3
27.	**Amalgam Restoration**: Indication, contraindication. Physical and mechanical properties	7

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	Clinical behavior. Advantages and disadvantages. Tooth preparation for Class I , II, V and III. Step wise procedure for tooth preparation and restoration including modified designs. Bonded amalgam, Failure and repair of amalgam restorations	
28.	**Contacts and contour** Tooth separation Matrices, retainers and wedges, methods of wedging	1
29.	**Management Of Deep Carious Lesions** Technique of caries excavation – Hand and rotary Indirect and Direct Pulp Capping, Pulpotomy	1
30.	**Dentinal Hypersensitivity** Theories of hypersensitivity Management	1
31.	**Complex amalgam restorations** Pin Amalgam Restoration Indications, Contra Indication, Advantages, Disadvantages of pin amalgams, types of pins, methods of placement, alternative means for providing retention for complex amalgam restorations. Failure of pin amalgam restoration	4
32.	**Gingival Tissue Management** Indication and methods, including recent techniques for gingival retraction.	2
33.	**Adhesion to tooth structure** Definition and mechanism Enamel and Dentin bonding Classification and recent development in dentin bonding systems components of dentin bonding agents critical steps in dentin bonding.	3
34.	**Anterior Restorations** Selection of cases, selection of material, shade selection, Clinical technique for anterior composite restorations.	2
35.	**Composite Restorations** Composition, classification, properties Recent advances in composite resins Indications, contraindications, advantages, disadvantages	4

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	Step wise procedures of tooth preparation for composite restorations. Finishing and polishing of composite restoration	
36.	**Minimal Invasive Dentistry** Principles of MID, caries risk assessment, materials and techniques	2
37.	**Alternate methods of tooth preparation for restorations** Air abrasion, chemo mechanical method, lasers	1
	Topic for Final year (Part I) **Endodontics**	
38.	**Introduction, definition, scope and future of Endodontics**	1
39.	**Rationale and principles of Endodontics** Case selection, indication and contraindications for root canal treatments	2
40.	**Clinical diagnostic methods** Case history, diagnosis and treatment plan Clinical diagnostic methods Case history, diagnosis, pulp vitality assessment, recent advances and treatment plan	3
41.	**Microbiology of endodontic infection**	2
42.	**Isolation and infection control in Endodontics** Rubber dam application	1
43.	**Endodontic instruments** Hand instruments Power driven instruments Standardization Principles of using endodontic instruments Sterilization	3
44.	**Pulpal diseases** Classification, etiology, diagnosis, management	2
45.	**Periapical diseases**: Classification, etiology, diagnosis, management	2
46.	**Vital pulp therapy**: Indirect and direct pulp capping Pulpotomy - types and medicaments used Apexogenesis and apexification –multivisit and single visit apical barrier techniques, revascularization ,regenerative endodontics	3

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47.	**Esthetics in dentistry** Introduction and scope Facial proportions, Golden proportions Anatomy and physiology of smile Role of colour and translucency Esthetic recontouring Alteration of tooth form, shape, size and colour Management of discoloured teeth	4
48.	**Composite restorations** Recent advances in posterior composite resins Indications, contraindications, advantages and disadvantages Stepwise procedure of tooth preparation for composite restoration. Clinical technique for posterior direct composite restorations Finishing and polishing of composite restoration Indirect posterior composite restoration	4
49.	**Casts restorations** Indications, contraindications, advantage and disadvantages Materials used Class II cavity preparation for inlays Types of bevels in cast restoration Fabrication of wax patterns Differences in tooth preparation for amalgam and cast restorations	3
50.	**Casting** Die materials and preparation of dies Refractory materials Alloys used for casting Casting machines Casting procedure Casting defects Cementation of restoration	2
51.	**Temporisation or interim restoration** Materials and procedure	1
52.	**Root Caries** Etiology, clinical features and management	1

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53.	**Non carious destruction of tooth structure** Definition, etiology, diagnosis, clinical features and management	2
54.	**Ceramic Restorations** Recent advances in ceramic materials & techniques including CADCAM (in brief) Ceramic laminates, inlays, onlays and crowns, Indications, contraindications, advantages, disadvantages and techniques (in brief)	3
55.	**Direct Filling gold Restorations** Introduction Types of direct filling gold Indications, contraindications, advantages, disadvantages tooth preparation and restoration	1
	Final year (Part II)	
	Endodontics	
56.	**Emergency endodontic procedures**	2
57.	**Anatomy of pulp space** Root canal anatomy of maxillary and Mandibular teeth. Classification of canal configuration and variations in pulp space.	2
58.	**Access preparation** Objectives Principles Instruments used Sequential steps of access preparation for individual tooth	2
59.	**Preparation of root canal space** a. Determination of working length definition and methods of determining working length	1
	Cleaning and shaping of root canals Objectives Principles Instruments used Techniques – hand and rotary Step back & Crown down methods	2

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60.	**Disinfection of root canal space** a. Irrigants Functions Requirements Types Methods and techniques of irrigation	1
	b. Intracanal medicaments Functions Requirements Types Method of placement and limitations	1
61.	**Problems during cleaning and shaping of root canal spaces** Perforation and its management Broken instruments and its management Management of curved root canals	2
62.	**Obturation of the root canal system** a. Materials- Ideal root canal filling material, classification of materials b. Obturation techniques Classification and procedure	2
63.	**Root canal sealers** Ideal properties Classification, functions Manipulation and application of root canal sealers	2
64.	**Post endodontic restoration** Principles of post endodontic restorations Post and core-materials and procedure(in brief)	2
65.	**Smear layer and its importance in endodontics and conservative treatment**	1
66.	**Discoloured teeth and its management** Classification, etiology Bleaching agents , Vital and non vital bleaching methods	1
67.	**Traumatized teeth** Diagnosis, Classification ,management of of luxated ,avulsed teeth .root fracture,	2

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	vertical fracture	
68.	**Endodontic surgeries** Indication contraindications, pre operative preparation Surgical instruments and techniques Apicoectomy, retrograde filling Post operative sequale Trephination, hemisection Radisectomy Reimplantation (both intentional and accidental)	3
69.	Endo-perio lesions Portals of communication Etiology ,clinical features, diagnosis, classification and management	
70.	**Root resorption** Etiology and management	1
71.	**Success and failures of endodontic treatments**	1
72.	**Retreatment in Endodontics**	1
73.	**Specialized equipments-lasers, magnification loupes, dental operating microscopes(DOM) in conservative dentistry and endodontics**	1

c) Minimum requirement to appear for Final BDS Part II Conservative Dentistry and Endodontics University Examination:

Sl.No	Clinical Procedure	No.
1	Case history recording, diagnosis and treatment planning	10
2	Management of deep caries lesions	5
3.	Glass ionomer restorations	20
4.	Composite restorations in anterior teeth	5
5.	Class I amalgam restorations	30
6.	Class II amalgam restorations	20
7.	Root canal treatment of anterior teeth	5

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d) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
One Question from Conservative Topics One Question from Endodontic Topics	Structured Essays 2x 10marks	20
Two Questions from Conservative Topics including esthetics and Two Questions from Endodontic Topics	Short Notes 4 x 5marks	20
Questions from any of the Conservative & Endodontic topics.	Brief Notes 10x3marks	30
	Total	**70**

xiii. Theory

University Written **70Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

xiv. Clinical:

University Clinical Examination: **80 Marks**

Internal Assessment: **20 Marks**

Grand Total 200 Marks

Details of Mark distribution for university Practical examination:

Clinical Exercise: 70 marks

Work Record : 10 marks

Clinical Exercises

1. Preparation for class II amalgam and restoration

   Or

2. Anterior composite restoration

   Or

3. Root canal treatment for anterior tooth up to selection of master cone

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Mark distribution for the clinical examinations

1. **Class II amalgam restoration**

i) Case history recording, examination,
diagnosis and treatment planning : 15 min 10 marks
ii) Tooth preparation : 45 min 20 marks
iii) Base and matrix : 15 min 15 marks
iv) Restoration and carving : 30 min 25 marks

Total : 70 marks

2. **Anterior composite restoration**

i) Case history recording, examination,
diagnosis and treatment planning : 15 min 10 marks
ii) Tooth preparation : 30 min 25 mark
iii) Lining and matrix : 15 min 10 marks
iv) Restoration and finishing : 45 min 25 marks

Total : 70 marks

3. **Anterior RCT**

i) Case history recording, examination,
Diagnosis and treatment planning : 15 min 10 marks
ii) Access preparation : 30 min 25 marks
iii) Working length : 15 min 10 marks
iv) Cleaning and shaping,
Master cone selection : 45 min 25 marks

Total : 70 marks

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21. PROSTHODONTICS AND CROWN & BRIDGE

a) THEORY:160 HOURS (IIyr. 25 hrs, IIIyr.65 hrs, Part I.40 hrs, Part II. 30 hrs)

Sl. No.	Topic	Description	Hours
Removable Complete Prosthodontics			
1.	Applied Anatomy and Physiology	Introduction Biomechanics of the edentulous state. Residual ridge resorption	3
2.	Communicating with the patient	Understanding the patients, mental attitude. Instructing the patient.	1
3.	Diagnosis and treatment planning for patient.	With some teeth remaining. With no teeth remaining. Systemic status. Local factor. The geriatric patient Diagnostic procedures.	2
4.	Articulators – discussion		3
5.	Improving the patient's denture foundation and ridge relation- an overview	Pre-operative examination. Initial hard tissue & soft tissue procedure, Secondary hard & soft tissue procedure Implant procedure. Congenital deformities Postoperative procedure	3
6.	Principles of Retention, Support and Stability		2
7.	Impressions- detail.	Muscles of facial expression. Biologic considerations for maxillary and Mandibular impression including anatomy landmarks and their	7

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		interpretation. Impression objectives Impression Materials Impression techniques. Maxillary and Mandibular impression procedures Preliminary impressions Final impressions. Laboratory procedures involved with impression making (Beading & Boxing, and cast preparation).	
8.	Record bases and occlusion rims- in details.	Materials & techniques Useful guidelines and ideal parameters.	2
9.	Recording and transferring bases and occlusal rims		1
10	Biological consideration in jaw relation& jaw movements – craniomandibular relations.	Mandibular movements. Maxillo- Mandibular relation including vertical and horizontal jaw relations.	3
11	Concepts of occlusion- discuss in brief.	Discuss in brief.	2
12.	Relating the patient to the articulator	Face bow types & uses – discuss in brief. Face bow transfer procedure- discus in brief.	1
13.	Recording Maxillo Mandibular relation.	Vertical relation Centric relation records. Eccentric relation records. Lateral relation records	4
14.	Tooth selection and arrangement.	Anterior teeth. Posterior teeth. Esthetic and functional	2

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		harmony.	
15.	Relating inclination of teeth to concept of occlusion- in brief.	Neutrocentric concept. Balanced occlusal concept.	2
16.	Trial dentures		3
17.	Laboratory procedures	Wax contouring. Investing of dentures. Preparing of mold. Preparing & packing acrylic resin. Processing of dentures. Recovery of dentures. Lab remount procedures Recovering the complete denture from the cast. Finishing and polishing the complete denture. Plaster cast for clinical denture remount procedure	3
18.	Denture insertion	Insertion procedures. Clinical errors. Correcting occlusal disharmony. Selective grinding procedures	3
19.	Treating problems with associated denture use	Discuss in brief (tabulation/ flow chart form).	1
20	Treating abused tissues	Discuss in brief	1
21	Relining and rebasing of dentures	Discuss in brief	2
22	Immediate complete dentures construction procedure	Discuss in brief	2
23	The single complete dentures	Discuss in brief	2
24	Overdentures	Discuss in brief	2
25	Implant Supported complete denture	Discuss in brief	3
26	Reduction of residual ridge	Discuss in brief	1
Removable Partial Prosthodontics			

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1.	Introduction		1
2	Terminologies and scope		1
3	Classification		2
4	Examination, Diagnosis & Treatment planning & evaluation of diagnostic data.		2
5	Components of a removable partial denture.	Major connectors Minor connectors Rest and rest seats Direct retainers Indirect retainers Tooth replacement.	12
6.	Principles of Removable Partial Denture Design		3
7	Survey and design – in brief		1
8	Surveyors		1
9	Surveying		1
10	Designing		3
11	Mouth preparation and master cast		1
12	Impression materials and procedures for removable partial dentures		2
13	Preliminary jaw relation and esthetic try in for some anterior replacement teeth		2
14	Laboratory procedures for framework construction- in brief		1
15	Fitting the framework- in brief		1
16	Try in of the partial denture- in brief		1
17	Completion of the partial denture- in brief		1
18	Inserting the Removable partial denture in brief		1
19	Post insertion observations		1
20	Temporary Acrylic Partial Dentures		1
21	Immediate Removable Partial Denture		1
22	Removable partial Dentures opposing Complete denture.		1
Fixed Partial Prosthodontics			
1.	Introduction		1

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2	Fundamentals of occlusion in brief.		1
3	Articulators	In brief.	1
4	Treatment planning for single tooth restoration.		1
5	Treatment planning for the replacement of missing teeth including selection and choice of abutment teeth.		2
6.	Fixed partial denture configurations		1
7	Principles of tooth preparations.		2
8	Preparations for full veneer crowns		3
9	Preparations for partial veneer crowns	In brief.	1
10	Provisional Restorations		1
11	Fluid Control and Soft Tissue Management		1
12	Impressions		1
13	Working Casts and Dies		1
14	Wax patterns		1
15	Pontics and Edentulous Ridges		1
16	Esthetic Considerations		1
17	Finishing and Cementation		1
18	Implant Supported Fixed Restorations		2
Miscellaneous Topics to Be Covered In Brief :			
1	Solder Joints and Other Connectors		35
2	All - Ceramic Restorations		
3	Metal - Ceramic Restorations		
4	Preparations of intracoronal restorations.		
5	Preparations for extensively damaged teeth.		
6	Preparations for Periodontally weakened teeth	`	
7	The Functionally Generated Path Technique		
8	Investing and Casting		
9	Resin - Bonded Fixed Partials Denture		
10	Digital impressions		
11	3D printing in Prosthodontics		
12	CAD-CAM in Prosthodontics		

It is

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suggested that the above mentioned topics be dealt with wherever appropriate in the following order so as to cover -

Definition

Diagnosis (of the particular situation /patient selection /treatment planning)

Types / Classification

Materials

Methodology - Lab /Clinical

Advantages & disadvantages

Indications, contraindications

Maintenance Phase

Recent advances

Failure

b) Mandatory requirement to appear for Final BDS part II Prosthodontics University Examination:

1. *Treating completely edentulous conditions with Complete Denture – Minimum 5 nos. (including all clinical and laboratory procedures)*
2. *Treating partially edentulous conditions with Removable Partial Denture – Minimum 5 nos. (including all clinical and laboratory steps)*
3. *Should have satisfactorily completed all the Preclinical Prosthodontic exercises*
4. *Minimum of one seminar presentation on any Prosthodontic topic. A hard copy of the seminar to be submitted at the time of University examination.*

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c) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
One Question From Complete Denture topics and one from either FPD or RPD	Structured Essays 2x 10marks	20
Two Questions from Complete denture, One question from RPD, One question from FPD.	Short Notes 4 x 5marks	20
Questions from any of the Prosthodontic topics including implants, maxillofacial prosthesis & applied Dental materials	Brief Notes 10x3marks	30
	Total	**70**

xv. Theory

University Written **70 Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

xvi. Clinical:

University Clinical Examination: **80 Marks**

Case History *5 Marks*

Complete Denture clinical steps *45 Marks*

Tooth Preparation on Typhodont 20 Marks

Clinical Work Record & Seminar *10Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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22. PAEDIATRIC AND PREVENTIVE DENTISTRY

a) THEORY: 65 HOURS (III yr. 15 hrs. Final Yr. Part I. 20hrs Part II*. 30 hrs.)*

Theory topics for III Year		
Sl. No.	**Topic**	**Hours**
	Introduction to Paediatric and Preventive Dentistry Definition, Scope, Objectives and Importance	**1**
1.	Dental Anatomy and Histology ♦ Chronology of Eruption of teeth ♦ Differences between primary and permanent teeth ♦ Eruption disorders and their management including teething, ectopic eruption, ankylosis etc. ♦ Importance of first permanent molar	**1**
2.	Growth and Development (will be covered by Department of Orthodontics also) ♦ Importance of study of growth and development in Pedodontics ♦ Prenatal and postnatal factors in growth and development ♦ Theories of growth and development ♦ Methods to measure growth ♦ Development of maxilla and mandible and age related changes	**2**
3.	Development of occlusion from birth to adolescence ♦ Mouth of neonate, gumpads ♦ Primary Dentition period ♦ Mixed dentition period ♦ Establishment of occlusion ♦ Study of variation and abnormalities	**2**
4.	Case history recording ♦ Principles of history taking, examination, investigations, ♦ diagnosis and treatment planning	**1**
5.	Child Psychology ♦ Definition ♦ Importance of understanding Child Psychology in Pedodontics ♦ Theories ♦ Psychological development from birth through adolescence	**4**

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	♦ Dental fear, anxiety and their management, types of cry ♦ Application of Psychology principles in management of child ♦ patients in the dental office ♦ Psychological disorders including anorexia, bulimia ♦ Child abuse and neglect	
6.	Behaviour management ♦ Definition ♦ Classification and types of behaviour ♦ Factors influencing child behaviour ♦ Non- Pharmacologic management of behaviour ♦ Pharmacologic management of behaviour- ♦ Conscious sedation including nitrous oxide- oxygen inhalational anaesthesia ♦ Pharmacological principles in Paediatric Dentistry- drug dosage formulae ♦ Analgesics, anti-inflammatory and antibiotics commonly prescribed for children	**4**
	Theory topics for Final Year Part I	
7.	Dental Caries ♦ Diagnostic procedures and caries detection ♦ Caries pattern in primary, young permanent and permanent teeth ♦ Early childhood Caries, rampant caries- definition, classification, etiology, pathogenesis, clinical features, complications and management ♦ Role of diet and nutrition in dental caries and sugar substitutes ♦ Diet counselling and diet modifications ♦ Caries activity tests , caries prediction, susceptibility and their clinical application	**3**
8.	Dental Radiology as related to Pedodontics	**1**
1.	Dental materials used commonly in children and adolescents (Outline revision)	**1**
2.	Paediatric Operative Dentistry ♦ Principles of Operative Dentistry ♦ Isolation- Importance and techniques	**5**

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	♦ Young Permanent Teeth and clinical considerations ♦ Modifications in cavity preparation and recent cavity designs for primary and young permanent teeth ♦ Atraumatic / Alternative Restorative Technique (ART) ♦ Other methods of caries removal ♦ Restoration of carious teeth (Primary, young permanent and permanent teeth) using various restorative materials like glass ionomers, composites, silver amalgam ♦ Preformed crowns: Stainless steel, polycarbonate and strip crowns	
3.	Gingival and Periodontal diseases in children ♦ Normal gingival and periodontium in children ♦ Definition, classification ♦ Etiology, Pathogenesis and management of gingival and periodontal condition seen in children and adolescents	**2**
4.	Flourides ♦ Historical background ♦ Systemic fluorides: Availability, agents, concentrations, advantages and disadvantages ♦ Topical fluorides: agents, composition, method of application both for professional and home use, advantages and disadvantages ♦ Mechanism of action and its anticariogenic effect ♦ Fluoride toxicity and its management ♦ Defluoridation techniques	**4**
5.	Paediatric Endodontics ♦ Principles and diagnosis ♦ Classification of pulp pathology ♦ Management of pulpaly involved primary, young permanent and permanent teeth including materials used and techniques followed: ♦ Pulp capping ♦ Pulpotomy ♦ Pulpectomy ♦ Apexogenesis ♦ Apexification	**4**
	Theory topics for Final Year Part II	

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6.	Traumatic injuries to teeth ♦ Definition, classification ♦ Etiology and incidence ♦ Management of trauma to primary teeth ♦ Sequelae and reaction following trauma to primary teeth ♦ Management of trauma to young permanent teeth ♦ Prevention of trauma: mouth protectors	**5**
7.	Preventive Orthodontics ♦ Importance and functions of deciduous dentition ♦ Effects of premature loss of primary teeth Preventive Orthodontics: ♦ Definition ♦ Preventive measures ♦ Space loss ♦ Space maintenance and space management ♦ Space maintainers: definition, classification, indications and contra indications, advantages and disadvantages including construction of fixed space maintainers ♦ Space regainers ♦ Mixed dentition analysis ♦ Serial extraction	**5**
8.	Interceptive Orthodontics ♦ Oral Habits in children ♦ Definition, classification and etiology of all habits ♦ Clinical features of deleterious oral habits including non- nutritive sucking, mouth breathing, non functional grinding, masochistic and occupational habits ♦ Management of oral habits in children ♦ Other problems seen during primary and mixed dentition period and their management	**4**
9.	Dental management of children with special needs ♦ Definition, classification, etiology, clinical features, special considerations in the dental management of :	**5**

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	♦ Physically handicapping conditions ♦ Mentally handicapping conditions ♦ Medically compromising conditions ♦ Genetic disorders and importance of genetic counseling including cleft lip and palate and its management	
10.	Oral surgical procedures in children ♦ Indications and contra indications for extraction ♦ Minor surgical procedures in children ♦ Knowledge of local and general anaesthesia	**2**
11.	Preventive Dentistry ♦ Definition, principles and scope ♦ Levels and types of prevention ♦ Infant oral health care and first dental visit Preventive measures: ♦ Minimal intervention ♦ Pit and fissure sealants ♦ Preventive resin restorations ♦ Newer agents available for caries prevention and demineralization ♦ Caries vaccine	**4**
12.	Nanodentistry – Introduction, principles and technique – an outline	**1**
13.	Dental Health Education and school dental health programmes	**1**
14.	Importance of Dental HOME and anticipatory guidance	**1**
15.	Dental emergencies in children and their management	**1**
16.	Setting up of paediatric dental practice including ethics	**1**

b) PRACTICALS/ CLINICALS

Student is trained to arrive at proper diagnosis by following a scientific and systematic procedure of history taking and examination of orofacial region. Training is also imparted in management whenever possible.

In view of the above each student shall maintain a record of work done, which shall be evaluated for marks at the time of university examination.

The following is the minimum prescribed clinical and academic requirement.

1. Case taking : 25 cases

Long case-

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Detailed history taking & clinical examination, formulating diagnosis and planning comprehensive treatment for the child -**3 nos.**

A very detailed history taking including diet chart recording, space analysis etc - **2nos**.

Short case-

History taking (briefly), clinical examination, formulating diagnosis and treatment planning- **20 nos.**

1. Preventive measures

   Oral prophylaxis after using disclosing agents - **25nos.**

   Topical fluoride application - **25 nos.**

   Pit and fissure sealant application – **2nos**
2. Permanent Restorations:- **45 nos.**
3. Removable orthodontic appliances

   Space maintainers / Habit breakers / Hawley's appliance - **10nos.**
4. Dental Extractions under LA

   Extraction of deciduous and permanent teeth –**30nos.**
5. Special Dentistry

   Treatment for children with special health care needs - **1 no.**
6. Assignments on the topics given below in the year wise split-up
7. Seminar

   Presentation of seminars, preferably in power point, during the Final year Part II clinical posting in the department. Seminar certified by the HOD should be submitted in a book form along with the record at the time of University Practical Examination.-**1 no.**

Clinical requirement –Year wise split up

Sl. No	Topic	Procedures in III year	Minimum requirement
1.	Case taking	Long case- Detailed history taking & clinical examination, formulating diagnosis and planning comprehensive treatment for the child.	2
2.	Preventive measures	1. Oral prophylaxis after using disclosing	5

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		agents 2. Topical fluoride application	5
3.	Permanent Restorations	Amalgam or glass ionomer cement	5
4.	Removable orthodontic appliance	Space maintainer /Habit breaker/Hawley's appliance	1
5.	Dental Extractions	Extraction of mobile deciduous teeth	5
6.	Assignments	Assignments on Milestones of development, Immunisation schedule, Chronology of human dentition & Stages of tooth development, Tooth numbering systems, Eruption sequence, Early and Delayed eruption, Sterilization in dental office, Amalgam-types, composition and setting reaction, GIC- types, composition and setting reaction, Post operative instructions for various clinical procedures- after extractions, restorative work and orthodontic appliance insertion (It should be written in the clinical record and submitted before the end of III year posting in the department)	
7.	A study model/chart/ poster		1
Procedures in Final year (Part I)			
1.	Case taking	Long case- All patient records- clinical & investigative records- like study models, pre-treatment and post- treatment photographs, prints of the radiographs etc Short case- History taking(briefly), clinical examination, formulating diagnosis and treatment planning	1 10
2.	Preventive measures	Oral prophylaxis	15

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		Topical fluoride application	15
3.	Permanent Restorations	Amalgam/GIC	20
4.	Dental Extractions	Extraction of anterior or posterior deciduous teeth under LA	15
5.	Removable orthodontic appliance	Space maintainers/ habit breakers/Hawley's appliance	5
6.	Assignments	Assignments on Dental age and Assessment methods, Topical fluorides, Pulp vitality tests	
Procedures in Final Year (Part II)			
1	Case taking	A very detailed history taking including diet chart recording, space analysis etc Short case -	2 10
2	Preventive measures	Oral prophylaxis Topical fluoride application	5 5
3	Permanent Restorations	Amalgam/GIC	20
4	Removable orthodontic appliances	Space maintainer/Habit breakers/Hawley's appliance	4
5	Dental Extractions	Extraction of teeth including permanent posterior teeth, root stumps, grossly decayed deciduous teeth- under LA	10
6	Treatment for children with special health care needs	Treatment for children with cardiac problem/bleeding disorders/neurological problems/ mentally challenged/visual/ hearing impairment etc	1
7	Seminar	Seminar on allotted topic should be presented with power point and the print and soft copies should be submitted to the Head of the department before the end of Part II posting.	1

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c) SCHEME OF EXAMINATION

Distribution of Topics and Types of Questions for University Written Examination:

Contents	Types of Questions and Distribution of Marks	Total Marks
Questions from any of the Paediatric & Preventive Dentistry Topics	Structured Essays 2x 10marks	20
	Short Notes 4 x 5marks	20
	Brief Notes 10x3marks	30
	Total	**70**

xvii. Theory

University Written **70 Marks**

Viva Voce **20 Marks**

Internal Assessment **10 Marks**

xviii. Clinical:

University Clinical Examination: **80 Marks**

Case History, Clinical Examination, Diagnosis &

Treatment Planning 40 *Marks*

Clinical Procedure:

Oral prophylaxis and topical fluoride application/ 20 Marks

Restoration of decayed tooth/

Extraction of tooth

Chair side preparation & Measures taken for 5 Marks

infection control

Overall management of the

child patient & Post operative instructions *5 Marks*

Clinical Work Record + Seminar + Chart/Poster/Study model 5+3+2=10 *Marks*

Internal Assessment: **20 Marks**

Grand Total 200Marks

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2.7 Total number of Hours (split up)

Subjects	Lecture (hrs)	Practical (hrs)	Clinical (hrs)	Total (hrs)
General Human Anatomy including Embryology and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry, Nutrition and Dietetics	70	60		130
Dental Anatomy, Embryology and Oral histology	105	250		355
Dental Materials	80	240		320
General and Dental Pharmacology & Therapeutics	70	20		90
General Pathology	55	55		110
General Microbiology	65	50		115
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology &Oral Microbiology	145	130		275
Oral Medicine & Radiology	75		200	275
Paediatric & Preventive Dentistry	65		320	385
Orthodontics & Dentofacial Orthopaedics	70	160	200	430
Periodontology	80		200	280
Oral & Maxillofacial Surgery	76		370	446
Conservative Dentistry & Endodontics	160	200	370	730
Prosthodontics and Crown & Bridge	160	340	370	870
Public Health Dentistry	74		200	274
Total	**1660**	**1740**	**2410**	**5840**

Note:

There should be a minimum of 240 teaching days every academic year consisting of at least 6 working hours a day excluding one hour of lunch break each day.

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2.8 Branches if any with definition: Refer Course content

2.9 Teaching learning Methods

The BDS programme offers a spiral, vertically and horizontally integrated curriculum utilising a blend of teaching and learning methods, which combine clinical skills training with the acquisition of knowledge, skills and professional attributes at all levels of the programme. All teaching and learning activities are patient and student-centered, and are specifically designed for students to experience authentic and contextual learning. Refer Section 2.5 for detailed outline.

2.10 Content of each Subjects in each year

First Year

a) General Human Anatomy including Embryology and Histology
b) General Human Physiology and Biochemistry, Nutrition and Dietetics
c) Dental Materials
d) Dental Anatomy, Embryology and Oral Histology
e) Preclinical Conservative Dentistry
f) Preclinical Prosthodontics and Crown & Bridge

Second Year

a) General Pathology and Microbiology
b) General and Dental Pharmacology and Therapeutics
c) Dental Materials
d) Pre clinical Conservative Dentistry
e) Preclinical Prosthodontics and Crown & Bridge
f) Pre clinical Orthodontics
g) Oral Pathology & Oral Microbiology

Third Year

a) General Medicine
b) General Surgery
c) Oral Pathology and Oral Microbiology
d) Conservative Dentistry and Endodontics
e) Oral & Maxillofacial Surgery
f) Oral Medicine and Radiology
g) Orthodontics & Dentofacial Orthopaedics
h) Paediatric & Preventive Dentistry
i) Prosthodontics and Crown & Bridge

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j) Periodontology

k) Public Health Dentistry

Final Year -Part I (One Year programme)

a) Orthodontics & Dentofacial Orthopaedics

b) Oral Medicine & Radiology

c) Public Health Dentistry

d) Periodontology

e) Prosthodontics & Crown and Bridge

f) Conservative Dentistry and Endodontics

g) Oral & Maxillofacial Surgery

h) Paediatric & Preventive Dentistry

Final Year- part II (Six months programme)

a) Prosthodontics and Crown & Bridge

b) Conservative Dentistry and Endodontics

c) Oral & Maxillofacial Surgery

d) Paediatric & Preventive Dentistry

Emphasis on Comprehensive Dental Care / Electives/ Research

For contents of each subject refer syllabus

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2.11 No. of hours per subject

I BDS

Sl. No.	Subjects	Lecture (hrs)	Practical (hrs)	Clinical (hrs)	Total (hrs)
1.	General Human Anatomy including Embryology and Histology	100	175	—	275
2.	General Human Physiology	120	60	—	180
3.	Biochemistry, Nutrition and Dietetics	70	60	—	130
4.	Dental Anatomy, Embryology and Oral histology	105	250	—	355
5.	Dental Materials	20	40	—	60
6.	Pre clinical Prosthodontics and Crown & Bridge	—	100	—	100
7.	Pre clinical Conservative Dentistry	—	100	—	100
	Total	**415**	**785**	**—**	**1200**

II B.D.S.

Sl. No.	Subjects	Lecture (hrs)	Practical (hrs)	Clinical (hrs)	Total (hrs)
1.	General Pathology	55	55	—	110
2.	General Microbiology	65	50	—	115
3.	General and Dental Pharmacology & Therapeutics	70	20	—	90
4.	Dental Materials	60	200	—	260
5.	Pre clinical Prosthodontics and Crown & Bridge	25	200	—	225
6.	Pre clinical Conservative Dentistry	25	100	—	125
7.	Pre clinical Orthodontics	—	160	—	160
8.	Oral Pathology &Oral Microbiology	25	50	—	75
	Total	**325**	**835**	**—**	**1160**

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III B.D.S.

Sl. No.	Subjects	Lecture (hrs)	Practical (hrs)	Clinical (hrs)	Total (hrs)
1.	General Medicine	60	—	90	150
2.	General Surgery	60	—	90	150
3.	Oral Pathology and Oral Microbiology	120	80		200
4.	Oral Medicine and Radiology	25	—	60	85
5.	Public Health Dentistry	24	—	60	84
6.	Orthodontics & Dentofacial Orthopaedics	20	—	60	80
7.	Periodontology	30		60	90
8.	Oral & Maxillofacial Surgery	26	—	110	136
9.	Paediatric and Preventive Dentistry	15	—	60	75
10.	Conservative Dentistry and Endodontics	65	—	110	175
11.	Prosthodontics and Crown & Bridge	65	40	110	215
	Total	**480**	**120**	**810**	**1440**

Final B.D.S. Part I

Sl. No.	Subjects	Lecture (hrs)	Practical (hrs)	Clinical (hrs)	Total (hrs)
1.	Oral Medicine & Radiology	50	—	140	190
2.	Public Health Dentistry	50		140	190
3.	Orthodontics & Dentofacial Orthopaedics	50	—	140	190
4.	Periodontology	50	—	140	190
5.	Oral & Maxillofacial Surgery	20	—	140	160
6	Paediatric and Preventive Dentistry	20	--	140	160
7.	Conservative Dentistry and Endodontics	40		140	180
8.	Prosthodontics and Crown & Bridge	40	—	140	180
	Total	**320**	**—**	**1120**	**1440**

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Final B.D.S. Part II

Sl. No.	Subjects	Lecture (hrs)	Practical (hrs)	Clinical (hrs)	Total (hrs)
1.	Oral & Maxillofacial Surgery	30	—	120	150
2.	Conservative Dentistry and Endodontics	30	—	120	150
3.	Prosthodontics and Crown & Bridge	30	—	120	150
4.	Paediatric and Preventive Dentistry	30	—	120	150
	Total	**120**	**—**	**480**	**600**

Note:

There should be a minimum of 240 teaching days every academic year consisting of at least 6 working hours a day excluding one hour of lunch break each day.

Each institution should prepare a master time table a format of which is given in Annexure

Teaching schedule as per the syllabus and master time table is to be prepared in all the subjects of study by the concerned HoD's in consultation with the Principal of the institution.

2.12 Practical Training: Refer Syllabus

2.13 Records: Refer Section syllabus

2.14 Dissertation: Not Applicable.

2.15 Specialty training if any: Refer Syllabus

2.16 Project work to be done if any: Refer Syllabus

2.17 Any other requirements: Refer syllabus

2.18 Prescribed/Recommended textbooks for each subject

Subject: **General Human Anatomy including Embryology and Histology**

1) Clinical Anatomy for Medical Students, Snell (Richard S.), Little Brown & company, Boston.
2) Anatomy, R J Last's - McMinn,
3) Cunningham Manual of Practical Anatomy: Head & Neck & Brain.Vol.III, Romanes (G.J) Oxford Medical publication.
4) Functional Histology, Wheater, Burkitt & Daniels, Churchill Livingstone.
5) Medical Embryology, Sadler, Langman's,
6) Grant's Atlas of Anatomy, James E Anderson, Williams& Wilkins.
7) Gray's Anatomy, Williams, Churchill Livingstone.
8) Medical Genetics, Emery.
9) Essentials of Anatomy for Dentistry Students, D R Singh, Wolters Kluwer.

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Subject: **Physiology**

1) Text book of Physiology, Guyton
2) Review of Medical Physiology, Ganong
3) Human physiology, Vander
4) Concise Medical Physiology, Choudhari
5) Human Physiology, Chaterjee
6) Human Physiology for BDS students, A.K. Jain

Reference books;

1) Physiology, Berne & Levey
2) Physiological basis of Medical Practice,West-Best & Taylor's

Experimental Physiology:

1) Practical Physiology, Rannade
2) A text book of practical physiology, Ghai
3) Clinical Methods, Hutchison's

Subject: **Biochemistry**

1) Textbook of Biochemistry for Dental Students, DM Vasudevan, Sreekumari S
2) Text book of Biochemistry-U Satyanarayana

Reference books;

1) Harper's Biochemistry, R.K.Murray et.al.
2) Text book of Biochemistry with clinical correlations T.N. Devlin
3) Basic and applied Dental Biochemistry, R.A.D. Williams & J.C.Elliot
4) Nutritional Biochemistry S. Ramakrishnan and S.V. Rao

Subject: **Dental Anatomy, Embryology and Oral Histology**

1) Orban's Oral Histology & Embryology - S.N.Bhaskar
2) Oral Development & Histology - James & Avery
3) Wheeler's Dental Anatomy, Physiology & Occlusion – Major M.Ash
4) Dental Anatomy - its relevance to dentistry - Woelfel & Scheid
5) Applied Physiology of the mouth – Lavelle
6) Physiology & Biochemistry of the mouth – Jenkins
7) Oral Histology- 'Development, Structure and Function- A. R. Tencate

Subject: **General Pathology**

1) Robbins - Pathologic Basis of Disease Cotran, Kumar, Robbins

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2) Anderson's Pathology Vol 1 & 2 Editors - Ivan Damjanov & James Linder
3) Wintrobe's clinical Haematology Lee, Bithell, Foerster, Athens, Lukens

Subject: **Microbiology**

1) Text book of Microbiology - R.Ananthanarayan & C.K.Jayaram Paniker.
2) Medical Microbiology - David Greenwood et al.
3) Textbook of Microbiology for Dental students- surinder Kumar

Reference books;

1) Microbiology - Prescott, et al.
2) Microbiology - Bernard D. Davis, et al.
3) Clinical & Pathogenic Microbiology - Barbara J Howard, et al.
4) Mechanisms of Microbial diseases - Moselio Schaechter, et al.
5) Immunology an Introduction – Tizard
6) Immunology - Evan Roitt, et al.

Subject: **Dental Materials**

1) Phillips Science of Dental Materials - Kenneth J. Anusavice
2) Restorative Dental Materials -Robert G.Craig
3) Notes on Dental Materials - E.C. Combe

Reference books:-

1) Introduction to Dental Materials, Van Noort,
2) Applied Dental Materials, McCabe,
3) Materials used in Dentistry- Mahalaxmi.S

Subject: **General and Dental Pharmacology and Therapeutics**

1) Basic and Clinical pharmacology,Bertam G. Katzung, Appleton & Lange
2) Clinical Pharmacology, Lauerence DR, Churchill Livingstone
3) Pharmacology and Pharmacotherapeutics Part I & Part II, Satoskar R.S. & Bhandarkar S.D, Popular Prakashan Mumbai.
4) Essentials of Medical Pharmacology, Tripathi K.D, Jaypee Brothers
5) Medical Pharmacology, Udaykumar, CBS publishing

Subject: **General Medicine**

1) Textbook of Medicine Davidson
2) Textbook of Medicine Hutchinson

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Subject: **General Surgery**

1) Short practice of Surgery, Baily & Love
2) A Consice Text Book of Surgery, S.Das

Subject: **Oral Pathology & Oral Microbiology**

1) A Text Book of Oral Pathology Shafer, Hine & Levy
2) Oral Pathology - Clinical Pathologic correlations Regezi & Sciubba.
3) Oral Pathology Soames & Southam.
4) Oral Pathology in the Tropics Prabhu, Wilson, Johnson & Daftary
5) Synopsis of Oral Pathology, Bhaskar, CBS publishing
6) Textbook of Oral Pathology-Ghom,Mhaske

Subject: **Public Health Dentistry**

1) Dentistry Dental Practice and Community by David F. Striffler and Brain A. Burt, W. B. Saunders Company
2) Principles of Dental Public Health by James Morse Dunning, Harward University Press.
3) Dental Public Health and Community Dentistry Ed by Anthony Jong Publication by The C. V. Mosby Company
4) Community Oral Health-A system approach by Patricia P. Cormier and Joyce I. Levy published by Apple ton-Century-Crofts/ New York,
5) Community Dentistry-A problem oriented approach by P. C.
6) Dental Hand book series Vol.8 by Stephen L. Silverman and Ames F. Tryon, Series editor-Alvin F. Gardner, PSG Publishing company Inc. Littleton Massachusetts,
7) Dental Public Health- An Introduction to Community Dentistry. Edition by Geoffrey L. Slack and Brain Burt, Published by John Wright and sons Bristol.
8) Oral Health Surveys- Basic Methods, 1997, published by W. H. O Geneva available at the regional office New Delhi.
9) Preventive Medicine and Hygiene-By Maxcy and Rosenau, published by Appleton Century Crofts,
10) Preventive Dentistry-by J. O. Forrest published by John Wright and sons Bristoli,
11) Preventive Dentistry by Murray,.
12) Text Book of Preventive and Social Medicine by Park and park,
13) Community Dentistry by Dr. Soben Peter.

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Public Health dentistry, Sikri. CBS Publishing

Subject: **Research methodology and Bio-statistics**

1) Introduction to Bio-statistics by B. K. Mahajan
2) Introduction to Statistical Methods by Grewal

Subject: **Paediatric and Preventive Dentistry**

1) Dentistry for the Child and Adolescence - Mc. Donald.
2) Pediatric Dentistry (Infancy through Adolescence) - Pinkham.
3) Pediatric Dentistry : Total Patient Care – Stephen H.Y. Wei
4) Clinical Pedodontics – Sidney B. Finn
5) Fundamentals of Pediatric Dentistry – R.J. Mathewson
6) Handbook of Clinical Pedodontics - Kenneth. D.
7) Text Book of Pedodontics- Shobha Tandon
8) Pediatric Dentistry - Damle S. G.
9) Kennedy's Pediatric Operative Dentistry - Kennedy & Curzon.
10) Handbook of Pediatric Dentistry – Cameron and Widmer
11) Pediatric Dentistry - Richard R. Welbury
12) Pedodontics: A Clinical Approach - Goran Koch
13) Orthodontics and Pediatric Dentistry (Colour Guide) - D Millet & R Welbury
14) Color Atlas of Oral Diseases in Children and Adolescents - George Laskaris
15) Dental Management of the Medically Compromised Patient –J.W. Little
16) Pediatric Dentistry – Scientific Foundations and Clinical Practice – Stewart and Barber.
17) Clinical Use of Fluorides - Stephen H. Wei.
18) Understanding of Dental Caries - Niki Foruk.
19) Essentials of Community & Preventive Dentistry - Soben Peters.
20) Behaviour Management – Wright
21) Traumatic Injuries - Andreason.
22) Occlusal Guidance in Pediatric Dentistry - Stephen H. Wei / Nakata
23) Pediatric Oral & Maxillofacial Surgery - Kaban.
24) Pediatric Medical Emergencies - P. S. Whatt.
25) An Atlas of Glass Ionomer Cements - G. J. Mount..
26) Textbook of Pediatric Dentistry - Braham Morris.
27) Primary Preventive Dentistry - Norman O. Harris.

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28) Preventive Dentistry - Forrester.
29) Contemporary Orthodontics - Profitt..
30) Preventive Dentistry - Depaola.
31) Endodontics - Ingle.
32) Pathways of Pulp - Cohen.
33) Management of Traumatized anterior Teeth - Hargreaves.

Subject: **Oral Medicine and Radiology**

Oral Diagnosis, Oral Medicine & Oral Pathology

1) Oral Medicine, Burkit, J.B. Lippincott Company
2) Principles of Oral Diagnosis, Coleman, Mosby Year Book
3) Oral Manifestations of Systemic Diseases, Jones, W.B. Saunders company
4) Oral Diagnosis & Oral Medicine, Mitchell
5) Oral Diagnosis, Kerr
6) Oral Diagnosis & Treatment ,Miller
7) Clinical Methods, Hutchinson
8) Shafers, Oral Pathology
9) Principles and practice of Oral Medicine, Sonis.S.T., Fazio.R.C. and Fang.L

Oral Radiology

1) Oral Radiology White & Goaz, Mosby year Book
2) Dental Radiology, Weahrman,C.V. Mosby Company
3) Oral Roentgenographs Diagnosis,Stafne,W.B.Saunders Co
4) Fundamentals of Dental radiology, Sikri, CBS Publishing.

Subject: **Orthodontics and Dentofacial Orthopaedics**

1) Contemporary Orthodontics- William R. Proffit
2) Orthodontics For Dental Students- White And Gardiner
3) Handbook Of Orthodontics- Moyers
4) Orthodontics - Principles And Practice- Graber
5) Design, Construction And Use Of Removable Orthodontic Appliances- C. Philip Adams
6) Clinical Orthodontics: Vol 1 & 2- Salzmann

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Subject: **Oral and Maxillofacial Surgery**

(1) Impacted teeth, Alling John et al

(2) Principles of Oral&maxillofacial Surgery vol1,2&3 Peterson LJ et al

(3) Text book of Oral&maxillofacial Surgery, Srinivasan B

(4) Hand book of Medical emergencies in the dental office, Melamed SF

(5) Killey's Fracture of the Mandible, Banks

(6) Killey's Fractures of the Middle 3 of the Facial Skeleton; Banks P

(7) The Maxillary Sinus and its Dental Implications; Mc Govanda

(8) Killey and Kays Outline of Oral Surgery - Fart l& 2; Seward GR & et al

(9) Essentials of Safe Dentistry for the Medically Compromised Patients; Mc Carthy FM

(10) Oral & Maxillofacial Surgery, Vol l& 2; Laskin DM

(11) Extraction of Teeth; Howe GL

(12) Minor Oral Surgery; Howe GL

(13) Contemporary Oral & Maxillofacial Surgeiy; Peterson LJ

(14) Text book of Oral &Maxillofacial Surgery , Neelima Anil Malik

(15) Text book of Oral &Maxillofacial Surgery, SM Balaji

(16) Principles of Oral Surgery; Moore J'R

(17) Handbook of Local Anaesthesia, Malamed

(18) Sedation; Malamed

(19) Text book of Oral & Maxillofacial Surgery; Gustav O Kruger

(20) A Practical guide to Hospital Dentistry, Dr. George Varghese, Jaypee brothers publishing, New Delhi.

(21) A Practical guide to the Management of Impacted Tooth, Dr. George Varghese, Jaypee brothers publishing, New Delhi.

(22) Textbook of Local Anaesthesia; Monheim

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Subject: **Prosthodontics, and Crown & Bridge**

1) Syllabus of Complete denture -Charles M.Heartwell Jr. and Arthur O. Rahn
2) Prosthodontic treatment for edentulous patients- Carl O.Boucher
3) Essentials of complete denture prosthodontics by - Sheldon Winkler.
4) Maxillofacial prosthetics by - Willam R.Laney.
5) McCraken's Removable partial Prosthodontics
6) Removable partial Prosthodontics by - Ernest L. Miller and Joseph E.Grasso.
7) Stewart's Clinical Removable Partial Prosthodontics, Quintessence Publishing Co.
8) Fundementals of Fixed Prosthodontics, Shillingburg, Quintessence Publishing Co.
9) Management of Temporomandibular Disorders and Occlusion, Jeffery P.Okeson, Mosby Year book,Inc.
10) A Primer on Complete Denture Prosthodontics, K Chandrasekharan Nair, Ahuja Publishing house.
11) Textbook of Prosthodontics,V Rangarajan & TV Padmanabhan,Elsevier.

Subject: **Periodontology**

1) Glickman's Clinical Periodontology-Carranza

Reference books

1) Essentials of Periodontology and periodontics- Torquil MacPhee
2) Contemporary periodontics- Cohen
3) Periodontal therapy- Goldman
4) Orbans' periodontics- Orban
5) Oral Health Survey- W.H.O.
6) Preventive Periodontics- Young and Stiffler
7) Advanced Periodontal Disease- John Prichard
8) Clinical Periodontology- Jan Lindhe
9) Periodontics- Baer & Morris.

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Subject: **Conservative Dentistry and Endodontics**

1) The Art & Science of Operative Dentistry,Sturdevant,MosbyU.S.A
2) Principle & Practice of Operative Dentistry, Charbeneu,Varghese Publishing, Mumbai.
3) Sturdevant's Art & Science of Operative Dentistry, Heymann, Swift, Ritter & Gopikrishna- South Asia Edition.
4) Fundementals of Operative Dentistry- Summit, Robbins, Hilton, Schwartz.
5) Grossman's Endodontic Practice, B.Suresh Chandra & V.GopiKrishna,Wolters Kluwer
6) Endodontics in Clinical Practice- Harty

Subject: **Esthetic Dentistry**

1) Esthetic guidelines for restorative dentistry; Scharer & others
2) Esthetics of anterior fixed prosthodontics; Chiche (GJ) & Pinault (Alain)
3) Esthetic & the treatment of facial form, Vol 28; Mc Namara (JA)
4) Contemporary Esthetic Dentistry – George. A. Freedman.

Subject: **Forensic Odontology**

1) Practical Forensic Odontology- Derek.H.Clark,Butterworth-Heinemann
2) Manual of Forensic Odontology, C Michael Bowers, Gary Bell

Subject: **Behaviourial Science**

1) General Psychology- Hans Raj, Bhatia
2) Behavioural Sciences in Medical Practice- Manju Mehta
3) General psychology — Hans Raj, Bhatia
4) General psychology —Munn
5) Sciences basic to psychiatry -- Basanth Puri & Peter J Tyrer

Subject: **Ethics**

1) Medical Ethics, Francis C M, Jaypee Brothers, New Delhi

Subject: **Implantology**

1) Contemporary Implant Dentistry, Carl. E.Misch,Mosby
2) Osseointegration and Occlusal Rehabilitation, Hobo S., Ichida. E. andGarcia L.T. Quintessence Publishing Company,

Note:

1. *Book titles will keep on adding in view of the latest advances in the Dental Sciences.*
2. *Standard books from Indian authors are also recommended*

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2.19 Reference books: *Included along with recommended books*

2.20 Journals

List of Journals

1) Journal of Dentistry
2) British Dental Journal
3) International Dental Journal
4) Dental Abstracts
5) Journal of American Dental Association
6) British Journal of Oral and Maxillofacial Surgery
7) Oral Surgery, Oral Pathology and Oral Medicine
8) Journal of Periodontology
9) Journal of Endodontics
10) American journal of Orthodontics and Dentofacial Orthopaedics
11) Journal of Prosthetic Dentistry
12) International Journal of Prosthodontics
13) Journal of Public Health Dentistry
14) Endodontics and Dental Traumatology
15) Journal of Dental Education
16) Dental Update
17) Journal of Dental Material
18) International Journal of Pediatric Dentistry
19) International Journal of Clinical Pediatric dentistry

Note: This is the minimum requirement. More journals both Indian and Foreign are recommended for imparting research oriented education.

2.21 Logbook: *Refer syllabus*

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3. EXAMINATIONS

3.1 Eligibility to appear for University examinations

a) Preface:

i. Evaluation is a continuous process, which is based upon criteria developed by with certain objectives to assess the performance of the learner. This also indirectly helps in the measurement of effectiveness and quality of the concerned B.D.S. programme.

ii. Evaluation is achieved by two processes

1) Formative or internal assessment
2) Summative or university examinations.

Formative evaluation is done through a series of tests and examinations conducted periodically by the institution.

Summative evaluation is done by the university through examination conducted at the end of the specified course.

b) Methods of evaluation:

Evaluation may be achieved by the following tested methods:

i. Written test
ii. Practical examination
iii. Clinical examination
iv. Viva voce

c) Eligibility criteria:

For a candidate to be eligible to write the university examination of an year of study **for the first time** he/she should have minimum 80% attendance in **all the subjects** in which examination is being held for the year of study and a minimum of 70% in Lectures and Practical/ Clinical separately in all the non-exam subjects for the year (Refer Section 1.8). However candidates with such 80% attendance in all the subjects of study for which university examination is held for a particular year will be eligible to attempt the university examination **only in those subjects** in which he/she has secured the minimum requirement of 40% of internal assessment marks. A candidate can reappear for university examination in the failed subjects provided he/she has secured minimum 70% attendance (theory & practical

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separately) and have scored minimum 40% marks in internal assessment conducted for the subject during the supplementary period.

3.2 Schedule of regular/Supplementary examinations

The University examination for a subject shall be conducted twice in a year as per the schedule approved by the Board of Examinations at an interval of not less than four to six months as notified by the university from time to time.

3.3 Scheme of examination Showing Maximum and Minimum Marks

The scheme of examination for B.D.S. Course shall be divided into 1st B.D.S. examination at the end of the first, 2nd B.D.S. examination at the end of second, 3rd B.D.S. examination at the end of third and Final BDS Part I examination at the end of fourth academic year. The Final B.D.S part II examination will be held on completing six months of the fifth academic year. The examination shall be open to a candidate who satisfies the requirements of attendance, progress and other rules governing the institution and The University.

1. Distribution of Marks

i. **For each paper in which written examination is held:**

Theory	
University written examination	*70*
University Viva Voce	*20*
Internal assessment	*10*
Total	***100***
Practical/ clinical	
University Practical/ Clinical examination	*80*
Internal assessment	*20*
Total	***100***
Aggregate marks for each paper	***200***

ii. **For Preclinical Examination in Prosthodontics/Conservative Dentistry & Orthodontics**

University Practical examination	*60*
Viva voce	*20*
Internal assessment Practical	*20*
Total	***100***

preclinical examination in each subject is to be conducted separately.

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Detailed mark distribution of each paper for each subject is given in Table below

Distribution of marks in University examination and internal assessment for various subjects from first year to fifth year.

Year of Study	Subjects		Theory Marks				Practical/ Clinical Marks			Grand Total Marks
			University written	Viva Voce	Internal Assessment	**Total**	University examination	Internal Assessment	**Total**	
I BDS	General Anatomy including Embryology and Histology		70	20	10	**100**	80	20	**100**	**200**
	General Human Physiology and Biochemistry	Section A Physiology	35	10	5	**50**	40	10	**50**	**200**
		Section B Biochemistry	35	10	5	**50**	40	10	**50**	
	Dental Anatomy, Embryology and Oral Histology		70	20	10	**100**	80	20	**100**	**200**
II BDS	General Pathology and Microbiology	Section A Pathology	35	10	5	**50**	40	10	**50**	**200**
		Section B Microbiology	35	10	5	**50**	40	10	**50**	
	General and Dental Pharmacology and Therapeutics		70	20	10	**100**	80	20	**100**	**200**
	Dental Materials	Section A Prosthodontics	35	10	5	**50**	40	10	**50**	**200**
		Section B Conservative dentistry	35	10	5	**50**	40	10	**50**	
	Pre Clinical Conservative Dentistry		-	20	-	**20**	60	20	**80**	**100**
	Pre Clinical Prosthodontics		-	20	-	**20**	60	20	**80**	**100**
	Pre Clinical Orthodontics		-	20	-	**20**	60	20	**80**	**100**
III BDS	General Medicine		70	20	10	**100**	80	20	**100**	**200**
	General Surgery		70	20	10	**100**	80	20	**100**	**200**
	Oral Pathology & Oral Microbiology		70	20	10	**100**	80	20	**100**	**200**
Final BDS part I	Oral Medicine and Radiology		70	20	10	**100**	80	20	**100**	**200**
	Periodontology		70	20	10	**100**	80	20	**100**	**200**
	Orthodontics & Dentofacial Orthopaedics		70	20	10	**100**	80	20	**100**	**200**
	Public Health Dentistry		70	20	10	**100**	80	20	**100**	**200**
Final BDS part II	Prosthodontics & Crown and Bridge		70	20	10	**100**	80	20	**100**	**200**
	Conservative Dentistry and Endodontics		70	20	10	**100**	80	20	**100**	**200**
	Paediatric & Preventive Dentistry		70	20	10	**100**	80	20	**100**	**200**
	Oral & Maxillofacial Surgery		70	20	10	**100**	80	20	**100**	**200**

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3.4 Papers in each year

I B.D.S. Examination:

i. General Anatomy including Embryology and Histology
ii. General Human Physiology and Biochemistry
iii. Dental Anatomy, Embryology and Oral Histology

II B.D.S. Examination:

Only a candidate who has successfully completed and passed all the 1st B.D.S. subjects can appear.

i. General Pathology and Microbiology
ii. General and Dental Pharmacology and Therapeutics
iii. Dental Materials
iv. Pre Clinical Conservative Dentistry(Only Practical and Viva)
v. Pre Clinical Prosthodontics and Crown & Bridge (Only Practical and Viva)
vi. Pre Clinical Orthodontics (Only Practical and Viva)

III B.D.S. Examination:

Only a candidate who has successfully completed and passed all the 2nd B.D.S. subjects can appear.

i. General Medicine
ii. General Surgery
iii. Oral Pathology & Oral Microbiology

Final BDS - Part I Examination:

Only a candidate who has successfully completed and passed all the 3rd BDS subjects can appear.

i. Oral Medicine and Radiology
ii. Periodontology
iii. Orthodontics & Dentofacial Orthopaedics
iv. Public Health Dentistry

Final BDS - Part II Examination:

Only a candidate who has appeared for the Final BDS Part I examination can appear.

i. Prosthodontics & Crown and Bridge
ii. Conservative Dentistry and Endodontics
iii. Oral & Maxillofacial Surgery
iv. Paediatric & Preventive Dentistry

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3.5 Details of theory examination (written)

1. The written examination in each paper will be of three hours duration and shall have maximum marks of 70. Type of Questions and Distribution of marks for written examination should be as given in **table I** given below.
2. The paper of Physiology & Biochemistry will be divided into two Sections, Section A (Gen. Physiology) and Section B (Biochemistry) of equal marks. Type of Questions and Distribution of marks for written examination should be as given in **table II** below.
3. The paper of Pathology & Microbiology will be divided into two Sections, Section A (Gen. Pathology) and Section B (Microbiology) of equal marks. Type of Questions and Distribution of marks for written examination should be as given in **table III** below.
4. The paper of Dental Materials will be divided into two Sections, Section A (Prosthodontics) and Section B (Conservative Dentistry) of equal marks. Type of Questions and Distribution of marks for written examination should be as given in **table IV** below.
5. The question paper should contain different types of questions like essay, short note and brief note.
6. The nature of questions should be aimed to evaluate students of different standards ranging from average to excellent.
7. The questions should cover as broad an area of content of the course as possible. The essay questions should be properly structured and the marks specifically allotted.

Table I.

Type of Questions	No. of Questions	Marks / Question	Total Marks
Structured Essay	2	10	20
Short note	4	5	20
Brief note	10	3	30
Grand Total			**70**

Table II.

Physiology and Biochemistry

Subject	Type of Questions	No. of Questions	Marks of Questions	Total Marks
Section A Physiology	Structured Essay	1	10	10
	Short note	2	5	10
	Brief note	5	3	15
	Grand Total			**35**

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Subject	Type of Questions	No. of Questions	Marks of Questions	Total Marks
Section B Biochemistry	Structured Essay	1	10	10
	Short note	2	5	10
	Brief note	5	3	15
	Grand Total			**35**

Table III.
Pathology and Microbiology

Subject	Type of Questions	No. of Questions	Marks of Questions	Total Marks
Section A Pathology	Structured Essay	1	10	10
	Short note	2	5	10
	Brief note	5	3	15
	Grand Total			**35**

Subject	Type of Questions	No. of Questions	Marks of Questions	Total Marks
Section B Microbiology	Structured Essay	1	10	10
	Short note	2	5	10
	Brief note	5	3	15
	Grand Total			**35**

Table IV.
Dental Materials

Subject	Type of Questions	No. of Questions	Marks of Questions	Total Marks
Section A Prosthodontics	Structured Essay	1	10	10
	Short note	2	5	10
	Brief note	5	3	15
	Grand Total			**35**

Subject	Type of Questions	No. of Questions	Marks of Questions	Total Marks
Section B Conservative Dentistry	Structured Essay	1	10	10
	Short note	2	5	10
	Brief note	5	3	15
	Grand Total			**35**

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3.6 Model question paper for each subject

Given as Annexure

3.7 Internal assessment

The internal assessment examinations in theory and practical/ clinical may be held at least twice in a particular year followed by a model examination in the pattern of university examination to be held at the end of the year of study. Internal assessment marks for a candidate in a subject will be calculated as the average of, marks obtained in the model examination and the highest among all other internal examinations, in the subject. This average mark will be reported to the University. The Heads of the Department and College Principal should ensure that the class average of internal assessment marks reported to the University in each subject/paper is not more than 75% in both theory and practical/clinical separately. For a student to be eligible to appear for the University examination he/she should have secured at least 40% of maximum marks in internal assessment for both theory and practical/clinical in all subjects/papers, separately (i.e. minimum 4/10 in theory and 8/20 in practical/clinical). (*For calculating internal assessment mark in papers where subjects are combined viz. General Human Physiology & Biochemistry, General Pathology & Microbiology and Dental Materials, marks obtained in the two subjects will be counted together for reporting to University and for applying all other stipulations mentioned above*)

3.8 Details of Practical/Clinical examinations

1. Objective Structured Clinical Evaluation:

   The clinical /practical examination should include different procedures for the candidate to express one's skills. A number of examination stations with specific instructions to be carried out may be provided. This can include clinical procedures, laboratory experiments, spotters etc. Evaluation must be made objective and structured. The method of objective structured clinical examinations should be followed. This will avoid examiner bias because both the examiner and the examinee are given specific instructions on what is to be observed at each station.

2. Records/Log Books:

   The candidate should be given credit for his records based on the scores obtained in the record. The marks obtained for the record in the first appearance can be carried over to the subsequent appearances if necessary.

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3. Scheme of clinical and practical examinations:

The specific scheme of clinical/practical examinations, the type of clinical procedures/experiments to be performed and marks allotted for each are given in Scheme of examination for each subject (Section 2.6). Changes if any should be discussed and finalized by the Chairman and members of the board of examiners and to be published prior to the conduct of the examinations along with the publication of time table for practical examination. This scheme should be brought to notice of the external examiner as and when the examiner reports. The practical/clinical examinations should be evaluated by two examiners of which one shall be an external examiner appointed from other zones of the university or outside University. Each candidate should be evaluated by each examiner independently and marks computed at the end of the examination.

3.9 Number of Examiners (internal & external)and their qualifications

For practical/Clinical and Viva voce examination there shall be two examiners for each paper, one internal and one external, from Medical/ Dental Institutions approved/recognized by the Dental Council of India for B.D.S. Course. The internal examiner will be from within the institution. The external examiner can be from a different zone of the University or from outside University. When the number of candidates registered for a subject/s in a particular examination exceeds 75, two sets of examiners (one external & one internal each) may be appointed for the subject/s, such that the practical and viva examination for the first half of candidates may be conducted by one set of examiners and that of the remaining candidates may be done be the other set of examiners. No person shall be an External Examiner to the same college for more than 3 consecutive years. However, if there is a break of one year the person can be reappointed.

Note:

1) *In case of Physiology and Biochemistry if Internal examiner is from Physiology, External examiner should be from Biochemistry and vice versa*
2) *In case of Pathology and Microbiology if Internal examiner is from Pathology, External examiner should be from Microbiology and vice versa*

   In case of Dental Materials, if Internal examiner is from Prosthodontics, External examiner should be from Conservative Dentistry and vice versa

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Qualification and experience to be eligible for examinership for BDS examination:

1) M.D.S. Degree in the concerned subject from a DCI recognized Institution.
2) Four years teaching experience in the subject after MDS in the concerned subject in a Dental College approved/recognized by the Dental Council of India for BDS.
3) Should be qualified as per DCI to hold the post of Reader or above in a Dental Institution approved/recognised by the Dental Council of India for B.D.S.
4) In case of medical subjects the qualification of examiners shall be the same as that prescribed by the Dental Council of India for the concerned subject.
5) Age not more than 65 years or as prescribed by DCI from time to time.

3.10 Details of Viva.

Viva voce is an excellent mode of assessment because it permits a fair broad coverage and it can assess the problem solving capacity of the student. An assessment related to the affective domain is also possible through viva voce. It is desirable to conduct the viva voce independently by each examiner. In order to avoid vagueness and to maintain uniformity of standard and coverage, questions can be pre-formulated before administering them to each student. Twenty marks are exclusively allotted for viva voce and that can be divided amongst the two examiners.

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4. INTERNSHIP

COMPULSORY PAID ROTATING INTERNSHIP PROGRAMME (CRRI)

4.1 Eligibility for Internship:

Candidates who fulfill the following criteria are eligible to start Internship (CRRI):

1. Must have successfully completed all the Final BDS Part I and Part II examinations within the stipulated time frame, if any.
2. Must have obtained temporary registration from Kerala Dental Council.
3. Must have satisfied all other criteria, if any, for starting internship put forth by the Institution, University and DCI from time to time.

4.2 Details of Internship Training Programme:

1. <u>Start of Internship programme</u>

As far as possible the internship programme will commence within 10 days after the declaration of Final BDS part II result by the University. Before commencement of the Internship training Programme the Dean/ Principal shall conduct Orientation Workshop for the interns to get acquainted with the details of Internship training Programme. The Orientation Workshop shall cover Ethical issues, Patient Management, Public Relation issues, Emergency Care of the patients (including CPR), Medico-legal issues, Public Health and National Oral Health Policy. It shall be mandatory for the all the interns to attend the Orientation Workshop. The period of the workshop shall be included in the period of one year Internship.

2. <u>Curriculum of Dental internship programme</u>

1. The duration of Internship shall be one year (365 days), not relaxable under any pretext.
2. All parts of internship shall be done in a Dental College duly recognized/ approved by the Dental Council of India for the purpose of imparting education and training to Dental graduates in the country.
3. During the internship period the candidates will be posted in all the clinical departments of the institution.
4. Each Intern shall be paid stipendiary allowance during the period of internship not extending beyond a period of one year.

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5. The internship shall be compulsory and rotating as per the regulations prescribed for the purpose.
6. During the internship period they will have to attend to the routine clinical activities of the department under the supervision of faculty members.
7. The interns will also be posted in the Dental Casualty for attending to the emergency services of the institution and may also include rural postings at satellite dental clinics of the institution.
8. Internship is considered as an integral part of BDS course and hence the B.D.S. degree shall be conferred only on satisfactory completion of internship.
9. As far as possible the Internship training Programme shall be commenced by the concerned Dean/ Principal not later than 10 days from the date of declaration of Final B.D.S. Part II result by KUHS.

3. <u>Determinants of Curriculum for internship:</u>

1. The curricular contents of internship training shall be based on:
2. Dental health needs of the society.
3. Financial, material and manpower resources available for the purpose.
4. National Dental Health Policy.
5. Socio-economic conditions of the people in general.
6. Existing Dental facilities at par with the primary health care concept for the delivery of health services.
7. Task analysis of what dental graduates are expected to do in Dentistry in various practice settings. (Private and Government service.)
8. Epidemiological studies conducted to find out prevalence of different dental health problems, taking into consideration the magnitude of dental problems, severity of dental problems and social disruption caused by these problems.

4. <u>Objectives –</u>

A. *To facilitate reinforcement of learning and acquisition of additional knowledge:-*

a. Reinforcement of knowledge.
b. Techniques & resources available to the individual and the community: Social and cultural setting.
c. Training in a phased manner, from a shared to a full responsibility.

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B. *To facilitate the achievement of basic skills: attaining competence vs. maintaining competence in:-*

a. History taking.
b. Clinical Examination.
c. Performance and interpretation of essential laboratory data.
d. Data analysis and inference.
e. Communication skills aimed at imparting hope and optimism in the patient.
f. Attributes for developing working relationship in the Clinical setting and Community team work.

C. *To facilitate development of sound attitudes and habits:-*

a. Emphasis on individual and human beings, and not on disease/symptoms.
b. Provision of comprehensive care, rather than fragmentary treatment
c. Continuing Dental Education and Learning of accepting the responsibility,

D. *To facilitate understanding of professional and ethical principles including: -*

a. Rights and dignity of patients
b. Consultation with other professionals and referral to seniors/institutions.
c. Obligations to peers, colleagues, patients, families and Community.
d. Provision of free professional services in an emergent situation.

E. *To initiate individual and group action, leading to disease prevention and oral and dental health promotion, at the level of individuals, families and the Community.*

F. *To maintain day to day record, in the form of a performance log book,the quantum of work done and any other assignment allotted to each intern by the department. HOD/Teaching staff supervising the intern shall duly certify the work done by awarding grades.*

(Complete record of all cases treated department wise to be prepared and presented in the form of performance Log book and case files at the time of completion of internship programme.)

5. <u>Content (subject matter) –</u>

The compulsory rotating paid Dental Internship shall include training in Oral Medicine & Radiology; Oral & Maxillofacial Surgery; Prosthodontics; Periodontics; Conservative

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Dentistry; Paediatric Dentistry; Oral Pathology & Microbiology; Orthodontics and Community Dentistry .

6. <u>Duties & responsibilities of Intern posted in various departments:-</u>

i. Attending to the routine O.P in the Department
ii. Carrying out the routine clinical procedures in the department
iii. Carrying out Patient and instrument Preparation for clinical procedures.
iv. Carrying out all Clinical procedures including impression making, and pouring casts (i.e. steps including mixing of impression materials & gypsum products, mixing of restorative materials and removal of casts from impressions to be done by the intern without seeking assistance)
v. Fabrication insertion and follow up of removable orthodontic appliances.
vi. Attending to the casualty duties of the institution
vii. Maintenance of log book and records
viii. Carrying out any other duty as instructed by the Head of the Department.
ix. Maintenance of proper dress code and attire.

Note: The entire clinical work done by intern will be under the supervision of faculty members. In the absence of faculty the intern will be under the supervision of Senior/Junior Resident.

7. <u>General Guidelines: -</u>

It shall be task-oriented training. The interns should participate in various institutional and field programmes and be given due responsibility to perform the activities in all departments of the Dental College and associated Institutions.

In order to facilitate achievement of basic skills and attitudes, following facilities should be provided to all dental graduates:

I. History taking, examination, diagnosis, charting and recording treatment plan of cases.
II. Presentation of cases in a group or Seminar.
III. Care and sterilization of instruments used in dental practice.
IV. Performance and interpretation of essential laboratory tests and other relevant investigations.
V. Data analysis and inference.

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VI. Proper use of antibiotics, anti-inflammatory and other drugs, as well as other therapeutic modalities.

VII. Education of patients, their relatives and community on all aspects of dental health care while working in the institution as also in the field.

VIII. Communication aimed at inspiring hope, confidence and optimism.

IX. Legal rights of patients and obligations of dental graduate under forensic jurisprudence.

X. It shall be binding on the interns to follow strictly the 'Code of Conduct' prescribed by the institution/ University/ Govt. for the regulation of the conduct of a Dental student in the State of Kerala.

Breach of Code of Conduct / discipline by the intern shall disqualify him/her from pursuing Internship Training Programme for a period as may be specified by the institutions/ University in such cases.

XI. The University has laid down the minimum quantum of work to be done by each intern department wise; however the clinical work allotted by the department has to be necessarily carried out by the intern.

XII. Workshops to be arranged by the colleges immediately after publication of final BDS part II result to orient the interns about ethical issues, patient management issues, public relation issues, emergency care of the patients, medico-legal issues, record keeping, public health & national oral health policy etc.

8. <u>Duration of internship in each department.</u>

Sl.No.	Department	No. of Days
1.	Prosthodontics and Crown & Bridge	60
2.	Oral & Maxillofacial Surgery	60
3.	Conservative dentistry& Endodontics	45
4.	Periodontics	45
5.	Paediatric and Preventive Dentistry	30
6.	Oral Medicine & Radiology	30
7.	Orthodontics and Dentofacial Orthopaedics	30
8.	Public Health Dentistry/ Rural services/Palliative care	30
9.	Oral Pathology & Oral Microbiology including Forensic Odontology	15
10.	Elective (any of the subjects listed from 1 to 7)	20

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9. Leave

Leave is not the right of an intern. For any kind of leave prior permission from the head of the department where the intern is posted is mandatory. An intern shall be entitled for a maximum of 15 days leave during one year period of internship posting. An intern will not be permitted to avail more than 3 days leave in any department. Period of leave in excess of 3 days in a department will have to be repeated in the same department as extension posting. Under any circumstances including maternity leave this period will not be condoned by any authority.

10. Internship completion certificate

An intern will be issued internship completion certificate (Refer Annexure III) by the office of the Dean / Principal only on completion of internship training programme satisfactorily. It is mandatory for the intern to attend at least one workshop on Basic Life Support and emergency management for issue of the internship certificate.

11. Registration with council

On Successful completion of both Final BDs Part I & II examinations the candidates can apply for issue of provisional degree certificate from the University. Before starting internship a temporary registration from the Kerala Dental council is mandatory. On successful completion of One year internship programme the candidate can apply for permanent degree certificate.

12. Stipend

As per the norms of the government/ KUHS framed from time to time.

13. Eligibility for award of degree

A candidate, who has successfully completed all the subjects of the course and one year internship with in the specified period, if any, will be eligible for the award of degree.

14. Transcript

To be issued by the institution where the candidate underwent training.

4.3 Model of Internship mark list

Not Applicable

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4.4 Extension rules

The duration of Internship shall be one year (365 days), not relax able under any pretext. An intern shall be entitled for a maximum of 15 days leave during one year period of internship posting. Period of leave in excess of 3 days in a department will be considered as absence and the candidate will have to do extension posting in the same department for the number of days he was absent in the department.

4.5 Details of training given:

1. Detailed distribution of minimum expected work to be completed (Department-wise):-

a) <u>Oral Medicine & Radiology</u>

The Intern during his/her posting in oral surgery shall perform the following procedures (minimum requirement):

a) Standardized examination of patients 5 cases

b) Exposure to clinical, pathological laboratory procedures and biopsies/ 5 cases

c) cytology

d) Effective training in taking of Radiographs & processing : (Intra-oral) I.O, Full mouth and (Extra oral) E.O

e) Cephalogram – with interpretation 1

f) Interpretation of X-rays 25 nos.

g) Orientation to additional investigation techniques like CT Scan/MRI/ Sialography / USG/ Doppler- (optional : where there is scope/ facility)

b) <u>Oral and Maxillofacial surgery</u>

A. An Intern during his/her posting in oral surgery shall perform the following procedures (minimum requirement):

a) Extractions 50

b) Trans-alveolar extractions 2

c) Assisting / observing & other minor surgery 2

B. the Intern shall perform the following on Cancer Patients (preferential)

a) Maintain file work

b) Do extractions for radiotherapy cases

*

c) Perform biopsies

d) Observe varied cases of oral cancers

C. An intern shall have 15 days posting in emergency services of a dental/ dental wing of general hospital with extended responsibilities in emergency dental care in the wards. During this period he/she shall attend to emergencies under the direct supervision of oral & maxillofacial surgeon. Emergencies to be assisted and observed:

a) Toothache
b) Trigeminal neuralgia
c) Bleeding from mouth due to trauma, post extraction, bleeding disorder or haemophilia
d) Airway obstruction due to fracture mandible and maxilla; dislocation of mandible; syncope or vasovagal attacks; Ludwig's angina; tooth fracture; post intermaxillary fixation after general Anaesthesia.
e) observes the work in I.C.U. with particular reference to resuscitation procedures.
f) conducts tutorials on medico-legal aspects including reporting on actual cases coming to casualty.

c) <u>Prosthodontics and Crown & Bridge</u>

The interns during their internship posting in Prosthodontics shall perform the following procedures (minimum requirement):

a) Complete denture (upper & lower) (Clinical Procedures & laboratory work) 3 Cases
b) Removable Partial Denture (Clinical Procedures & laboratory work) 4 Cases
c) Planned (cast) partial denture (designing on model only) 1 Case
d) Learning use of Face bow and Semi anatomic articulator technique
e) Management of TMD cases etc.(preferable)
f) Miscellaneous-like Reline/Rebasing / Overdenture/ repairs of Denture/immediate complete denture.

d) <u>Periodontics</u>

An intern shall perform the following procedures (minimum requirement):

A. Prophylaxis 10 cases
B. Assist / observe or perform :

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a) Flap Operation 2 cases
b) Root Planning 1 case
c) Currettage 1 case
d) Gingivectomy 1 case
e) Perio-Endo cases 1 case

e) <u>Conservative Dentistry& Endodontics</u>

To facilitate reinforcement of learning and achievement of basic skills, the interns shall perform at least the following procedures independently or under the guidance of supervisors (minimum requirement):

a) Routine Restoration work 40 cases
b) Restoration of extensively mutilated teeth 2 cases
c) inlay and onlay preparations 1 case
d) Use of tooth colored restorative materials 4 cases
e) Treatment of discolored vital and non-vital teeth 1 case each
f) Management of pulpless, single-rooted teeth without periapical lesion 1 case
g) Management of acute dentoalveolar Infections 4 cases / as per availability
h) Management of pulpless, single-rooted tooth with periapical lesion 1 case
i) Non-surgical management of traumatised teeth during formative period. 1 case

f) <u>Paediatric and Preventive Dentistry</u>

During their posting in Paediatric Dentistry the intern shall perform (minimum requirement):

a) Topical application of fluorides 5 cases
b) Oral prophylaxis 10 cases
c) Restorative procedures of carious deciduous teeth in children 10 cases
d) Pulpotomy / Pulpectomy 1 case
e) Management of traumatized permanent anterior teeth (RCT) 1 case
f) Fabrication and insertion of Preventive /Interceptive orthodontic appliances 2 cases
g) Extractions 30 cases
h) Minor oral surgical procedures

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i) (Surgical exposure of unerupted teeth, mucocoele excision, frenectomy etc) 1 case

j) Management of Dento alveolar fractures 1 case

k) Management of Special children 2 cases

l) Comprehensive treatment including case discussion, maintenance of clinical records, Primary, secondary & tertiary levels of prevention including diet recording and diet counseling 1 case

g) <u>Oral Pathology and Oral Microbiology including Forensic Odontology</u>

An intern shall perform the following (minimum requirement):

a) History-recording and clinical examination 5 cases

b) Blood. Urine and Sputum examination 5 cases

c) Exfoliative Cytology and smears study 2 cases

d) Biopsy -Laboratory procedure & reporting 1 case

e) Preparation of ground section 2

Interns may also be posted in the Forensic Medicine Department of the attached Medical College.

h) <u>Orthodontics and Dentofacial Orthopaedics</u>

A. an intern shall observe the following procedures during their posting in Orthodontics (minimum requirement):

a) Detailed diagnostic procedures 5 patients

b) Laboratory techniques including wire-bending for removable appliances. Soldering and processing of myo-functional appliances.

c) Treatment plan options and decisions.

d) Making of bands, bonding procedures and wire insertions.

e) Use of extra oral anchorage and observation of force values.

f) Retention.

g) Observe handling of patients with oral habits causing malocclusions.

B. an intern shall do the following laboratory work (minimum requirement):

a) Wire bending for removable appliances and space-maintainers including welding and heat treatment procedure 5 cases

b) Soldering exercises, banding & bonding procedures 2 cases

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c) Cold-cure and heat-cure acrylisation of simple orthodontic Appliances 5 cases

C. an Intern shall carry out the following clinical work (minimum requirement):

a) Diagnosis and treatment plan including cephalometric analysis 5 cases
b) Fabrication of removable appliances with different problems 4 cases
c) Orthodontic impressions and bite-recordings. 5 cases

i) <u>Public Health Dentistry</u>

1. The intern shall conduct health education sessions for individuals and groups on oral health, public health nutrition, behavioural sciences, environmental health, preventive dentistry and oral epidemiology.
2. They shall conduct a short-term epidemiological survey in the community or in the alternate, participate in the planning and methodology
3. They shall arrange effective demonstration of (minimum requirement):

   a) Preventive and interceptive procedures for prevalent dental diseases.
   b) Mouth-rinsing and other oral hygiene demonstrations 5 cases
   c) Tooth brushing techniques 5 cases

4. Conduction of oral health education programmes at (minimum requirement):-
   a) School setting 2
   b) Community setting 2
   c) Adult education programmes 2

5. Preparation of Health Education materials 5
6. Exposure to team concept and National Health Care systems:

   a) Observation of functioning of health infrastructure.
   b) Observation of functioning of health care team including multipurpose; workers (male and female), health educators and other workers.
   c) Observation of atleast one National Health Programme.
   d) Observation of interlinkages of delivery of oral health care with Primary Health Care and visit to a water treatment plant.

   Mobile dental clinics should be made available for this training.

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j) Elective Posting

An Intern shall be posted for 20 days in any of the above clinical dental departments as per choice and availability.

2. Organisation of content

The Curriculum during the 4 ½ years of B.D.S. training is subject-based with more emphasis on learning practical skills. During one-year internship the emphasis will be on competency-based community-oriented training. The practical skills to be mastered by an intern along with the minimum performance level are given under the course content of different departments of Dental Education. The supervisors should see to it that proper facilities are provided in all departments and attached institutions for their performance.

3. Specification of teaching activities

Didactic lectures are delivered during the four and half years training in B.D.S. These shall be avoided. During the internship programme emphasis shall be on the chair-side teaching, small group teaching and discussions: tutorials, seminars, ward posting, laboratory posting, field visits and self-learning.

4. Use of Resource Materials

Overhead projectors, slide projectors, film projectors, charts, diagrams, photographs, posters, specimens, models and other audio-visual aids shall be provided in all the Dental Colleges and attached institutions and field areas. If possible, television and video tapes showing different procedures and techniques to be mastered by the internshould be provided. Use of computers/ advance facilities may be encouraged.

The intern shall submit minimum one educative chart/ model to any one department. The chart/model should have importance from the view of public awareness.

The intern shall prepare and submit minimum one scientific paper (Library dissertation) under the guidance of teacher by utilizing resources from library/ Internet etc.

5. Evaluation –

1. Formative Evaluation:

Day-to-day assessment of each intern during their internship posting should be done. The objective is that all the interns must acquire necessary minimum skills required for carrying out day-to-day professional work competently. This can be achieved by maintaining records and performance data book by each intern. This will not only

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provide a demonstrable evidence of the processes of training but also more importantly, of the intern's own acquisition of competencies as related to performance. It shall form a part of formative evaluation and shall also constitute a component of final grading of interns.

Cases treated by interns in respective department to be thoroughly observed and grades to be awarded on the same day by the in charge of the Internship Training Programme.

6. Skill Tests:

Evaluation systems shall assess the skills of candidates while performing clinical procedure over the patient during the course of treatment and during the posting in that department. Head of the Department and senior teacher of respective departments shall enlist minimum 10 skills relevant to that specialty and gradation to be given. Scoresto be given for performing not less than 5 skills with proficiency and to the satisfaction of the teacher. Maximum 5 marks for each skill and score less than 3 marks will be considered as unsatisfactory performance by the intern.

Gradation of each skill should be done as under:-

a)	Poor	1
b)	Below average	2
c)	Average	3
d)	Above average (Good)	4
e)	Excellent	5

If a candidate is declared as unsuccessful due to unsatisfactory performance in any of the Department he/ she shall be required to repeat the posting in continuation in that Department for a period as deemed fit by Head of the Department in consultation with Dean/ Principal.

Only after satisfactory performance of the skill during subsequent evaluation, the intern shall be eligible for award of internship completion certificate (refer section XII).

7. Summative Evaluation

It shall be based on the observations of the Head and supervising teachers of the Department. The final grading shall be done on the basis of records and performance log book maintained by the intern. In case of dispute, the Dean/Principal in consultation with the concerned Head of the Department and teacher in charge of Internship Training Programme shall take the decision, which shall be final and binding.

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5. ANNEXURE

5.1 Check List For Monitoring: Log Book, Seminar Assessment Etc. to be formulated by the Curriculum Committee of the Concerned Institution

5.2 Model Master time table for BDS

5.3 Format of Condonation register

5.4 Format for CRRI certificate

5.5 Model Question papers

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MODEL MASTER TIME TABLE FOR BDS

I BDS

Week days	8 am – 9 am	9 am -10 am	10 am -11 am	11 am -12 noon	12 noon -1 pm	1 pm -2 pm
Monday	Physiology	Anatomy	Biochemistry Practicals		Anatomy Practicals	
Tuesday	Dental Anatomy	Anatomy	Biochemistry	Physiology	Anatomy Practicals	
Wednesday	Biochemistry	Physiology	Physiology Practicals		Dental Anatomy Practicals	
Thursday	Dental Anatomy	Prosthodontics PC Practicals			Dental Materials Practicals	
Friday	Dental Anatomy Practicals		Dental Anatomy	Anatomy		Dental Materials
Saturday	C.D PC Practicals			Dental Anatomy Practicals		

II BDS

Week days	8 am – 9 am	9 am -10 am	10 am -11 am	11 am -12 noon	12 noon -1 pm	1 pm -2 pm
Monday	Pathology	Microbiology	Pharmacology Practicals		Pathology Practicals	
Tuesday	Microbiology	Pharmacology	Microbiology Practicals		Oral Pathology Practicals	
Wednesday	Pharmacology	Pathology	Orthodontics PC Practicals		Prosthodontics PC Practicals	
Thursday	Oral Pathology	Dental Materials Practicals		C.D PC	Prosthodontics PC Practicals	
Friday	Dental Materials	Dental Materials Practicals				Prosthodontics PC Praticals
Saturday	Dental Materials	CD PC Practicals		Prosthodontics PC	Orthodontics PC Practicals	

III BDS

Week days	8 am – 9 am	9 am -10 am	10 am -11 am	11 am -12 noon	12 noon -1 pm	1 pm -2 pm
Monday	Surgery	Medicine	Medicine Clinics			Oral Pathology
Tuesday	Medicine	Surgery	Surgery Clinics			OMR
Wednesday	Oral Pathology	Periodontics	Clinics			
Thursday	Pedodontics	Oral Pathology	OMFS	Clinics		
Friday	Prosthodontics	CD	Clinics			
Saturday	PHD	Orthodontics	PHD/OMFS	Oral Pathology Practicals		Prosthodontics PC Practicals

Final BDS Part I

Week days	8 am – 9 am	9 am -10 am	10 am -11 am	11 am -12 noon	12 noon -1 pm	1 pm -2 pm
Monday	OMR	Clinics				OMFS
Tuesday	PHD	Clinics				Pedodontics
Wednesday	Orthodontics	Clinics				
Thursday	Periodontics	Clinics				
Friday	CD	Clinics				
Saturday	Prosthodontics	Clinics				

Final BDS Part II

Week days	8 am – 9 am	9 am - 2 pm
Monday	OMFS	Clinics
Tuesday	CD	Clinics
Wednesday	Prosthodontics	Clinics
Thursday	Pedodontics	Clinics
Friday	Prosthodontics	Clinics
Saturday	OMFS	Clinics

At least 30% of theory classes to be handled by Assoc. Professors & above.

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Condonation register format

Page No.

Condonation Register

Name of

College:_____

Sl.No.	Name of Student	KUHS registration number of student	Year and date of request for availing condonation	Examination & subjects for which condonation is availed	Reason for condoning	Remarks	Dated Signature of the Principal

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Name of College of Dental Sciences

Emblem of College of Dental Sciences

Compulsory Rotating Resident Internship Certificate

This is to certify that_____ was a bona fide student of name of college for BDS course from_____ to _____. He/She passed the Final BDS Part II examination of the KERALA UNIVERSITY OF HEALTH SCIENCES, Thrissur, held in _____ and has successfully completed twelve months of Compulsory Paid Rotating Resident Internship Programme in various departments from _____to _____ as shown below:

Department	From	to	Extension Posting	
			From	to
Prosthodontics and Crown & Bridge	_____	_____	_____	_____
Conservative Dentistry& Endodontics	_____	_____	_____	_____
Oral & Maxillofacial Surgery	_____	_____	_____	_____
Periodontics	_____	_____	_____	_____
Public Health Dentistry	_____	_____	_____	_____
Paediatric & Preventive Dentistry	_____	_____	_____	_____
Orthodontics& Dentofacial Orthopaedics	_____	_____	_____	_____
Oral Medicine & radiology	_____	_____	_____	_____
Oral pathology& Oral Microbiology including Forensic Odontology	_____	_____	_____	_____
Elective (_____)	_____	_____	_____	_____

The character, conduct and professional performance of him/her during the period of training was _____.

Place:
Date: Office seal Principal

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QP Code: **Reg. No……**

First Year BDS Degree Examinations - Month Year

New Scheme (2016 admission onwards)

General Human Anatomy including Embryology and Histology

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Describe the middle ear in detail under the following headings: • Shape and size • Parts and communications • Contents • Blood supply and nerve supply • Applied anatomy (2+2+3+2+1)
2. Describe the mandibular nerve in detail under the following headings: • Functional components • Course and relations • Branches and distribution • Applied anatomy (2+3+3+2)

Short notes **(4x5=20)**

3. Enumerate the para nasal sinuses and mention its functions. Where do each of them open. Mention its clinical importance. (2+2+1)
4. Describe the palatine tonsil under the following headings: • Location • Features • Blood supply (1+3+1)
5. Describe the tongue under the following headings: • External features • Extrinsic muscles. (2+3)
6. Describe the extra ocular muscles including: • Origin and insertion • Actions (3+2)

Brief notes: **(10x3=30)**

7. Sub mandibular ganglion
8. Microscopic structure of hyaline cartilage
9. Graafian follicle
10. Tentorium cerebelli
11. Inter peduncular fossa
12. Chromosomes
13. Bell's palsy
14. Pharyngeal pouches
15. Cavity of larynx
16. Structures within the parotid gland

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Reg. No……

First Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
General Human Physiology and Biochemistry

Time: 3hrs **Max Marks: 70**

- Answer all questions
- Draw diagrams wherever necessary
- Write **section A** and **section B** in separate answer books (32 pages). Do not mix up questions from section A and section B

QP Code: **Section: A Physiology** **Max Marks: 35**

Essay: **(10)**

1. Enumerate the hormones secreted by pituitary gland. Discuss the actions of growth hormone. Add a note on disorders produced by hyper secretion of growth hormone. (2+6+2)

Short notes: **(2x5=10)**

2. Describe the endometrial changes during different phases of menstrual cycle, giving its hormonal basis. (3+2)
3. Draw a neat, labeled spirogram. Explain different lung volumes and capacities. (2+3)

Brief notes: **(5x3=15)**

4. Molecular basis of muscle contraction.
5. Chemical regulation of respiration
6. Factors influencing spermatogenesis
7. O_2-Hb Dissociation curve
8. Neuromuscular junction

QP Code: **Section: B Biochemistry** **Max Marks: 35**

Essay: **(10)**

9. What is the normal blood pH? Which are blood buffers? Explain renal regulation of blood pH. (1+2+7)

Short notes: **(2x5=10)**

10. Explain beta oxidation.
11. Classify jaundice and explain different types. Mention the laboratory findings for each category.

Brief notes: **(5x3=15)**

12. Deficiency diseases of vitamin A
13. BMR
14. Functions of calcium
15. Dietary fibers
16. Gout

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QP Code: **Reg. No……**

First Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
Dental Anatomy, Embryology and Oral Histology

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Enumerate and explain in detail the stages in the life cycle of ameloblast with the help of neat diagrams. (2+6+2)
2. Explain in detail the anatomy of permanent maxillary canine with neat diagrams. Add a note on its chronology. (8+2)

Short notes **(4x5=20)**

3. Cap stage of tooth development
4. Types of dentin
5. Permanent maxillary lateral incisor
6. Development of roots of the teeth

Brief notes: **(10x3=30)**

7. Enamel spindles
8. Nasmyth's membrane
9. Cell rests of Serre
10. Reciprocal induction
11. Reduced enamel epithelium
12. Perikymata
13. Hydrodynamic theory of tooth sensitivity
14. Traits in dentition
15. Three differences between permanent mandibular central and lateral incisor
16. Define : Cusp, cingulum & Mammelons

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QP Code: **Reg. No……**

Second Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
Dental Materials

Time: 3hrs **Max Marks: 70**

- Answer all questions
- Draw diagrams wherever necessary
- Write **section A** and **section B** in separate answer books (32 pages). Do not mix up questions from section A and section B

QP Code: **Section: A Prosthodontics** **Max Marks: 35**

Essay: **(10)**

1. Define impressions in Prosthodontics. Classify Impression Materials. Enumerate in detail the composition, Properties and uses of any one elastic impression material. (2+3+5)

Short notes: **(2x5=10)**

2. Classify Dental casting investment materials. Explain in detail about Phosphate bonded investments. (2+3)
3. Enumerate the materials used as denture base resins. Add a brief note on curing cycle of denture base resins. (3+2)

Brief notes: **(5x3=15)**

4. CAD- CAM in Prosthodontics
5. Wrought metal alloys
6. Green stick impression compound
7. Stress and strain
8. Describe Hue , value and Chroma.

QP Code: **Section: B Conservative Dentistry** **Max Marks: 35**

Essay: **(10)**

9. Classify Dental Cements. Explain in detail the composition, properties ,manipulation and uses of Poly carboxylate cement. (3+2+2+2+1)

Short notes: **(2x5=10)**

10. ADA classification of Dental Casting Alloys. Describe in detail advantages and disadvantages of base metal alloys. (2+3)
11. Explain in detail various methods of trituration of amalgam and the setting reaction of amalagam. (3+2)

Brief notes: **(5x3=15)**

12. Classify casting defects
13. Composition and uses of Gutta percha
14. Rake angle
15. Inlay casting wax
16. Gold foil

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QP Code: **Reg. No……**

Second Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
General & Dental pharmacology and therapeutics

Time: 3hrs **Max Marks: 70**

- Answer all questions
- Draw diagrams wherever necessary

Essay: **(2x10=20)**

1. Classify non-steroidal anti-inflammatory drugs. Mention the mechanism of action, adverse effects, and therapeutic uses of aspirin. (4+2+2+2)
2. Classify fluoroquinolones. Enumerate the mechanism of action, adverse effects, and therapeutic uses of ciprofloxacin. (4+2+2+2)

Short notes **(4x5=20)**

3. Classify the local anaesthetics. Explain the mechanism of action of lignocaine (3+2)
4. Classify diuretics and mention the mechanism of action of loop diuretics (3+2)
5. Classify oral hypoglycaemic agents. Mention the mechanism of action and adverse effects of glibenclamide. (3+2)
6. Classify antiseptics and mention its therapeutic applications. (3+2)

Brief notes: **(10x3=30)**

7. Therapeutic uses of digoxin.
8. Therapeutic uses and contraindications of adrenaline.
9. Intravenous general anesthetics
10. Explain briefly about the drugs used in helicobacter pylori therapy
11. Oral iron preparations
12. Mention four calcium channel blockers and its therapeutic uses
13. Explain about the local haemostatics
14. Explain the therapeutic uses of cotrimoxazole
15. Explain briefly on dentifrices
16. Mention the drugs used in insomnia and explain the mechanism of action

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Reg. No……

First Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
General Pathology and General Microbiology

Time: 3hrs **Max Marks: 70**

- Answer all questions
- Draw diagrams wherever necessary
- Write **section A** and **section B** in separate answer books (32 pages). Do not mix up questions from section A and section B

QP Code: **Section: A General Pathology** **Max Marks: 35**

Essay: **(10)**

1. Define inflammation. Enumerate the chemical mediators of inflammation. Discuss the cellular events in acute inflammation. (2+3+5)

Short notes: **(2x5=10)**

2. Classify anemia. Discuss the peripheral smear picture in iron deficiency anemia. (2+3)
3. Describe healing by primary intention with the help of a diagram. Mention four complications of wound healing. (4+1)

Brief notes: **(5x3=15)**

4. Pathologic classification
5. Septic shock
6. Giant cell tumor
7. Metastatic cascade
8. Actinomycosis

QP Code: **Section: B General Microbiology** **Max Marks: 35**

Essay: **(10)**

9. Define and classify sterilization. Describe moist heat sterilization (2+3+5)

Short notes: **(2x5=10)**

10. Describe the pathogenesis and laboratory diagnosis of Syphilis. (2+3)
11. Define hypersensitivity and types of Hypersensitivity reaction. Describe the mechanism of anaphylaxis. (1+2+2)

Brief notes: **(5x3=15)**

12. Candidiasis
13. Laboratory diagnosis of Diphtheria
14. Classical compliment pathway
15. Drug resistance
16. Laboratory diagnosis of HIV

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QP Code: **Reg. No……**

Third Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
Oral pathology and Microbiology

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Classify odontogenic tumors. Discuss the clinical & radiographic features & histopathology of ameloblastoma. (3+2+1+4)
2. Define Dental Caries. Describe the types & histopathology of dentinal caries. (2+4+4)

Short notes **(4x5=20)**

3. What is amelogenesis imperfecta. Discuss the causes of enamel hypoplasia. (1+4)
4. Grading and histopathology of oral squamous cell carcinoma. (1+4)
5. Discuss the radiographic features and histopathology of dentigerous cyst . (2+3)
6. Age estimation (5)

Brief notes: **(10x3=30)**

7. Actinomycosis
8. Dysplasia
9. Oral thrush
10. Tzanck cells
11. Focal infection
12. Clinical features of Pagets disease
13. Histopathology of lichen planus
14. Investigation of sjogren syndrome
15. Radiographic features of osteosarcoma
16. Hemophilia

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QP Code: **Reg. No……**

Third Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
General Medicine

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Discuss the etiology, clinical manifestations, investigations and treatment of thyrotoxicosis. (2+5+2+1)
2. Define heart failure. Discuss the etiology, pathogenesis, clinical manifestations, diagnosis and treatment of heart failure. (1+2+1+3+2+1)

Short notes **(4x5=20)**

3. Discuss the clinical features, diagnosis and treatment of lung abscess.(2+2+1)
4. Discuss the etiology, clinical features, investigations and treatment of acute adrenal insufficiency. (1+2+1+1)
5. Discuss the classification & diagnosis of diabetes mellitus and mention the oral hypoglycemic agents in brief. (1+2+2)
6. Describe in detail the etiology, clinical features, investigations and treatment of enteric fever. (1+1+2+1)

Brief notes: **(10x3=30)**

7. Migraine
8. Amoebiasis
9. Hypocalcaemia
10. Anticonvulsant drugs
11. Anaphylactic shock
12. Osteomalacia
13. Fallot's tetralogy
14. Nephrotic syndrome
15. Mumps
16. Sleep apnea

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QP Code: **Reg. No……**

Third Year BDS Degree Examinations - Month Year
New Scheme (2016 admission onwards)
General Surgery

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Classify salivary tumors. Discuss the pathology, clinical features, investigations and treatment of pleomorphic adenoma. (3+2+3+1+1)
2. Classify shock. Discuss the clinical features and management of septic shock (2+5+3)

Short notes **(4x5=20)**

3. What is reactionary haemorrhage and how do you manage it. Mention the indications and complications of massive blood transfusion (2+1+2)
4. Classify wounds. Discuss the management of wounds (3+2)
5. Discuss the pathology, investigations and treatment of tuberculous cervical lymphadenitis (2+1+2)
6. Discuss briefly the development, arterial supply and venous drainage of thyroid gland. (3+2)

Brief notes: **(10x3=30)**

7. Ranula
8. Brachytherapy
9. Robert Koch
10. Fine needle aspiration cytology
11. Sternomastoid tumor
12. Branchial cyst
13. Keloid
14. Medullary carcinoma of thyroid
15. Ludwig's angina
16. Informed consent

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QP Code: **Reg. No……**

Final Year BDS (Part I) Degree Examinations - Month Year
New Scheme (2016 admission onwards)
Public Health Dentistry

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Define health education. Add a note on principles and approaches in health education (2+4+4)
2. Define water fluoridation. Enumerate and describe in detail various systemic fluoridation methods. (3+7)

Short notes: **(4x5=20)**

3. Changing concepts in public health
4. Biomedical waste management
5. Define primary health care. Add a note on principles of primary health care.
6. Describe prevention of dental caries based on levels of prevention.

Brief notes: **(10x3=30)**

7. Turku sugar study
8. WHO index age groups and its significance.
9. Prevention and management of pressure sores.
10. Principles of ethics
11. Mobile dental van
12. Normal curve
13. Management of oral conditions in chronic/terminal illness
14. School Dental Nurse
15. Balanced diet
16. Percentile

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QP Code: **Reg. No……**

Final Year BDS (Part I) Degree Examinations - Month Year
New Scheme (2016 admission onwards)
Periodontology

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Define localized aggressive periodontitis. Explain the clinical features, radiographic features and treatment of localized aggressive periodontitis. (1+2+2+5)
2. Classify bone grafts. Explain in detail the various bone graft materials used in periodontics. (3+7)

Short notes: **(4x5=20)**

3. Explain the procedure of external bevel gingivectomy.
4. Classify periodontal pocket. Briefly describe the signs and symptoms of periodontal pocket.
5. Free gingival autograft.
6. Treatment of Class II furcation involvement.

Brief notes: **(10x3=30)**

7. Radius of action.
8. Factors determining the probing depth.
9. Steps in Resective osseous surgery.
10. DNA probe.
11. Plaque hypotheses.
12. Stages of gingivitis.
13. Pericoronitis.
14. Interdental cleansing aids.
15. Chlorhexidine.
16. Pyogenic granuloma.

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QP Code: **Reg. No……**

Final Year BDS (Part I) Degree Examinations - Month Year

New Scheme (2016 admission onwards)

Orthodontics and Dentofacial Orthopedics

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Define interceptive orthodontics. Enumerate various interceptive orthodontic procedures. Discuss serial extraction in detail. (2+2+6)
2. An 11 year old girl was brought to your clinic by her mother complaining of protruded upper teeth, on examination there was convex profile, incompetent lips and increased overjet. Cephalometric findings showed an SNA of 83, ANB of 6 degree and FMA of 26 degrees. What is your diagnosis? Write a note on treatment plan and elaborate on mechanotherapy. (3 +2+ 5)

Short notes: **(4x5=20)**

3. Methods to reinforce anchorage
4. CVMI
5. Therapeutic extractions
6. Merits and demerits of Angle's Classification

Brief notes: **(10x3=30)**

7. EH Angle
8. Six keys to normal occlusion
9. Moment to force ratio
10. Modifications of Adams Clasp
11. Rule of 10 in CLCP management
12. Twin study
13. Elements of Valid consent
14. Schools of retention
15. List essential diagnostic aids
16. VTO

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QP Code: **Reg. No……**

Final Year BDS (Part I) Degree Examinations - Month Year

New Scheme (2016 admission onwards)

Oral Medicine & Radiology

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Classify white lesions of oral cavity. Mention about etiopathogenesis, Clinical features, investigations and management of oral submucous fibrosis. (4+1+2+1+2)
2. Write in detail about faulty radiographs and methods of rectification of faults. (5+ 5)

Short notes: **(4x5=20)**

3. Trigeminal neuralgia
4. Sialolithiasis
5. Bisecting angle technique
6. Latent image

Brief notes: **(10x3=30)**

7. Vital staining
8. Penny test
9. Ely's cyst
10. Intensifying screens
11. James- Ramsey Hunt syndrome
12. Radiographic features of fibrous dysplasia
13. TNM staging for oral cancer
14. Dosimeters
15. Antifungal agents
16. Image receptors

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QP Code: **Reg. No……**

Final Year BDS (Part II) Degree Examinations - Month Year

New Scheme (2016 admission onwards)

Prosthodontics

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Define Centric Relation. Explain the various techniques for recording centric relation. Describe the importance of centric relation in complete denture treatment. (2+5+3)
2. Classify Direct retainers. Explain in detail the parts of a circumferential clasp. Describe the functions of each component of the clasp. (3+3+4)

Short notes: **(4x5=20)**

3. Define and Classify pontics. (1+4)
4. Describe the principles of tooth preparation.
5. Post insertion complaints of complete denture treatment.
6. Maxillofacial prosthetic materials.

Brief notes: **(10x3=30)**

7. Obturator.
8. Indirect retention.
9. Combination syndrome.
10. Osseointegration.
11. Denture stomatitis.
12. Kennedy's Classification.
13. Colour coding in RPD designing.
14. Gingival retraction.
15. Digital impressions in prosthodontics.
16. Compensatory curves.

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QP Code: **Reg. No……**

Final Year BDS (Part II) Degree Examinations - Month Year
New Scheme (2016 admission onwards)
Oral and Maxillofacial Surgery

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Describe nerve conduction and mechanism of action of local anesthetics. Enumerate theories of local anesthesia. Classify local anesthetics based on their action. (2+2+3+3)
2. Classify mandibular fractures. Describe clinical features, diagnosis and management of displaced angle fracture. (2+2+2+4)

Short notes: **(4x5=20)**

3. Describe clinical features, diagnosis and management of trigeminal neuralgia
4. Discuss the importance of pre-anaesthetic evaluation before administration of general anaethesia
5. Describe clinical features, diagnosis and management of pterygomandibular space infection
6. Describe landmarks and technique of infra orbital nerve block. Add a note on the possible complications of infra orbital nerve block.

Brief notes: **(10x3=30)**

7. CPR
8. Principles of antimicrobial therapy in OMFS
9. Chronic oro-antral fistula
10. Genioplasty
11. Osteoradionecrosis
12. Dry Socket
13. Autoclave
14. Fine needle aspiration cytology
15. Trismus
16. Dental investigations in mass disaster incidents

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QP Code: **Reg. No……**

Final Year BDS (Part II) Degree Examinations - Month Year
New Scheme (2016 admission onwards)
Pediatric and Preventive Dentistry

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. What is the concept of a Dental Home? Define anticipatory guidance and chart out the anticipatory guidance of children age wise. (3+2+5)
2. Discuss the Ellis and Davey classification of dental trauma. Explain the emergency oral soft tissue injury management and management of fractured permanent incisors without pulp exposure. (3+3+4)

Short notes: **(4x5=20)**

3. List out the various fixed space regainers and explain briefly on Gerber space regainer.
4. Define defluoridation. Outline the types of defluoridation techniques
5. Explain in detail diet counseling in a child with ECC.
6. What are the clinical features of a child with Down syndrome. Outline dental management of this child in the clinic.

Brief notes: **(10x3=30)**

7. AAPD definition of dental neglect and role of dentist in child abuse
8. Stainless Steel Crowns- composition and types
9. Causes of delayed eruption of teeth
10. Uses of hypnodontics
11. Storage media for avulsed teeth
12. Causes of midline diastema
13. Primate space and Leeway space of Nance
14. Tongue blade Therapy
15. Frankl Rating Scale
16. Define oral habits. Management of a child with lip biting.

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QP Code: **Reg. No……**

Final Year BDS (Part II) Degree Examinations - Month Year

New Scheme (2016 admission onwards)

Conservative dentistry and Endodontics

Time: 3hrs **Max Marks: 70**

- **Answer all questions**
- **Draw diagrams wherever necessary**

Essay: **(2x10=20)**

1. Define working length. Enumerate the methods of working length determination. Discuss in detail radiographic technique (2+3+5)
2. What are the methods of isolation of operating field. Discuss the significance of isolation with respect to the various materials used (6+4)

Short notes: **(4x5=20)**

3. Rationale of endodontics
4. Principles of cast restorations
5. What re the principles of biomechanical preparation
6. Classify hand cutting instruments in operative dentistry. Discuss instrument formula

Brief notes: **(10x3=30)**

7. Pulp polyp
8. Bevels
9. Standardisation of endodontic instruments
10. Retention form in amalgam
11. Cavity liners
12. Sodium hypochlorite
13. Thermal test
14. Flaps in surgical endodontics
15. Metal modified glass ionomer
16. Pins used with amalgam

DR GIJU GEORGE BABY

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