SYLLABUS
BACHELOR OF DENTAL SURGERY

Notice

1. Amendments made by the Statutory Regulating Council i.e. Dental Council of India in Rules/Regulations of Graduate Dental Course shall automatically apply to the Rules/Regulations of the Mahatma Gandhi University of Medical Sciences & Technology (MGUMST), Jaipur.

2. The University reserves the right to make changes in the syllabus/books/guidelines, fees-structure or any other information at any time without prior notice. The decision of the University shall be binding on all.

3. The Jurisdiction of all court cases shall be Jaipur Bench of Hon'ble Rajasthan High Court only.

RULES & REGULATIONS
BACHELOR OF DENTAL SURGERY

GENERAL REGULATIONS:

OBJECTIVES:

At the end of undergraduate program, the dental student should be able to:

(a) Recognize "health for all' as a national goal and right of all citizens and by undergoing training for medical profession, fulfil his/her social obligations towards realization of this goal.
(b) Learn various aspects of National policies on health and devote him/her to its practical implementation.
(c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases
(d) Develop scientific approach, acquire educational experience for proficiency in profession and promote healthy living.
(e) Become exemplary citizen by observation of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

ADMISSION TO THE DENTAL COURSE:

I. **Eligibility Criteria:** No candidate shall be allowed to be admitted to the Curriculum of Bachelor of Dental Surgery (BDS) course until:
   (1) He/she shall complete the age of 17 years on or before 31st December of the year of admission to the course;
   (2) He/she has obtained a minimum of marks in National Eligibility-cum Entrance Test as prescribed in sub-regulation 5 of Regulation II under the heading "**Selection of students**".
   (3) In order to be eligible to take National Eligibility-cum-Entrance Test he/she has passed qualifying examination as under:-
      a. The higher secondary examination or the Indian School Certificate Examination which is equivalent to 10+2 Higher Secondary Examination after a period of 12 years study, the last two years of study comprising of Physics, Chemistry, Biology and Mathematics or any other elective subjects with English at a level not less than the core course for English as prescribed by the National Council for Educational Research and Training after the introduction of the 10+2+3 years educational structure as recommended by the National Committee on Education;
      Note: Where the course content is not as prescribed for 10+2 education structure of the National Committee, the candidates will have to undergo a period of one year pre-professional training before admission to the dental colleges:

      or

      b. The intermediate examination in science of an Indian University/board or other recognized examining body with Physics, Chemistry and Biology which shall include a practical test in these subjects and also English as a compulsory subject;

      or

      c. The pre-professional/pre-medical examination with Physics, Chemistry and Biology, after passing either the higher secondary school examination, or the pre-university or an equivalent examination. The pre-professional/premedical examination shall include a practical test in Physics, Chemistry and Biology. English should have been present as a compulsory subject at a level not less than the core course for English as prescribed by the relevant authority;

      or

d. The First year of the three years degree course of a recognized university, with Physics, Chemistry and Biology including a practical test in three subjects provided the examination is "University Examination" and Candidate has passed 10+2 with English at a level not less than a core course;

or

e. B.Sc. examination of an Indian University, provided that he/she has passed the B.Sc. examination with not less than two of the following subjects Physics, Chemistry, Biology (Botany, Zoology) and further that he/she has passed the earlier qualifying examination with the following subjects-Physics, Chemistry, Biology and English.

or

f. Any other examination which, in scope and standard is found to be equivalent to the intermediate science examination of an Indian University/Board, taking Physics, Chemistry and Biology including practical test in each of these subjects and English.

(4) 3% seats of the annual sanctioned intake capacity shall be filled up by candidates with locomotory disability of lower limbs between 50 to 70%

Provided that in case any seat in this 3% quota remains unfilled on account of unavailability of candidates with locomotory disability of lower limbs between 50 to 70% then any such unfilled seat in this 3% quota shall be filled up by persons with locomotory disability of lower limbs between 40 to 50 % before they are included in the annual sanctioned seats for General Category candidates.

Provided further that this entire exercise shall be completed by each Dental College/ Institution as per the statutory time schedule for admissions and in no case any admission will be made in the BDS after 30thof September.

Note: After the 10+2 course is introduced, the integrated courses should be abolished. Universities shall organize admission timings and admission process in such a way that teaching starts from 1st day of August in each academic year.

Selection of Students: The selection of students to dental college shall be based solely on merit of the candidate and for determination of the merit, any one or more of following criteria be adopted :-

a. There shall be a single eligibility-cum-entrance examination namely “National Eligibility-cum-Entrance test for admission to BDS course” in each academic year.

b. In order to be eligible for admission to BDS course for a particular academic year, it shall be necessary for a candidate to obtain minimum of marks of 50th percentile in “National Eligibility-cum –Entrance Test to BDS course’ held for the said academic year. However, in respect of candidates belonging to Scheduled castes, Scheduled Tribes, Other Backward classes, the minimum marks shall be at 40th percentile. In respect of candidates with locomotory disability of lower amendments, the minimum marks shall be at 45th percentile. The percentile shall be determined on the basis of highest marks secured in the All-India common merit list in “National Eligibility-cum-Entrance Test for admission to BDS course”.

Provided when sufficient number of candidates in the respective categories fail to secure minimum marks as prescribed in National Eligibility-cum-Entrance test held for any academic year for admission to BDS course, the Central government in consultation with the Dental Council of India may at its discretion lower the minimum marks required for admission to BDS course for candidates belonging to respective categories and marks so lowered by the Central Government shall be applicable for the said academic year only.

c. The reservation of seats in dental colleges for respective categories shall be as per applicable laws prevailing in States/Union territories. An all India merit as well as State-wise merit list of the eligible candidates shall be prepared on the basis of the marks obtained in National Eligibility-cum-Entrance test and candidates shall be admitted to BDS course from the said lists only.
d. No candidate who has failed to obtain the minimum eligibility marks as prescribed in Clause (ii.) above shall be admitted to BDS course in the said academic year.
e. All admissions to BDS course within the respective categories shall be based solely on marks obtained in the National Eligibility-cum-Entrance Test.
f. To be eligible for admission to BDS course, a candidate must have passed in the subjects of Physics, Chemistry, Biology/Biotechnology and English individually and must have obtained a minimum of 50% marks taken together in Physics, Chemistry, Biology/Biotechnology at the qualifying examination as mentioned in the Sub regulation 2 of regulation I and in addition must have come in the merit list of "National Eligibility-cum-Entrance Test" for admission to BDS course. In respect of candidates belonging to Scheduled Caste, Scheduled Tribes or other backward classes the minimum marks obtained in Physics, Chemistry, and Biology/Biotechnology taken together in qualifying examination shall be 40% instead of 50%. In respect of candidates with locomotory disability of lower limbs in terms of sub-regulation 4, after the commencement of these amendments, of Regulations 1 above, the minimum marks in qualifying examination in Physics, Chemistry, and Biology/Biotechnology taken together in qualifying examination shall be 45% instead of 50%.
   Provided that a candidate who has appeared in the qualifying examination the result of which has not been declared, he/she may be provisionally permitted to take up the National Eligibilty-cum-Entrance Test and in case of selection for admission to the BDS course, he/she shall not be admitted to that course until he fulfills the eligibility criteria under Regulation 1.
g. The Central Board of Secondary Education shall be the organization to conduct National Eligibility-cum-Entrance Test for admission to BDS course.

II. **A common counselling**

(1) There shall be a common counselling for admission to BDS course in all dental educational institutions on the basis of merit list of the National Eligibility-cum-Entrance Test.
(2) The designated authority for counselling for the 15% All India Quota seats of the contributing states and all the BDS seats of Dental Education Institutions of the Central Government universities established by an Act of Parliament and the Deemed Universities shall be Directorate General of Health Services, Ministry of Health and Family welfare, Government of India.
(3) The counselling for admission to BDS course in a State/Union Territory, Including Dental Education Institutions established by the State Government, University established by an Act of State/ Union Territory Legislature, Trust, Society, Minority Institutions shall be conducted by the State/ Union Territory Government.
(4) In case any dispute arises on such common counselling, the respective state government shall refer the matter to the Central Government and its decision shall be final, in this regard.

III. **Duration of the course**

The undergraduate dental program leading to BDS degree shall be of Four Academic years, with 240 teaching days in each academic year, plus one year paid rotating Internship in a

dental college. Every candidate will be required after passing the final BDS examination, to undergo one year paid rotating internship in a dental college. The detailed curriculum of Dental Internship Programme is annexed as Annexure-A. The internship shall be compulsory and BDS Degree shall be granted after completion of one year paid internship.

IV. **Migration:**

(1) Migration from one dental college to other is not a right of a student. However, migration of students from one dental college to another dental college in India may be considered on extreme compassionate ground* provided following criteria are fulfilled. Routine migrations on other ground shall not be allowed.
(2) Both the colleges, i.e. one at which the student is studying at present and one to which migration is sought, are recognized by the Dental Council of India.
(3) The applicant candidate should have passed first professional BDS examination.
(4) The applicant candidate submits his application for migration, complete in all respects, to all authorities concerned within a period of one month of passing (declaration of results) the first professional bachelor of Dental Surgery (BDS) examination.
(5) The applicant candidate must submit an affidavit stating that he/she will pursue 240 days of prescribed study before appearing at IInd professional Bachelor of Dental Surgery (BDS) examination at the transferee dental college, which should be duly certified by the Registrar of the concerned University in which he/she is seeking transfer. The Transfer will be applicable only after receipt of the affidavit.

Note 1:

a. Migration is permitted only in the beginning of II year BDS Course in recognized Institution.
b. All application for migration shall be referred to Dental Council of India by college authorities. No Institution/University shall allow migration directly without the prior approval of the Council.
c. Dental council reserves the right to not entertain any application which is not under the prescribed compassionate grounds and also to take independent decisions where applicant has been allowed to migrate without referring the same to the Council.

Note 2: *Compassionate ground criteria:

a. Death of supporting guardian.
b. Disturbed sociopolitical/environmental conditions as declared by Government in the Dental College area.

V. **Attendance requirement, Progress and Conduct:**

(1) 75% in theory and 75% in practical/clinical in each year.
(2) In case of a subject in which there is no examination at the end of the academic year/semester, the percentage of attendance shall not be less than 70%. However, at the time of appearing for the professional examination in the subject, the aggregate percentage of attendance in the subject should satisfy condition (i) above.

VI. **Subjects of Study:**

First BDS

1. General Human Anatomy including Embryology and Histology
2. General Human Physiology and Biochemistry, Nutrition and Diet
3. Dental Anatomy, Embryology and Oral Histology
4. Dental Materials
5. Pre Clinical Prosthodontics and Crown & Bridge

Second BDS

1. General Pathology and Microbiology
2. General and Dental Pharmacology and Therapeutics
3. Dental Materials
4. Pre-Clinical Conservative
5. Pre-Clinical Prosthodontics
6. Oral Pathology and Oral Microbiology

Third BDS

1. General Medicine
2. General Surgery
3. Public Health Dentistry
4. Periodontology
5. Orthodontics & Dentofacial Orthopaedics
6. Oral Medicine & Radiology
7. Oral & Maxillofacial Surgery
8. Conservative Dentistry and Endodontics
9. Prosthodontics and Crown & Bridge
10. Paediatric & Preventive Dentistry

Fourth (Final) BDS

1. Public Health Dentistry
2. Periodontology
3. Orthodontics & Dentofacial Orthopedics
4. Oral Medicine & Radiology
5. Oral & maxillofacial Surgery
6. Conservative Dentistry & Endodontics
7. Prosthodontics and Crown & Bridge
8. Paediatric & Preventive Dentistry

EXAMINATION:

(1) Scope: These regulations shall be applicable for the B.D.S. degree examinations.

(2) Preface

(a) Evaluation is a continuous process, which is based upon criteria developed by the concerned authorities 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. program.

(b) Evaluation is achieved by two processes:

i. Formative or internal assessment
ii. 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.

(3) Methods of Evaluation: Evaluation may be achieved by the following tested methods:

(a) Written test
(b) Practical
(c) Clinical examination
(d) Viva voce

(4) Internal Assessment Examination: The continuing assessment examinations at least two times in a particular year and the average marks of these examinations shall be taken into consideration. 10% of the total marks in each subject for theory, practical and clinical examination separately should be set aside for the internal assessment examinations.

(5) University Examination:

(a) Scheme of Examination: The scheme of examination for B.D.S. Courses shall be divided into 1st B.D.S. examination at the end of the first academic year, 2nd B.D.S. examination at the end of second year, 3rd B.D.S. examination at the end of third year, 4th and final B.D.S. at the end of 4th year. 240 days minimum teaching in each academic year is mandatory.

(b) The examination shall be open to a candidate who satisfies the requirements of attendance, progress and other rules laid down by the University. Universities shall organize admission timings and admission process in such a way that teaching starts from 1st day of August in each academic year.

i. First B.D.S. Examination: Any student who does not clear the BDS Course in all the subjects within a period of 9 years, including one year Compulsory Rotatory paid Internship from the date of admission shall be discharged from the course.
Any candidate who fails in one subject in an Examination is permitted to go to the next higher class but should appear for the failed subject and pass it successfully before he/she is permitted to appear for the next higher examination.

ii. Second B.D.S. Examination: A candidate who has not successfully completed the 1st B.D.S. examination cannot appear in the IInd year Examination.
Any candidate who fails in one subject in an Examination is permitted to go to the next higher class but should appear for the failed subject and pass it successfully before he/she is permitted to appear for the next higher examination.

iii. Third B.D.S. Examination: A candidate who has successfully completed the 2nd B.D.S. examination can appear in IIIrd B.D.S. Examination.
Any candidate who fails in one subject in an Examination is permitted to go to the next higher class but should appear for the failed subject and pass it successfully before he/she is permitted to appear for the next higher examination.

iv. Fourth (Final) BDS Examination: A candidate who has not successfully completed the 3rd BDS examination cannot appear in Final BDS Examination
A candidate has to successfully complete the final BDS Examination to be permitted to go for internship program.

(c) Written Examination (Theory):

i. The written examination in each subject shall consist of one paper having two sections (A & B) of three hours duration and shall have maximum marks of 70.

ii. In the subjects of 'Physiology & Biochemistry' and 'Pathology & Microbiology' each paper will be divided into two parts, A and B of equal marks.

iii. The question paper should contain different types of questions like essay, short answer and objective types / M.C.Q's

iv. The nature of questions set, should be aimed to evaluate students of different standards ranging from average to excellent.

v. The questions should cover a broad area of the content of the course. The essay questions shall be properly structured and marks specifically allotted.

vi. The University may set up a question bank.

(d) Practical and Clinical Examination

i. Objective Structured Clinical Evaluation: The present system of conducting practical and clinical examination at several universities provide chance for unrealistic proportions of luck. Only a particular clinical procedure or experiment

is usually given for the examination. The clinical and practical examination should provide a number of chances for the candidate to express one's skills. A number of examination stations with specific instructions to be provided. This can include a number of examination stations with specific instructions to be provided e.g. 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 becauseboth the examiner and the examinee are given specific instructions on what is to be expected at each station.

ii. Records / Log Books: The candidate will 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 appearance if necessary.

iii. Scheme of clinical and practical examinations: The specific scheme of clinical and practical examinations, the type of clinical procedures / experiments to be performed and marks allotted for each are to be discussed and finalized by the Chairman and other examiners and it is to be published prior to the conduct of the examinations along with the publication of the time table for the practical examinations. This scheme shall be brought to the notice of the external examiner as and when the examiner reports. The practical and clinical examinations shall be evaluated by two examiners of which one shall be an external examiner appointed from other universities preferably outside the State. Each candidate shall be evaluated by each examiner independently and marks computed at the end of the examination.

iv. Viva Voce: Viva voce shall be preferably conducted independently by each examiner. In order 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 equally amongst the examiners, i.e., 10 marks per examiner.

(e) Criteria for a pass:

i. Fifty percent of the total marks in any subject computed as aggregate for theory, i.e., written, viva voce and internal assessment and practical including internal assessment, separately is essential for a pass in all years of study.

ii. For declaration of pass in a subject, a candidate shall secure 50% marks in the University examination both in Theory and Practical/Clinical examinations separately, as stipulated below:

1) A candidate shall secure 50% marks in aggregate in University theory including Viva Voce and Internal assessment obtained in University written examinations combined together.
2) In the University Practical / Clinical examination, a candidate shall secure 50% of University practical marks and Internal Assessment combined together.
3) In case of Pre-clinical Prosthetic Dentistry and Pre clinical conservative dentistry in II BDS, where there is no written examination, minimum for pass is 50% of marks in Practical and Viva voce combined together in University examination including Internal Assessment i.e. 50/100 marks.
4) Successful candidates who obtain 65% of the total marks or more shall be declared to have passed the examination in First Class. Other successful candidates will be placed in Second Class. A candidate who obtains 75% and above is eligible for Distinction. Only those candidates who pass the whole examination in the first attempt will be eligible for distinction or class.

5) First Class and Distinction and any other awards to be awarded by the University as per the respective rules.

(f) Grace Marks: Grace marks upto a maximum of 5 marks may be awarded to students who have failed only in one subject but passed in all other subjects as per university rules.

(g) Re-evaluation: The objective of re-evaluation is to ensure that the student receives a fair evaluation in the University examination and to minimize human error and extenuating circumstances. There shall be two mechanisms for this purpose.

i. Re-totaling: The University on application and remittance of a stipulated fee shall permit a recounting or opportunity to recount the marks received for various questions in an answer paper/ papers for theory of required subjects for which the candidate has appeared in the university examination. Any error in totaling of the marks shall be suitably rectified as per university rules.

ii. Re-evaluation: Re-evaluation of theory papers in all years of study of the BDS course may be permissible by the university on application and remittance of a prescribed fee. Such answer script shall be re-evaluated as per University rules.

(6) Qualification and experience to be eligible for examinership for BDS examination

(a) M.D.S. Degree from a recognized institution

(b) 4 years teaching experience in the subject in a dental college after MDS

(c) Should be holding the post of a Reader or above in a Dental Institution approved/ recognized by the Dental Council of India for B.D.S.

Note:

- in case of Public Health Dentistry, as there is acute shortage of teachers one examiner from Public Health Dentistry and the second one could be from Periodontics. To be reviewed after 3 years.
- In case of Physiology and Biochemistry if internal examiner is from Physiology, External examiner should be from Biochemistry or vice versa.
- In case of Pathology and Microbiology if Internal examiner is from Pathology, External examiner should be from Microbiology or vice versa
- In case of Dental Materials, if internal is from Prosthodontics, external should be from Conservative Dentistry and vice versa

50% of Examiners appointed shall be external, from other University, preferably from outside the State, from Dental Institutions approved/ recognized by the Dental Council of India for B.D.S. Course.

Reciprocal arrangement of Examiners should be discouraged, in that, the Internal Examiner in a subject should not accept external examinership for a College from which External Examiner is appointed in his subject for the corresponding period.

No person shall be an external Examiner to the University for more than 3 consecutive years. However, if there is a break of one year the person can be re-appointed.

GOALS AND OBJECTIVES

GOALS

The dental graduates during training in the institutions should acquire adequate knowledge, necessary skills and reasonable attitudes which are required for carrying out all the activities appropriate to general dental practice involving the prevention the prevention, diagnosis and treatment of anomalies and diseases mouth, jaws and associated tissues. The graduate also should understand the concept of community oral health education and be able to participate in the rural health care delivery programmes existing in the country.

OBJECTIVES

The objectives are dealt under three headings (A) Knowledge and understanding (B) skills and (C) Attitudes

(A) KNOWLEDGE AND UNDERSTANDING:

The graduate 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, principles of biological able to evaluate and analyse scientifically various established facts and data.
2. Adequate knowledge of the development, structure and function of the teeth, mouth and jaws and associated tissues both in health and disease and their relationship and state of health and also bearing on physical and social wellbeing of the patient.
3. Adequate knowledge of clinical disciplines and methods which provide a coherent anomalies, lesions and diseases of the teeth, mouth and jaws and preventive, diagnostic and therapeutic aspects of dentistry
4. Adequate clinical experience required for general dental practice
5. Adequate knowledge of the constitution, biological function and behaviour of persons in health and sickness as well as the influence of the natural and social environment on the state of health in so far as it affect 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 possible treatment available wherever possible
2. Acquire the skill to prevent and manage complications if encountered while carrying out various surgical and other procedures
3. Possess skill to carry out certain investigative procedures and ability to interpret laboratory findings
4. Promote oral health and help prevent oral diseases where possible
5. Competent in the control of pain and anxiety among the patients during dental treatment.

(C) ATTITUDES:

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

1. Willing to apply the 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 CPED Programmes to update the knowledge and professional skill from time to time
5. To help and participate in the implementation of the national oral health policy.

RECOMMENDATIONS

General

1. The undergraduate course involves organisation of teaching programmes year-wise. However this course, as a whole, should demonstrate integration of the basic sciences, clinical dentistry and practical or the laboratory skills. The course should be designed and integrated in such a way 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 medicine and dentistry like anatomy, physiology, biochemistry and behavioural 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 behaviour, leading to understanding of the diseases, its prevention and treatment. The main objective is to provide the student a broad knowledge of the 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 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 behavioural sciences including both sociology and psychology should be introduced at the initial stages of the training programme, much be the students actually deal with the patients
4. The second component of dental undergraduate programme consists instruction in the subjects dealing with dental and oral aspects to ensure 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 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 how to preserve natural teeth with their supporting structures. The importance of the various preventive methods need 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 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.

   Towards the final stage of the clinical training, each student should be involved in comprehensive oral health care or or holistic approach to enable them to plan and treat patients as a whole, instead of piece-meal treatment provided in each speciality. The Dental Council of Indiastrongly recommends that all the dental colleges should provide facilities and required infrastructure for this purpose.

The aim of the undergraduate programme should undoubtedly be to produce graduate competent in general dental practice.

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 particularly, oral health care, including the reasons for the variation in the oral and dental needs of different sections of society. It is important to know the influence of the social, behavioural, 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.
7. Scientific advancement of any profession is based largely on continuous research activities. Dentistry is no exception. It is important that in every dental college proper facilities should be provided for research and the faculty members should involve themselves in such activities. Inter-disciplinary research should be encouraged to bring in integration among various specialities. The teaching and training methodology should be such that students are motivated to think and indulge in self-study rather than playing a passive role. Provision should be be made in the daily schedules for adequate time for reading. Proper library facilities with adequate timings and seating capacity should be made available in all dental colleges. Adequate audio visual aids, like video tapes, computer assisted learning aids, Medline and facilities should be provided in all dental colleges to encourage self-study. Students should be encouraged to participate in simple research project work and the system of electives, spending some stipulated amount of time in another dental college within the country or out given a serious consideration by all the dental institutions.
8. The society has a right to expect high standards and quality of treatment. Hence, it is mandatory and a social obligation for each dental surgeon to upgrade his or her knowledge and professional skills from time to time. The Dental Council of India strongly recommendsfacilities and proper infrastructure should be developed to conduct the continuous professionaleducation programmes in dentistry to enable the practitioners to update their knowledge and skills. The Council is of the opinion that the dental collegesby virtue of their infrastructural facilities will be ideal to conduct such courses and recommends establishment of a Department of continuing dental education in each of the dental colleges. In addition, the practitioners should be encouraged to attend conferences of state and national level, workshops, seminars and any such activity which the Council feels is suitable to upgrade the knowledge and skills.
9. The undergraduate curriculum should stress 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 should be properly incorporated into curriculum so that the graduates are aware of its significance and follow it in their practice.
10. The information technology has touched everyaspect of an individual's personal professional life. Council hence recommends that all undergraduates acquire minimum computer proficiency which will enable them to enhance their professional knowledge and skills

RECOMMENDATIONS

Specific

1. The undergraduate dental training programme leading to B.D.S. degree shall be a minimum of five years duration. During this period, the students shall be study at a dental college recognized or approved by the Dental Council of India required to engage in full time study

at a dental college recognized or approved by the Dental Council of India. During the five years undergraduate course, the instruction in clinical subjects should be at least for three years.

2. Basic Medical & Dental Subjects: The basic medical and dental sciences comprise anatomy gross and microscopic, physiology, biochemistry, pharmacology, oral biology and science of dental materials. Subjects like behavioural sciences, which is useful to develop communication skills, should also be introduced in the first year itself and spread over undergraduate course. An introduction to Public Health Dentistry & Preventive Dentistry also will be useful to develop the concept of commitment to community. The laboratory skills to be developed by the students pre-clinical Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology exercises and studying dental morphology also is a part of initial training. The instruction in the above medical and dental sciences shall be for two years duration. At the end of this period the student should be in a position to understand and comprehend in general the development 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 which 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 three 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 clinicaldental subjects dental 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 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 in-patient 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 various professional colleges also become important aspects of this training.
6. The Dental Council of India considers it important for all dental students to receive instruction in first-aid and principles of cardio-pulmonary resuscitation. It is also desirable to spend time in an accident and emergency department of a general hospital.
7. The purpose of the clinical training is to provide sufficient practical skills 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 or disabled patients.

8. During the three years 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 and Oral Implantology, 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, Endodontics & Aesthetic Dentistry, Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology and Periodontology and Oral Implantology students should be competent on graduation to carry out routine treatment like restorations of various kinds and fixed prosthodontics, concept of Osseo-integration and finally various kinds of periodontal therapy. 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
   In Orthodontics & Dentofacial Orthopaedics, students should carry out simple appliance therapy for patients. Students should also be able to appreciate the role of Dentofacial growth in the development and treatment of malocclusion
   In Paediatric dentistry, the students should concentrate on clinical management, efficacy of preventive measures, treatment needs particularly for children with disabilities. In oral medicine and oral diagnosis, the student should receive instruction in various lesions, occurring in the oral cavity with particular reference to oral cancer.
9. 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 anaesthesia. The value of behavioural methods of anxiety management should be emphasised. The students should also have the practical experience in the administration of intra-muscular and intravenous injections. Knowledge of pain mechanisms and strategies to control post-operative pain is essential for practice of dentistry.
10. All students should receive instructions and gain practical experience in taking processing and interpretation of various types of intra and extra oral radiographs. They should be aware of the ds of radiation and proper protective measures from radiation for the patient, operator and other staff.
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.
12. Infection and cross infection control assume significance in dental practice. The students should be made aware of the potential risk of transmission in the dental surgery, various infectious diseases particularly HIV and hepatitis. 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. In the recent times, the subjects of esthetic dentistry, oral implantology, behavioural sciences and forensic odontology have assumed great significance. Hence, the Council recommends that these four specialities should be incorporated into the undergraduate curriculum. The instruction and clinical training in aesthetic dentistry shall be carried out by the departments of Conservative, Endodontics & Aesthetic Dentistry and prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology. Similarly, the instruction and clinical training in oral implantology shall be done by the departments of Oral & Maxillofacial Surgery, Prosthodontics, Crown Bridge, Aesthetic Dentistry and Oral Implantology and Periodontology and Oral Implantology. The instruction in behavioural 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 &Preventive Dentistry and Pedodontics & Preventive Dentistry. Forensic Odontology will be a part of Oral Pathology & Oral Microbiology and Oral Medicine and Radiology

COMPETENCIES

At the completion of the undergraduate training programme the graduates shall be competent in the following.-

General Skills

- Apply knowledge & skills in day to day practice
- Apply principles of ethics
- Analyse the outcome of treatment
- Evaluate the scientific literature and information to decide the treatment
- Participate and involve in professional bodies
- Selfassessment & willingness to update the knowledge &skills from time to time
- Involvement in simple research projects
- Minimum computer proficiency to enhance knowledge and skills
- Refer patients for consultation and specialized treatment
- Basic study of forensic odontology and geriatric dental problems

Practice Management

- Evaluate practice location, population dynamics & reimbursement mechanism
- Co-ordinate & supervise the activity of allied dental health personnel Maintain all records
- Implement & monitor infection control and environmental safety programs
- Practice within the scope of one's competence

Communication & Community Resources

- Assess patients goals, values and concerns to establish rapport and guide patient care
- Able to communicate freely, orally and in writing with all concerned
- Participate in improving the oral health of the individuals through community activities

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

Patient Care Treatment Planning

- Integrate multiple disciplines into an individual comprehensive sequencetreatment plan using diagnostic and prognostic information
- Able to order appropriate investigations

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 anaesthesia
- Administration of intra muscular and venous injection
- Prescription of drugs, pre-operative, prophylactic and therapeutic requirements
- Trans alveolar 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 fixed prosthodontics
- Various kinds of periodontal therapy

ORAL MEDICINE & RADIOLOGY

- Able to identify precancerous and cancerous lesions of the oral cavity and refer to the concerned speciality for their management
- Should have an adequate knowledge about common laboratory investigations and interpretation of their results
- Should have adequate knowledge about medical complications that can arise while treating systemically compromised patients and take prior precautions/ consent from the concerned medical specialist
- Have adequate knowledge about radiation health hazards, radiations safety and protection
- 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
- Should be familiar with jurisprudence, ethics and understand the significance of dental records with respect to law

PAEDIATRIC & PREVENTIVE DENTISTRY

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

ORTHODONTICS& DENTOFACIAL ORTHOPAEDICS

- Understand about normal growth and development of facial skeleton and dentition

- Pinpoint aberrations in growth process both dental and skeletal and plan necessary treatment
- Diagnose the various malocclusion categories motivate and explain to the patient (and parent) about the necessity of treatment
- Plan and execute preventive orthodontics (space maintainces or space regainers)
- Plan and execute interceptive orthodontics (Habit breaking appliances)
- Manage treatment of simple malocclusion such as anterior spacing using removable appliances
- Handle delivery and activation of removable orthodontic appliances
- Diagnose and appropriately refer patients with complex malocclusion to the specialist

PERIODONTOLOGY

- Diagnose the patients periodontal problem, plan and perform appropriate periodontal treatment
- Competent to educate and motivate the patient
- Competent to perform thorough oral prophylaxis, subgingival scaling, root planning and minor periodontal surgical procedures
- Give proper post treatment
- Familiar with concepts of oseeointegration and basic surgical aspects of implantology.

PROSTHODONTICS AND CROWN & BRIDGE

- Able to understand and use various dental materials
- Competent to carry out treatment of conventional complete and partial removable dentures and fabricate fixed partial dentures
- Able to carry out treatment of routine prosthodontic procedures
- Familiar with the concept of osseo-integration and the value of implant supported Prosthodontic procedures

CONSERVATIVE DENTISTRY AND ENDODONTICS

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

ORAL & MAXILLOFACIAL SURGERY

- Able to apply the knowledge gained in the basic medical and clinical subjects in the management of patients with surgical problems
- Able to diagnose, manage and treat patients with basic oral surgical problems
- Have a broad knowledge of maxillofacial surgery and oral implantology
- Should be familiar with legal, ethical and moral issues pertaining to the patient care and communication sills
- Should 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 sterilisation
- Should be competent in the extraction of the teeth under both local and general anaesthesia
- Competent to carry out certain minor oral surgical procedure under LA like trans-alveolar extraction, frenectomy, dentoalveolar procedures, simple impaction, biopsy, etc.
- 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
- Familiar with the management of major oral surgical problems and principles involved in the in- patient management

PUBLIC HEALTH DENTISTRY

- 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 env. Factors which contribute to health or illness
- Administer and hygiene instructions, topical fluoride therapy and fissure sealing
- Educate patients concerning the aetiology and prevention of oral disease and encourage them to assure responsibility for their oral health

SCHEME OF EXAMINATIONS OF B.D.S.

First B.D.S. Examination

Code No.	Subject	Theory A & B	Oral	Internal Assess	Total	Practical	Internal Assess	Total	G. Total
2010	Paper I General Human Anatomy including embryology and histology	70	20	10	100	90	10	100	200
2020	Paper II General Human Physiology and Biochemistry	70	20	10	100	90	10	100	200
2030	Paper III Dental Anatomy, Embryology and Oral Histology	70	20	10	100	90	10	100	200

Second B.D.S. Examination

Code No.	Subject	Theory A & B	Oral	Internal Assess	Total	Practical	Internal Assess	Viva voice	Total	G. Total
2210	Paper I General Pathology and Microbiology	70	20	10	100	90	-	10	100	200
2220	Paper II	70	20	10	100	90	-	10	100	200

	General and Dental Pharmacology and Therapeutics									
2230	Paper III Dental Materials	70	20	10	100	90	-	10	100	200
2240	Pre-clinical Prosthodonitics	-	-	-	-	60	20	20	100	
2250	Pre-clinical Conservative	-	-	-	-	60	20	20	100	

Third B.D.S. Examination

Code No.	Subject	Theory A & B	Oral	Internal Assess	Total	Practical	Internal Assess	Total	G. Total
2410	Paper I General Medicine	70	20	10	100	90	10	100	200
2420	Paper II General Surgery	70	20	10	100	90	10	100	200
2430	Paper III Oral Pathology and Oral Microbiology	70	20	10	100	90	10	100	200

Fourth (Final) B.D.S. Examination

Code No.	Subject	Theory A & B	Oral	Internal Assess	Total	Practical	Internal Assess	Total	G. Total
2610	Paper-I Public Health Dentistry	70	20	10	100	90	10	100	200
2620	Paper II Periodntology	70	20	10	100	90	10	100	200
2630	Paper III Orthodontics & Dentofacial Orthopaedics	70	20	10	100	90	10	100	200
2640	Paper IV Oral Medicine and Radiology	70	20	10	100	90	10	100	200
2650	Paper V Oral and Maxillofacial Surgery	70	20	10	100	90	10	100	200
2660	Paper VI Conservative Dentistry and Endodontics	70	20	10	100	90	10	100	200
2670	Paper VII Prosthodontics & Crown and Bridge	70	20	10	100	90	10	100	200
2680	Paper VIII Pediatric & Preventive Dentistry	70	20	10	100	90	10	100	200

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY (B.D.S. COURSE)

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Human Anatomy including Embryology, Osteology and Histology	100	175		275

General Human Physiology and Biochemistry	120 70	60 60		180 130
Dental Materials	80	240		320
Dental Anatomy, Embryology and Oral Histology	105	250		355
Dental Pharmacology and Therapeutics	70	20		90
General Pathology and Microbiology	55 65	55 50		110 115
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Oral Microbiology	145	130		275
Oral Medicine and Radiology	65		170	235
Pediatric & Preventive Dentistry	65		170	235
Orthodontics & Dental Orthopaedics	50		170	220
Periodontology	80		170	250
Oral and Maxillofacial Surgery	70		270	340
Conservative Dentistry and Endodontics	135	200	370	705
Prosthodontics & Crown and Bridge	135	300	370	805
Public Health Dentistry including Lectures on Tobacco Control & Habit Cessation	60		200	260
Total	**1590**	**1540**	**1989**	**5200**

Note :

There should be a minimum of 240 teaching days each academic year consisting of 8 working hours, including one hour of lunch break.

Internship - 240x8 hours = 1920 clinical hours.

MINIMUM WORKING HOURS FOR EACH SUBJECT OF STUDY (B.D.S. COURSE)

First B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Gen. Human Anatomy including Embryology, Osteology and Histology	100	175		275
General Human Physiology	120	60		180
Biochemistry	70	60		130
Dental Anatomy, Embryology and Oral Histology	105	250		355
Dental Materials	20	40		60
Pre Clinical Prosthodontics & Crown & Bridge	-	100		100
Total	**415**	**685**		**1100**

Second B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Dental Pharmacology and Therapeutics	70	20		90
General Pathology	55	55		110

Microbiology	65	50		115
Dental Materials	60	200		260
Oral Pathology and Oral Microbiology	25	50		75
Pre Clinical Prosthodontics & Crown & Bridge	25	200		225
Pre Clinical Conservative Dentistry	25	200		225
Total	**326**	**775**		**1100**

Third B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
General Medicine	60		90	150
General Surgery	60		90	150
Oral Pathology and Oral Microbiology	120	80		200
Oral Medicine and Radiology	20		70	90
Pediatric & Preventive Dentistry	20		70	90
Orthodontics & Dental Orthopaedics	20		70	90
Periodontology	30		70	100
Oral and Maxillofacial Surgery	20		70	90
Conservative Dentistry and Endodontics	30		70	100
Prosthodontics & Crown and Bridge	30		70	100
Total	**410**	**80**	**750**	**1160**

Fourth B.D.S.

Subject	Lecture Hours	Practical Hours	Clinical Hours	Total Hours
Prosthodontics	80		300	380
Oral Medicine	45		100	145
Periodontics	50		100	150
Public Health	60		200	260
Conservative Dentistry	80		300	380
Oral Surgery	50		200	250
Orthodontics	30		100	130
Pedodontics	45		100	145
Total	**440**		**1400**	**1840**

Provided that nothing contained in the provision of this regulations or statute or rules, regulations or guidance or notifications of the concerned university, or any other law for the time being in force shall prevent any student pursuing his/her 4th year BDS Course who fails in any one or more subjects of 1st semester will carry over those subjects to the 2nd semester and will appear in those subjects together with the subjects of the 2nd semester. A pass in all the eight subjects is mandatory for completion of the 4th BDS Course before undergoing internship programme.

Note :

(1) A pass in all the eight subjects is mandatory for completion of the 4th BDS Course before undergoing internship programme.

(2) Behavioral Science Classes shall commence in 1st Year.

(3) Forensic Odontology shall be covered in the department of Oral pathology and Oral Medicine during 3rd year.
(4) Esthetic Dentistry shall be covered in the Department of Conservative Dentistry and Prosthodontics during Final BDS
(5) Oral Implantology shall be covered in the Department of Maxillofacial Surgery, Prosthodontics & Crown & Bridge and Periodontology during Final BDS
(6) Ethics and Dental Jurisprudence shall be covered in Public Health Dentistry in Final BDS
(7) Electives / Research work to be encouraged during the Final BDS for a period of at least one month (to be spent in a different dental institution(s) in India / Overseas).
(8) It is compulsory to have Comprehensive oral health care training for at least 3 months during Final Year. The department of Public Health Dentistry may be utilised in case the institution does not have separate department for this purpose. Qualified faculty members from the departments of Prosthodontics, Conservative and Periodontics should guide the students along with faculty of Public Health Dentistry Department.
(9) Minimum working hours indicated for each year of study does not include one month mid year vacation and one month of university examination.

FIRST B.D.S. EXAMINATION

Paper I : Human Anatomy, Embryology, Histology & Medical Genetics (2010)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOALS:
The students should gain knowledge and insight into the functional anatomy of the normal human head and neck region, functional histology, an appreciation of the genetic basis of inheritance and disease, and the embryological development of clinically important structures related to general embryology and of head and neck region, so that relevant anatomical & scientific foundation is laid down for the clinical years of the BDS course.

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

(1) Knowledge and understanding
   (a) Know the normal disposition of the structures in the body while clinically examining a patient and while conducting clinical procedures.
   (b) Know the anatomical basis of disease and injury.
   (c) Know the microscopic structure of the various relevant tissues.
   (d) Know the nervous system to locate the site of lesions according to the sensory and/or motor deficits encountered.
   (e) Have an idea about the basis of, critical stages of development, abnormal development, and effects of teratogens, genetic mutations and environmental hazards.
   (f) Know the sectional anatomy of head, neck and brain to read the features in radiographs and pictures taken by modern imaging techniques.
   (g) Know the anatomy of cardio pulmonary resuscitation so making it easier to learn the procedure accurately.

(2) Skills
   (a) To locate various structures of the body and to mark the topography of living anatomy
   (b) To identify various tissues under microscope
   (c) To identify the features in radiographs and modern imaging techniques
   (d) To detect various congenital abnormalities

(3) 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. This insight is gained in a variety of ways:
   (a) Lectures & small group teaching
   (b) Demonstrations
   (c) Dissection of the human cadaver
   (d) Study of dissected specimens
   (e) Osteology

(f) Surface anatomy on living individual
(g) Study of radiographs & other modern imaging techniques.
(h) Study of Histology slides.
(i) Study of embryology models
(j) 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.

3. SYLLABUS:

An Outline of the Course Content

(1) General anatomy: Introduction of anatomical terms and brief outline of various systems of the body.
(2) Regional anatomy and osteology of head & neck with emphasis on topics of dental importance.
(3) General disposition of thoracic, abdominal & pelvic organs
(4) The regional anatomy of the sites of intramuscular & intra vascular injections & lumbar puncture.
(5) General embryology & systemic embryology with respect to development of head & neck.
(6) Histology of basic tissues and of the organs of gastrointestinal tract, respiratory system, endocrine system and excretory system.
(7) Medical genetics.

3.1 Theory

(1) Introduction to:
   (a) Anatomical terms
   (b) Skin superficial fascia & deep fascia
   (c) Cardiovascular system, portal system collateral circulation and arteries.
   (d) Lymphatic system, regional lymph nodes
   (e) Osteology- including ossification & growth of bones
   (f) Myology-including types of muscle tissue & innervation
   (g) Syndesmology- including classification of joints.
   (h) Nervous system
(2) Head & Neck:
   (a) Scalp, face & temple, lacrimal apparatus
   (b) Neck – Deep fascia of neck, posterior triangle, suboccipital triangle, anterior triangle, anterior median region of the neck, deep structures in the neck
   (c) Cranial cavity – meninges, parts of brain, ventricles of brain, dural venous sinuses, cranial nerves attached to the brain, pituitary gland
   (d) Cranial nerves – III, IV, V, VI, VII, IX, XII in detail
   (e) Orbital cavity – Muscles of the eye ball, supports of the eye ball, nerves and vessels in the orbit,
   (f) Parotid gland
   (g) Temporo-mandibular joint, muscles of mastication, infratemporal fossa, pterygo – palatine fossa
   (h) Submandibular region
   (i) Walls of the nasal cavity, paranasal air sinsuses
   (j) Palate
   (k) Oral cavity, Tongue
   (l) Pharynx (palatine tonsil and the auditory tube), Larynx. OSTEOLOGY – Foetal skull, adult skull, individual bones of the skull, hyoid bone and cervical vertebrae

(3) Thorax : Demonstration on a dissected specimen of
   (a) Thoracic wall
   (b) Heart chambers
   (c) Coronary arteries
   (d) Pericardium
   (e) Lungs- surfaces ; pleural cavity
   (f) Diaphragm
(4) Abdomen : Demonstration on a dissected specimen of
   (a) Peritoneal cavity
   (b) Organs in the abdominal & pelvic cavity.
(5) Clinical Procedures :
   (a) Intramuscular injections: Demonstration on a dissected specimen and on a living person of the following sites of injection.
      i. Deltoid muscle and its relation to the axillary nerve and radial nerve.
      ii. Gluteal region and the relation of the sciatic nerve.
      iii. Vastus lateralis muscle.
   (b) Intravenous injections & venesection: Demonstration of following veins in the dissected specimen and on a living person.
      i. Median cubital vein
      ii. Cephalic vein
      iii. Basilic vein
      iv. Long saphenous vein
   (c) Arterial pulsations: Demonstration of arteries on a dissected specimen and feeling of pulsation of the following arteries on a living person.
      i. Superficial temporal
      ii. Facial
      iii. Carotid
      iv. Axillary
      v. Brachial
      vi. Radial
      vii. Ulnar
      viii. Femoral
      ix. Popliteal
      x. Dorsalis pedis
   (d) Demonstration of lumbar puncture on a dissected specimen of the spinal cord, cauda equina & epidural space and the inter vertebral space between L4 & L5.
(6) Embryology :
   (a) Oogenesis, Spermatogenesis, Fertilisation, Placenta, Primitive streak, Neural crest, Bilaminar and trilaminar embryonic disc, Intra embryonic mesoderm formation and fate, notochord formation & fate, Pharyngeal arches, pouches & clefts, Development of face, tongue, palate, thyroid glands, and anomalies in their development, Tooth development in brief.
(7) Histology :
   (a) The Cell :
      i. Basic tissues : Epithelium, connective tissue including cartilage and bone, muscle tissue, Nervous tissue : Peripheral nerve, sensory ganglion, sympathetic ganglion, skin
      ii. Classification of Glands
      iii. Salivary glands (serous, mucous and mixed gland), Blood vessels, Lymphoid tissue,Tooth, lip, tongue, hard palate, Liver, Lung, Trachea, Epiglottis, Thyroid gland,

para thyroid gland, supra renal gland and pituitary gland, Kidney, Ureter, Urinary bladder, gall bladder.

(8) Medical Genetics:

Mitosis, meiosis, chromosomes, gene structure, Mendelism, modes of inheritance

5. BOOKS:

1. SNELL (Richard S.) Clinical Anatomy for Medical Students, Ed. 5, Little Brown & company, Boston.
2. ROMANES (G.J.) Cunningham Manual of Practical Anatomy : Head & Neck & Brain Ed. 15 Vol. III, Oxford Medical publication.
3. Di Fiore's Atlas of Histology
4. Anatomy for dental students by Inderbir Singh
5. Head & Neck & Brain, Vol III by B.D. Chaurasia
6. Human Anatomy for dental students by Mahinder Kumar Anand
7. Human Embryology by Inderbir Singh
8. JAMES E ANDERSON, Grant's Atlas of Anatomy Williams & Wilkins.
9. WILLIAMS , Gray's Anatomy, Ed. 38, Churchill Livingstone
10. EMERY, Medical Genetics.

First BDS (Main) Examination Month Year

Paper I

Human Anatomy, Embryology, Histology & Medical Genetics

(Section A & B)

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Describe Parotid gland under the following headings: (3+3+4) =10
a) Relations
b) Nerve supply
c) Microanatomy

Q.2 Write short notes: 10
a) Cutaneous distribution of Trigeminal nerve with diagram
b) Derivatives of 2nd branchial arch & pouch

Q.3 Describe the parts and constituents of Internal capsule 10

Q.4 Write short notes : 15
a) Mandibular nerve
b) Waldeyer's ring
c) Dangerous layer of scalp

Section B

Q.5 Enumerate Dural venous sinuses. Describe the boundaries, relations and structures passing through the Cavernous sinus (3+1+2+4) = 10

Q.6 Write short notes: 10
a) Histology of Thyroid gland with diagram
b) Blood supply of long bone

Q.7 Describe the Temporo-mandibular joint under the following headings: (3+3+4) = 10
a) Ligaments
b) Movements
c) Muscles producing these movements

Q.8 Write short notes: 15
a) Classify synovial joints giving one example of each
b) Bell's palsy
c) Palatine tonsil

Paper II : Human Physiology and Biochemistry (2020)
(Having Section A & B)

Theory : 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

(1) The broad goal of the teaching undergraduate students in Human 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.
(2) The broad goal of the teaching undergraduate students in Human Biochemistry aims at providing a sound but crisp knowledge on the biochemical basis of the life processes relevant to the human system and to dental/ medical practice.

2. OBJECTIVES:

2.1 Physiology

(1) Knowledge : At the end of the course, the student will be able to:
  (a) Explain the normal functioning of all the organ systems and their interactions for well co-ordinated total body function.
  (b) Assess the relative contribution of each organ system towards the maintenance of the milieu interior.
  (c) List the physiological principles underlying the pathogenesis and treatment of disease.
(2) Skills :
  (a) Conduct experiments designed for the study of Physiological phenomena.
  (b) Interpret experimental and investigative data.
  (c) Distinguish between normal and abnormal data derived as a result of tests which he/she has performed and observed in the laboratory.
(3) Integration:
(a) At the end of the integrated teaching the student shall acquire an integrated knowledge of organ structure and function and its regulatory mechanisms.

2.2 Biochemistry

(1) The contents should be organised to build on the already existing information available to the students in the pre-university stage and reorienting. A mere rehash should be avoided.
(2) 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.
(3) 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.

(a) Need not know the structure of cholesterol. Should know why it cannot be carried free in plasma.
(b) Mutarotation should not be taught. Student should know why amylase will not hydrolyse cellulose.
(c) Need not know the details of alpha – helix and beta – pleats in proteins. Should know why haemoglobin is globular and keratin is fibrous.
(d) Need not know mechanism of oxidative phosphorylation. Should know more than 90% of ATP is formed by this process.
(e) Need not know details of the conversion of pepsinogen to pepsin. Should know hydrochloric acid cannot break a peptide bond at room temperature.
(f) Need not remember the steps of glycogenesis. Should know that excess intake of carbohydrate will not increase glycogen level in liver or muscle.
(g) Need not know about urea or cretinine clearance tests. Should know the basis of increase of urea and creatinine in blood in renal insufficiency.
(h) Need not know the structure of insulin. Should know why insulin level in circulation is normal in most cases of maturity onset diabetes.
(i) Need not know the structural details of ATP. Should know why about 10 g of ATP in the body at any given time meets all the energy needs.
(j) Need not know the mechanism of action of prolylhydroxylase. Should know why the gum bleeds in scurvy.
(k) Need not know structure of Vitamin K. Should know why the basis of internal bleeding arising due to its deficiency.
(l) Need not remember the structure of HMGCoA. Should know why it does not lead to increased cholesterol synthesis in starvation.

3. SYLLABUS:

3.1 Theory

Section A: Physiology

(1) General Physiology
   (a) Homeostasis: Basic concept, Feedback mechanisms
   (b) Structure of cell membrane, transport across cell membrane
   (c) Membrane potentials

(2) Blood
   (a) Composition & functions of blood.
   (b) Specific gravity, Packed cell volume, factors affecting & methods of determination.
   (c) Plasma proteins – Types, concentration, functions & variations.
   (d) Erythrocyte – Morphology, functions & variations. Erythropoiesis & factors affecting erythropoiesis.
   (e) ESR – Methods of estimation, factors affecting, variations & significance.
   (f) Haemoglobin – Normal concentration, method of determination & variation in concentration.
   (g) Blood Indices – MCV, MCH, MCHC – definition, normal values, variations.

(h) Anaemia : Definition, classification, life span of RBC's, destruction of RBC's, formation & fate of bile pigments, Jaundice – types.
(I) Leucocytes : Classification, number, percentage distribution, morphology, functions & variation. Role of lymphocytes in immunity, leucopoiesis, life span & fate of leucocytes.
(j) Thromobocytes – Morphology, number, variations, function & thrombopoiesis.
(k) Haemostatsis : Role of vasoconstriction, platelet plug formation in haemostasis, coagulation factors, intrinsic & extrinsic pathways of coagulation, clot retraction.
(l) Tests of haemostatic function, platelet count, clotting time, bleeding time, prothrombin time – normal values, method & variations. Anticoagulants – mechanism of action. Bleeding disorders.
(m) Blood groups: ABO & Rh system, method of determination, importance, indications & dangers of blood transfusion, blood substitutes.
(n) Blood volume : Normal values, variations.
(o) Body fluids : distribution of total body water, intracellular & extracellular compartments, major anions & cations in intra and extra cellular fluid.
(p) Tissue fluids & lymph : Formation of tissue fluid, composition, circulation & functions of lymph,
(q) Oedema : causes.
(r) Functions of reticuloendothelial system.

(3) Muscle and Nerve
(a) Classification of nerves, structure of skeletal muscle – Molecular mechanism of muscle contraction, neuromuscular transmission. Properties of skeletal muscle. Structure and properties of cardiac muscle & smooth muscle.

(4) Digestive System
(a) Introduction to digestion: General structure of G.I. tract, Innervation. Salivary glands: Structure of salivary glands, composition, regulation of secretion & function of saliva.
(b) Stomach: Composition and functions of gastric juice, mechanism and regulation of gastric secretion.
(c) Exocrine Pancreas – Structure, composition of pancreatic juice, functions of each component, regulation of pancreatic secretion.
(d) Liver : structure, composition of bile, functions of bile, regulation of secretion
(e) Gall bladder : structure, functions
(f) Small intestine – Composition, functions & regulation of secretion of intestinal juice.
(g) Large intestine – Functions.
(h) Motor functions of GIT: Mastication, deglutition, gastric filling & emptying, movements of small and large intestine, defecation.

(5) Excretory System
(a) Structure & functions of kidney, functional unit of kidney & functions of different parts. Juxta glomerular apparatus, renal blood flow.
(b) Formation of Urine: Glomerular filtration rate – definition, determination, normal values, factors influencing G.F.R. Tubular reabsorption – Reabsorption of sodium, glucose, water & other substances. Tubular secretion – secretion of K+, hydrogen and other substances.
(c) Mechanism of concentration & dilution of urine.
(d) Role of kidney in the regulation of pH of the blood.
(e) Micturition : anatomy & innervation of Urinary bladder, mechanism of micturition & abonrmalities.

(6) Body Temperature & Functions of Skin
(7) Endocrinology

(a) General endocrinology – Enumeration of endocrine glands & hormones – General functions of endocrine system, chemistry, mechanism of secretion, transport, metabolism, regulation of secretion of hormones.
(b) Hormones of anterior pituitary & their actions, hypothalamic regulation of anterior pituitary function. Disorders of secretion of anterior pituitary hormones.
(c) Posterior pituitary : Functions, regulation & disorders of secretion.
(d) Thyroid : Histology, synthesis, secretion & transport of hormones, actions of hormones, regulation of secretion & disorders, Thyroid function tests.
(e) Adrenal cortex & Medulla – synthesis, secretion, action, metabolism, regulation of secretion & disorders.
(f) Other hormones – Angiotensin, A.N.F.

(8) Reproduction
(a) Sex differentiation, Physiological anatomy of male and female sex organs, Female reproductive system : Menstrual cycle, functions of ovary, actions of oestrogen & Progesterone, control of secretion of ovarian hormones, tests for ovulation, fertilisation, implantation, maternal changes during pregnancy, pregnancy tests & parturition.
(b) Lactation, composition of milk, factors controlling lactation, milk ejection, reflex, Male reproductive system : spermatogenesis, semen and contraception.

(9) Cardio Vascular System
(a) Functional anatomy and innervation of heart, Properties of cardiac muscle.
(b) Origin & propagation of cardiac impulse and heart block.
(c) Electrocardiogram – Normal electrocardiogram. Three changes in ECG in myocardial infarction.
(d) Cardiac cycle – Phases, pressure changes in atria, ventricles & aorta.
(e) Volume changes in ventricles. Jugular venous pulse, arterial pulse.
(f) Heart sounds : Mention of murmurs.
(g) Heart rate : Normal value, variation & regulation.
(h) Cardiac output: Definition, normal values, one method of determination, variation, factors affecting heart rate and stroke volume.
(i) Arterial blood pressure : Definition, normal values & variations, determinants, regulation & measurement of blood pressure.
(j) Coronary circulation.
(k) Cardio vascular homeostasis – Exercise & posture.

(10) Respiratory System
(a) Physiology of Respiration : External & internal respiration.
(b) Functional anatomy of respiratory passage & lungs.
(c) Respiratory movements: Muscles of respiration, Mechanism of inflation & deflation of lungs.
(d) Intra pleural & intra pulmonary pressures & their changes during the phases of respiration.
(e) Mechanics of breathing – surfactant, compliance & work of breathing.
(f) Spirometry : Lung volumes & capacities definition, normal values, significance, factors affecting vital capacity, variations in vital capacity, FEV & its variations.
(g) Pulmonary ventilation – alveolar ventilation & dead space ventilation.
(h) Composition of inspired air, alveolar air and expired air.
(i) Exchange of gases: Diffusing capacity, factors affecting it.
(j) Transport of Oxygen & carbon dioxide in the blood.
(k) Regulation of respiration – neural & chemical.
(l) Hypoxia, cyanosis, dyspnoea, periodic breathing.
(m) Artificial respiration, pulmonary function tests.

(11) Central Nervous System
  (a) Organisation of central nervous system
  (b) Neuronal organisation at spinal cord level
  (c) Synapse, receptors, reflexes, sensations and tracts
  (d) Physiology of pain
  (e) Functions of cerebellum, thalamus, hypothalamus and cerebral cortex.
  (f) Formation and functions of CSF
  (g) Autonomic nervous system
(12) Special Senses
  (a) Fundamental knowledge of vision, hearing, taste and smell.

Section B : Biochemistry

(1) Chemistry of Bioorganic Molecules
  (a) Carbohydrates: Definition, biological importance and classification, Monosaccharides, Isomerism, anomerism. Sugar derivatives, Disaccharides. Polysaccharides. Structures of starch and glycogen.
  (b) Lipids : Definition, biological importance and classification. Fats and fatty acids. Introduction to compound lipids. Hydrophobic and hydrophilic groups. Cholesterol. Bile salts. Micelle, Bimolecular leaflet.
  (c) Proteins : Biological importance, Aminoacids, Classification. Introduction to peptides, Proteins : Simple and conjugated; globular and fibrous, charge properties, Buffer action, Introduction to protein conformation: Denaturation.
  (d) Nucleic acids : Building untis, Nucleotides, Outline structure of DNA and RNA.
  (e) High energy compounds: ATP, Phosphorylamidines, Thiolesters, Enol phosphates.
(2) Macro-Nutrients and Digestion
  (a) Energy needs: Basal metabolic rate. Dietary carbohydrates, fibres, Dietary lipids, essential fatty acids. Nitrogen balance. Essential amino acids. Protein quality and requirement (methods for evaluation of protein quality to be excluded). Protein calorie malnutrition. Balanced diet.
  (b) Enzymatic hydrolysis of dietary carbohydrates, Mechanism of uptake of monosaccharides. Digestion and absorption of triacylglycerols. Enzymatic hydrolysis of dietary proteins and uptake of amino acids.
(3) Micro-Nutrients
  (a) Vitamins : Definition, classification, daily requirement, sources and deficiency symptoms. Brief account of water soluble vitamins with biochemical functions. Vitamins A functions including visual process. Vitamin D and its role in calcium metabolism. Vitamin E, Vitamin K and gamma carboxylation. Introduction to anti-vitamins and hyper-vitaminosis.
  (b) Minerals : Classification, daily requirement, Calcium and phosphate: sources, uptake, excretion, function, Serum calcium regulation, Iron : sources, uptake and transport.
  (c) Heme and non-heme iron functions, deficiency. Iodine: Brief introduction to thyroxine synthesis. General functions of thyroxine; Fluoride: function, deficiency and excess. Indications of role of other minerals.
(4) Energy Metabolism
  (a) Overview: Outlines of glycolysis, pyruvate oxidation and citric acid cycle. Beta oxidation of fatty acids. Electron transport chain and oxidative phosphyorylation. Ketone body formation and utilisation. Introduction to glycogenesis, glycogenolysis, fatty acid synthesis, lipogenesis and lipolysis. Gluconeogenesis. Lactate metabolism. Protein utilisation for energy. Glucogenic and ketogenic amino acids. Integration of metabolism.

(5) Special Aspects of Metabolism
   (a) Importance of pentose phosphate pathway. Formation of glucuronic acid. Outlines of cholesterol synthesis and breakdown. Ammonia metabolism. Urea formation, Phosphocreatine formation. Transmethylation. Amines, Introduction to other functions of amino acids including one carbon transfer, Detoxication: Typical reactions, Examples of toxic compounds, oxygen toxicity.
(6) Biochemical Genetics and Protein Synthesis
   (a) Introduction to nucleotides; formation and degradation. DNA as genetic material, introduction to replication and transcription. Forms and functions of RNA. Genetic code and mutation. Outline of translation process. Antimetabolites and antibiotics interfering in replication, transcription and translation. Introduction to cancer, viruses and oncogenes.
(7) Enzyme and Metabolic Regulation
   (a) Enzymes: Definition, classification, specificity and active site. Cofactors. Effect of pH, temperature and substrate concentration. Introduction to enzyme inhibitors, proenzymes and isoenzymes. Introduction to allosteric regulation, covalent modification and regulation by induction/ repression. Overview of hormones. Introduction to second messengers, cyclic AMP, calcium ion, inositol triphosphate. Mechanism of action of steroid hormones, epinephrine, glucagon and insulin in brief. Acid base regulation, Electrolyte balance.
(8) Structural Components and Blood Proteins
   (a) Connective tissue: Collagen and elastin, Glycosaminoglycans. Bone structure. Structure of membranes, Membrane associated processes in brief. Exocytosis and endocytosis. Introduction to cytoskeleton. Myofibril and muscle contraction in brief.
   (b) Hemoglobin: Functions introduction to heme synthesis and degradation. Plasma proteins: classification and separation. Functions of albumin. A brief account of immunoglobulins, Plasma lipoproteins: Formation, function and turnover.
(9) Medical Biochemistry
   (a) Regulation of blood glucose. Diabetes mellitus and related disorders. Evaluation of glycemic status. Hyperthyrodism: Biochemical evaluation. Hyperlipoproteinemias and atherosclerosis, Approaches to treatment. Jaundice: Classification and evaluation. Liver function tests: Plasma protein pattern, serum enzymes levels. Brief introduction to kidney function tests and gastric function tests. Acid base imbalance. Electrolyte imbalance: evaluation. Gout, examples of genetic disorders including lysosomal storage disorders, glycogen storage disorders, glucose 6- phosphate dehydrogenase deficiency, hemoglobinopathies, inborn errors of amino acid metabolism and muscular dystrophy (one or two examples with biochemical basis will be adequate). Serum enzymes in diagnosis.

3.2 Practical

Physiology

The following list of practical is minimum and essential. All the practical have been categorised 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 categorised as demonstrations are to be shown to the students during practical classes, however these demonstrations would not be included in the University examinations but questions based on this would be given in the form of charts, graphs and calculations for interpretation by the students.

(1) Procedures
   (a) Enumeration of Red Blood Cells

(b) Enumeration of White Blood Cells
(c) Differential Leucocyte Counts
(d) Determination of Haemoglobin
(e) Determination of Blood Group
(f) Determination of bleeding time and clotting time
(g) Examination of pulse
(h) Recording of Blood Pressure.

(2) Demonstration
(a) Determination of packed cell volume and erythrocyte sedimentation rate
(b) Determination of specific gravity of blood
(c) Determination of erythrocyte fragility
(d) Determination of vital capacity and timed vital capacity
(e) Skeletal muscle experiments.
i. Study of laboratory appliances in experimental physiology. Frog's gastrocnemius sciatic preparation. Simple muscle curve, effects of two successive stimuli, effects of increasing strength of stimuli, effects of temperature, genesis of fatigue and tetanus. Effect of after load and free load on muscle contraction, calculation of work done.
(f) Electrocardiography: Demonstration of recording of normal Electro cardiogram
(g) Clinical examination of cardiovascular and respiratory system.

Biochemistry

(1) Qualitative analysis of carbohydrates
(2) Color reactions of proteins and amino acids
(3) Identification of non-protein nitrogen substance
(4) Normal constituents of urine
(5) Abnormal constituents of urine
(6) Analysis of saliva including amylase
(7) Analysis of milk, Quantitative estimations
(8) Titrable acidity and ammonia in urine
(9) Free and total acidity in gastric juice
(10) Blood glucose estimation
(11) Serum total protein estimation
(12) Urine creatinine estimation, Demonstration
(13) Paper electrophoresis charts/ clinical data evaluation
(14) Glucose tolerance test profiles
(15) Serum lipid profiles
(16) Profiles of hypothyrodisim and hyperthyrodisim
(17) Profiles of hyper and hypoparathyrodism
(18) Profiles of liver function
(19) Urea, uric acid, creatinine profile in kidney disorders
(20) Blood gas profile in acidodis / alkalosis

5. BOOKS:

(1) Guyton : Text book of Physiology, 9th edition.
(2) Ganong; Review of Medical Physiology, 19th edition
(3) Vander, Human physiology, 5th edition
(4) Choudhari; Concise Medical Physiology, 2nd edition
(5) Chaterjee; Human Physiology, 10th edition
(6) A.K. Jain; Human Physiology for BDS students, 1st edition

(7) Berne & Levey; Physiology, 2nd edition
(8) West-Best & Taylor's, Physiological basis of Medical Practise, 11th edition
(9) Rannade; Practical Physiology, 4th edition
(10) Ghai; a text book of practical physiology
(11) Hutchison's; Clinical Methods, 20th edition
(12) Consice text book of Biochemistry (3rd edition) 2001 T.N. Pattabiraman
(13) Nutritional Biochemistry 1995, S. Ramakrishnan and S.V. Rao
(14) Lecture notes in Biochemistry 1984, Kandlish
(15) Text book of Biochemistry with clinical correlations 1997, T.N. Devlin
(16) Harper's Biochemistry, 1996, R.K. Murray et. al
(17) Basic and applied Dental Biochemistry, 1979, R.A.D. Williams & J.C. Elliot

First BDS (Main) Examination Month Year

Paper II

Human Physiology and Biochemistry

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A : Physiology

Q.1 Discuss Calcium metabolism in detail. 10

Q.2 Short Notes: 10
a) Hypoxia
b) Insulin hormone

Q.3 Define Coagulation. Describe the mechanism of coagulation of blood. 10

Q.4 Write short notes on: 15
a) Vitamin-A.
b) B.M.R.
c) Platelets.

Section B : Biochemistry

Q.5 Write classification of carbohydrates with properties of monosaccharides. 10

Q.6 Short Notes: 10
a) Principles of Electrophoresis
b) DNA polymerase

Q.7 Enumerate steps of cholesterol biosynthesis and its regulation. Write a note on bile acids synthesis 10

Q.8 Write short notes on : 15
a) Biological Oxidation
b) Enzyme inhibition
c) Liver function test

Paper III : Dental Anatomy, Embryology and Oral Histology (2030)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be competent to understand dental anatomy, embryology and oral histology.

2. OBJECTIVES:

The student should acquire basic skills in:
(1) Carving of crowns of permanent teeth in wax.
(2) Microscopic study of oral tissues.
(3) Identification of Deciduous & Permanent teeth.
(4) Age estimation by patterns of teeth eruption from plaster casts of different age groups.
(5) Appreciate the normal development, morphology, structure & functions of oral tissues & variations in different pathological/ non-pathological states.
(6) Understand the histological basis of various dental treatment procedures and physiologic ageing process in the dental tissues.
(7) Understand the basic knowledge of various research methodologies.

3. SYLLABUS:

3.1 Theory

Tooth Morphology

(1) Introduction to tooth morphology:
   (a) Human dentition, types of teeth & functions, Palmer's & Binomial notation systems, tooth surfaces; their junctions – line angles & point angles, definition of terms used in dental morphology, geometric concepts in tooth morphology, contact areas & embrasures clinical significance.
(2) Morphology of permanent teeth :
   (a) Description of individual teeth, along with their endodontic anatomy & including a note on their chronology of development, differences between similar class of teeth & identification of individual teeth.
   (b) Variations & Anomalies commonly seen in individual teeth.
(3) Morphology of Deciduous teeth:
   (a) Generalised differences between Deciduous & Permanent teeth.
   (b) Description of individual deciduous teeth, including their chronology of development, endodontic anatomy, differences between similar class of teeth & identification of individual teeth.
(4) Occlusion :
   (a) Definition, factors influencing occlusion – basal bone, arch, individual teeth, external & internal forces & sequence of eruption.

(b) Inclination of individual teeth compensatory curves.
(c) Centric relation & Centric occlusion – protrusive, retrusive & lateral occlusion.
(d) Clinical significance of normal occlusion.
(e) Introduction to & classification of Malocclusion.

Oral Embryology

(1) Brief review of development of face, jaws, lip, palate & tongue, with applied aspects.
(2) Development of teeth:
   (a) Epithelial mesenchymal interaction, detailed study of different stages of development of crown, root & supporting tissues of tooth & detailed study of formation of calcified tissues.
   (b) Applied aspects of disorders in development of teeth.
(3) Eruption of Deciduous & Permanent teeth:
   (a) Mechanisms in tooth eruption, different theories & histology of eruption, formation of cementogingival junction, role of gubernacular cord in eruption of permanent teeth.
   (b) Clinical or applied aspects of disorders of eruption.
(4) Shedding of teeth :
   (a) Factors & mechanisms of shedding of deciduous teeth.
   (b) Complications of shedding.

Oral Histology

(1) Detailed microscopic study of Enamel, Dentine, Cementum & Pulp tissue. Age changes & Applied aspects (Clinical and forensic significance) of histological consideration. Fluoride applications, transparent, dentine, dentine hypersensitivity, reaction of pulp tissue to varying insults to exposed dentine; Pulp calcifications & Hypercementosis.
(2) Detailed microscopic study of Periodontal ligament & alveolar bone, age changes, histological changes in periodontal ligament & bone in normal & orthodontic tooth movement, applied aspects of alveolar bone resorption.
(3) Detailed microscopic study of Oral Mucosa, variation in structure in relation to functional requirements, mechanisms of keratinisation, clinical parts of gingiva, Dentogingival & Mucocutaneous junctions & lingual papillae. Age changes & clinical considerations.
(4) Salivary Glands :
   (a) Detailed microscopic study of acini & ductal system.
   (b) Age changes & clinical consideration.
(5) Temporomandibular (TM) Joint :
   (a) Review of basic anatomical aspects & microscopic study & clinical consideration.
(6) Maxillary Sinus :
   (a) Microscopic study, anatomical variations, functions & clinical relevance of maxillary sinus in dental practice.
(7) Processing of Hard & soft tissues for microscopic study :
   (a) Ground sections, decalcified sections & routine staining procedures.
(8) Basic histochemical staining patterns of oral tissues.

Oral Physiology

(1) Saliva :
   (a) Composition of saliva – variations, formation of saliva & mechanisms of secretion, salivary reflexes, brief review of secretomotor pathway, functions, role of saliva in dental caries & applied aspects of hyper & hypo salivation.
(2) Mastication :

(a) Masticatory force & its measurement – need for mastication, peculiarities of masticatory muscles, masticatory cycle, masticatory reflexes & neural control of mastication.

(3) Deglutition :
   (a) Review of the steps in deglutition, swallowing in infants, neural control of deglutition & dysphagia.

(4) Calcium, phosphorous & fluoride metabolism:
   (a) Source, requirements, absorption, distribution, functions & excretion, clinical considerations, hypo & hypercalcemia and hypo & hyper phosphatemia and flurosis.

(5) Theories of Mineralisation :
   (a) Definition, mechanisms, theories & their drawbacks.
   (b) Applied aspects of physiology of mineralisation, pathological considerations, calculus formation.

(6) Physiology of Taste :
   (a) Innervation of taste buds & taste pathway, physiologic basis of taste sensation, age changes & applied aspects – taste disorders.

(7) Physiology of Speech :
   (a) Review of basic anatomy of larynx & vocal cords.
   (b) Voice production, resonators, production of vowels & different consonants – Role of palate, teeth & tongue.
   (c) Effects of dental prosthesis & appliances on speech & basic speech disorders.

4. BOOKS:

(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

First BDS (III) **Dent.Anat.Embryo.Oral.Histo.-III**
(2030)

First BDS (Main) Examination Month Year

Paper III

Dental Anatomy, Embryology And Oral Histology

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Describe enamel, write in detail the hypo calcified areas of enamel. 10

Q.2 Short Notes: 10
a) CEJ
b) Zones of pulp

Q.3 Explain Periodontal ligament, describe in detail about the principal fibers of PDL. 10

Q.4 Short Notes : 15
a) Osteoblasts
b) HERS
c) Saliva

Section B

Q.5 Classify oral mucous membrane. Describe in detail about keratinized mucosa. 10

Q.6 Short Notes 10
a) TMJ
b) Maxillary sinus

Q.7 Classify cementum. Write in detail about the cells of cementum. 10

Q.8 Short Notes 15
a) Mucous cells
b) Meckel's cartilage
c) Development of tongue

SECOND B.D.S. EXAMINATION

Paper I : General Pathology & Microbiology (2210)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be competent to:

(1) 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.
(2) At the end of this course the students should be aware of various branches of microbiology, importance, significance and contribution of each branch to mankind and other field of medicine.

2. OBJECTIVES:

2.1 Pathology

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

(1) Demonstrate and apply basic facts, concepts and theories in the field of Pathology.
(2) Recognize and analyze pathological changes at macroscopic and microscopic levels and explain their observations in terms of disease processes.
(3) Integrate knowledge from the basic sciences, clinical medicine and dentistry in the study of Pathology.
(4) Demonstrate understanding of the capabilities and limitations of morphological Pathology in its contribution to medicine, dentistry and biological research.
(5) Demonstrate ability to consult other resource materials along with lectures, laboratory and tutorial classes.

2.2 Microbiology

At the end of the course the student should be able 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, Community Dentistry, Periodontics, Oral Surgery, Pedodontics, Conservative Dentistry and Oral medicine in higher classes.
(3) Understand and practice various method of Sterilisation and disinfection in dental clinics.
(4) Have a sound understanding of various infectious diseases and lesions in the oral cavity.
(5) Skills
    (a) Have acquired the skill to diagnose, differentiate various oral lesions.
    (b) Select, collect and transport clinical specimens to the laboratory.
    (c) Carry out proper aseptic procedures in the dental clinic.

3. SYLLABUS:

3.1 Theory

Section A: General Pathology

(1) Introduction to Pathology
   (a) Terminologies
   (b) The cell in health
   (c) The normal cell structure
   (d) The cellular functions

(2) Etiology and Pathogenesis of Disease
   (a) Cell Injury
   (b) Types
      i. Congenital
      ii. Acquired
   (c) Mainly Acquired causes of disease
      i. Hypoxic injury,
      ii. Chemical injury,
      iii. Physical injury,
      iv. Immunological injury

(3) Degenerations
   (a) Amyloidosis
   (b) Fatty change
   (c) Cloudy swelling
   (d) Hyaline change, mucoid degeneration

(4) Cell death & Necrosis
   (a) Apoptosis
   (b) Def, causes, features and types of necrosis
   (c) Gangrene – Dry, wet, gas
   (d) Pathological Calcifications (Dystrophic and metastatic)

(5) Inflammation
   (a) Definition, causes types and features
   (b) Acute inflammation
      i. The vascular response
      ii. The cellular response
      iii. Chemical mediators
      iv. The inflammatory cells
      v. Fate
   (c) Chronic inflammation
   (d) Granulomatous inflammation

(6) Healing
   (a) Regeneration
   (b) Repair
      i. Mechanisms
      ii. Healing by primary intention
      iii. Healing by secondary intention
      iv. Fracture healing
      v. Factors influencing healing process
      vi. Complications

(7) Tuberculosis
   (a) Epidemiology
   (b) Pathogenesis (Formation of tubercle);Pathological features of primary & Secondary T.B.

(c) Complications and Fate

(8) Syphilis
   (a) Epidemiology
   (b) Types and stages of syphilis
   (c) Pathological features
   (d) Diagnostic criterias
   (e) Oral lesions

(9) Typhoid
   (a) Epidemiology
   (b) Pathogenesis
   (c) Pathological features
   (d) Diagnostic criterias

(10) Thrombosis
   (a) Definition, Pathophysiology
   (b) Formation, complications & Fate of a thrombus

(11) Embolism
   (a) Definition
   (b) Types
   (c) Effects

(12) Ischaemia and Infarction
   (a) Definition, etiology, types
   (b) Infarction of various organs

(13) Derangements of body fluids
   (a) Oedema – pathogenesis
      i. Different types

(14) Disorders of circulation
   (a) Hyperaemia
   (b) Shock

(15) Nutritional Disorders
   (a) Common Vitamin Deficiencies

(16) Immunological mechanisms in disease
   (a) Humoral & cellular immunity
   (b) Hypersensitivity & autoimmunity

(17) AIDS and Hepatitis.

(18) Hypertension
   (a) Definition, classification
   (b) Pathophysiology
   (c) Effects in various organs

(19) Diabetes Mellitus
   (a) Def, Classification, Pathogenesis, Pathology in different organs

(20) Adaptive disorders of growth
   (a) Atrophy & Hypertrophy, Hyperplasia, Metaplasia and Dysplasia

(21) General Aspects of neoplasia
   (a) Definition, terminology, classification
   (b) Differences between benign and malignant neoplasms
   (c) The neoplastic cell
   (d) Metastasis
   (e) Etiology and pathogenesis of neoplasia, Carcinogenesis
   (f) Tumour biology
   (g) Oncogenes and anti-oncogenes

(h) Diagnosis
(i) Precancerous lesions
(j) Common specific tumours, Sq papilloma & Carcinoma, Basal cell Carcinoma, Adenoma, Fibroma & Fibrosarcoma, Lipoma and Liposarcoma

Systemic Pathology

(1) Anaemias
   (a) Iron Deficiency anaemia, Megaloblastic anaemia
(2) Leukaemias
   (a) Acute and chronic leukaemias, Diagnosis and clinical features
(3) Diseases of Lymph nodes
   (a) Hodgkin's disease, Non Hodgkins lymphoma, Metastatic carcinoma
(4) Disease of oral cavity
   (a) Lichen planus, Stomatitis, Leukoplakia, Sq cell Ca, Dental caries, Dentigerious cyst, Ameloblastoma
(5) Diseases of salivary glands
   (a) Normal structure, Sialadenitis, Tumours
(6) Common diseases of Bones
   (a) Osteomyelitis, Metabolic bone diseases, Bone Tumours, Osteosarcoma, Giant cell Tumour, Ewing's sarcoma, Fibrous dysplasia, Aneurysmal bone cyst.
(7) Diseases of Cardiovascular system
   (a) Cardiac failure
   (b) Congenital heart disease –
      i. ASD, VSD, PDA
      ii. Fallot's Tetrology, Infective Endocarditis
   (c) Atherosclerosis
   (d) Ischaemic heart Disease
(8) Haemorrhagic Disorders
   (a) Coagulation cascade
   (b) Coagulation disorders
   (c) Platelet function
   (d) Platelet disorders

Section B : Microbiology

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.
(5) Basic knowledge of selection, collection, transport, processing of clinical Specimens and identification of bacteria.
(6) Bacterial Genetics and Drug Resistance in bacteria.
(7) Health Associated Infections & Biomedical Waste Management.

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) Immunohaematology

Systematic Bacteriology

(1) Pyogenic cocci – Staphylococcus, Streptococcus, Pneumococcus, Gonococcus.
   (a) Meningococcus – brief account of each coccus – detailed account of mode of spread, laboratory diagnosis, Chemotherapy and prevention – Detailed account of Cariogenic Streptococci.
(2) Corynebacterium diphtheriae – mode of spread, important clinical features, Laboratory diagnosis, Chemotherapy and Active immunisation.
(3) Mycobacteria – Tuberculosis and Leprosy.
(4) Clostridium – Gas gangrene, food poisoning and tetanus.
(5) Non-sporing Anaerobes – in brief about classification and morphology, in detail about dental pathogens – mechanism of disease production and prevention.
(6) Spirochaete – Treponema pallidum – detailed account of Oral Lesions of syphilis, Borrelia vincentii.
(7) Actinomycetes.

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
   (f) Bacteriophage – structure and significance

Mycology

(1) Brief Introduction
(2) Candidosis – in detail
(3) Brief on oral lesions of systemic mycoses.

Parasitology

(1) Brief Introduction – protozoans and helminths
(2) Brief knowledge about the mode of transmission and prevention of commonly seen parasitic infection in the region.

3.2 Practical

Pathology

(1) Urine- Abnormal constituents
    (a) Sugar, albumin, ketone bodies
(2) Urine - Blood, bile salts, bile pigments
(3) Haemoglobin (Hb) estimation
(4) Total WBC count
(5) Differential WBC Count
(6) Packed cell volume (PCV), Erythrocyte sedimentation Rate (ESR)
(7) Bleeding Time & clotting time
(8) Histopathology Tissue Processing Staining
(9) Histopathology slides
    (a) Acute appendicitis, Granulation tissue, fatty liver
(10) Histopathology slides
    (a) CVC lung, CVC liver, Kidney amyloidosis
(11) Histopathology slides
    (a) Tuberculosis, Actionomycosis, Rhinosporidiosis
(12) Histopathology slides
    (a) Papilloma, Basal cell Ca, Sq cell Ca
(13) Histopathology slides
    (a) Osteosarcoma, osteoclastoma, fibrosarcoma
(14) Histopathology slides
    (a) Malignant melanoma, Ameloblastoma, Adenoma
(15) Histopathology slides
    (a) Mixed parotid tumour, metastatic carcinoma in lymph node

Microbiology

(1) Collection of relevant clinical samples.
    (a) Blood for culture and serological test
    (b) Urine for culture
    (c) Swabs for microscopy and culture
    (d) Body fluids for microscopy and culture
(2) Storage and transport of the clinical specimens
(3) Preparation of smears from clinical material
(4) Microscopic Examination
    (a) Gram stain.
    (b) Ziehl – Neelsen stain
    (c) Stool for ova and cyst
    (d) Blood smear for parasites (MP, Mf).
    (e) Albert stain for diphtheria
(5) Under supervision
    (a) India ink of CSF for Cryptococcus
    (b) Modified Z-N stain for M. leprae.
    (c) KOH for fungal elements
(6) Standard (universal precaution): hand wash, asepsis and antisepsis.
(7) Biomedical waste disposal: Needle, sharps disposal, infectious material
(8) Interpretation of Microbiology reports:
    (a) Serology: VDRL, HIV, Hepatitis, ASO, RF, Widal Test.
(9) Antibiotic sensitivity: Rational use of antibiotics

5. BOOKS:

(1) Robbins – Pathologic Basis of Disease Cotran, Kumar, Robbins
(2) Anderson's Pathology Vol 1 & 2 Editors- Ivan Damjanov & James Linder
(3) Wintrobe's clinical Haematology Lee, Bithell, Foerster, Athens, Lukens
(4) Text book of Microbiology – R. Ananthanarayan & C.K. Jayaram Paniker
(5) Medical Microbiology – David Greenwood et al.
(6) Microbiology – Prescott, et al
(7) Microbiology – Bernard D. Davis, et al
(8) Clinical & Pathogenic Microbiology – Barbara J Howard, et al,
(9) Mechanisms of Microbial diseases – Moselio Schaechter, et al
(10) Immunology an Introduction – Tizard
(11) Immunology 3rd edition – Evan Roitt, et al
(12) Microbiology for dental students - C.P. Baveja, Arya Publications.

Second BDS (I) **Gen.Patho.Micro- I**
(2210)

Second BDS (Main) Examination Month Year

Paper I

GENERAL PATHOLOGY AND MICROBIOLOGY

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A : Pathology

Q.1 Define inflammation. Describe the cellular events of acute inflammation. 10

Q.2 Short notes: 10
a) Apoptosis
b) Scurvy

Q.3 Define & Classify shock. Write the pathogenesis of septic shock. 10

Q.4 Short notes: 15
a) Dental caries
b) Type I hypersensitivity reaction
c) Differences in benign & malignant neoplasms

Section B : Microbiology

Q.5 Enumerate Gram Positive cocci. Describe lab diagnosis of Staphylococci aureus in details. 10

Q.6 Short Notes: 10
a) Dermatophytes
b) Gram negative bacteria

Q.7 Define sterilization. Describe sterilization by moist heat in detail. 10

Q.8 Short Notes: 15
a) Candidiasis
b) Opportunistic infection in HIV
c) Hypersensitivity Type I

Paper II : General and Dental Pharmacology and Therapeutics (2220)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be able to demonstrate rational and scientific basis of therapeutics keeping in view dental curriculum and Profession.

2. OBJECTIVES:

(1) Knowledge : At the end of the course the student shall be able to :
   (a) Describe the pharmacokinetics and pharmacodynamics of essential and commonly used drugs in general and in dentistry in particular.
   (b) List the indications, contraindications; interactions, and adverse reactions of commonly used drugs with reason.
   (c) Tailor the use of appropriate drugs in disease with consideration to its cost, efficiency, safety for individual and mass therapy needs.
   (d) 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.
   (e) Integrate the rational drug therapy in clinical pharmacology.
   (f) Indicate the principles underlying the concepts of "Essential drugs".
(2) Skills : At the end of the course the student shall be able to :
   (a) Prescribe drugs for common dental and medical ailments.
   (b) appreciate adverse reactions and drug interactions of commonly used drugs.
   (c) Observe experiments designed for study of effect of drugs.
   (d) Critically evaluate drug formulations and be able to interpret the clinical pharmacology
(3) Integration: Demonstrate practical knowledge of use of drugs in clinical practice through integrated teaching with clinical departments.

3. SYLLABUS:

3.1 Theory

General Pharmacology:

(1) Introduction to Pharmacology and definitions.
   (a) General principles of pharmacology, sources and nature of drugs dosage forms; routes of drug administration, prescription writing; pharmacokinetics (absorption, distribution, metabolism and excretion of drugs and kinetics of elimination), pharmacodynamics, mode of action of drugs, combined effects of drugs, receptor mechanism of drug action, factors modifying drug action, pharmacovigilance, adverse drug reactions; drug interactions, implications of General Principles in clinical dentistry.

(2) Autonomic nervous system drugs; sympathomimetics, parasympothomimetics, antiadrenergic drugs and parasympatholytics, implications of Autonomic drugs in clinical dentistry.
(3) CNS drugs; ethyl alcohol, General anaesthetics, pre anaesthetic medication, sedatives, hypnotics, opioid and non opioid analgesics psychotropic drugs, anti epileptics, implications of these drugs in clinical dentistry.
(4) Peripheral nervous system – local anaesthetics, skeletal muscle relaxants, implications of these drugs in clinical dentistry.
(5) Cardiovascular drugs; Cardiac glycosides and treatment of congestive heart failure; antihypertensive drugs, vasopressor agents, treatment of shock and myocardial infarction, Antianginal agents and diuretics, implications of these drugs in clinical dentistry.
(6) Autocoids: histamine, antihistamines, prostaglandins, leukotrienes and bronchodilators, implications of Autocoids in clinical dentistry.
(7) Drugs acting on blood : coagulants and anticoagulants, hematinics, implications of these drugs in clinical dentistry.
(8) G.I.T. Drugs: Purgatives, anti-diarrhoeal, treatment of peptic ulcer, anti-emetics, implications of these drugs in clinical dentistry.
(9) Endocrines; Emphasis on treatment of diabetes and glucocorticoids, thyroid and antithyroid agents, drugs affecting calcium balance and anabolic steroids, female and male sex hormones, implications of these drugs in clinical dentistry.
(10) Introduction to chemotherapy: sulfonamides, fluoroquinolones and urinary antiseptics; penicillins, cephalosporins and other beta lactam antibiotics; aminoglycosides; macrolides; broad spectrum antibiotics – tetracyclines and chloramphenicol; chemotherapy of tuberculosis and leprosy; antifungal drugs; antiviral drugs; drugs for anaerobic infection; antiseptics and disinfectants; implications of antimicrobial therapy in clinical dentistry.
(11) Vitamins : Water soluble vitamins, Vit. A, Vit. D, Vit. K. and Vit. E, implications of Vitamins in clinical dentistry.
(12) Pharmacotherapy of emergencies in dental office and emergency drugs tray implications of Pharmacotherapy in clinical dentistry.
(13) Chelating agents – BAL, EDTA and desferrioxamine,

Dental Pharmacology:
(1) Anti-septics, astringents, obtundents, mummifying agents, bleaching agents, styptics, disclosing agents, dentifrices, mouth washes, anti caries, anti plaque and anti gingivitis agents, fluorides.
(2) Pharmacotherapy of common oral conditions in dentistry.

3.2 Practical
(1) To familiarise the student with the methodology; prescription writing and dispensing. Rationale of drug combinations of marketed drugs.

5. BOOKS:
(1) Sharma HL, Sharma KK, Gupta DK. Dental Pharmacology 2nd Edition. Paras Medical publisher 2014
(2) Khanna NK. Principles of Pharmacology for dental students. 3rd edition. CBS publisher 2010.
(3) Tripathi K.D., Essentials of Pharmacology for dentistry. 2nd edition. Jaypee Publishers 2011.
(4) Shanbhag TV. Pharmacology for dental students. 2nd edition, Elsevier publisher 2012.

(2220)

Second BDS (Main) Examination Month Year
Paper II
General and Dental Pharmacology and Therapeutics
Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Discuss the factors affecting response of drugs. Describe briefly Pharmacodynamics and pharmacokinetics with suitable examples. 10

Q.2 Write short notes on: 10
a) Obtundants.
b) Mummifying Agents.

Q.3 Discuss mechanism of action, uses, side effects and contraindications of Aspirin. 10

Q.4 Discuss the pharmacotherapeutics of the following class of agents with special reference to their use in clinical dentistry: 15
a) Cephalosporin.
b) Disclosing agents.
c) Styptics

Section B

Q.5 Classify nonsteroidal anti-Inflammatory drugs. Discuss the mechanism of action, side effects and contra-indications of Ibuprofen. 10

Q.6 Explain the pharmacological basis of the following: 10
a) Propranolol should not be given to patient of Bronchial Asthma.
b) Phenobarbitone should not be given to pregnant lady.

Q.7 Classify General anaesthetic agents. Write a note on preanaesthetic medication and uses of general anaesthetics in clinical dentistry? 10

Q.8 Write short notes on: 15
a) Local Anaesthetics.
b) Proton pump inhibitors.
c) Frusemide

Paper III : Dental Materials (2230)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

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 specialised branches of chemistry, practically all engineering applied sciences and biological characteristics, the science of dental material emerged as a basic science in itself with its own values and principles.

2. AIMS:

At the end of the course the student should be able to:
(1) Understand basic chemical and physical properties of Dental materials as they are related to its manipulation
(2) Understand criteria of selection and which will enable to discriminate between facts and propaganda with regards to claims of manufacturers.

3. OBJECTIVES:

At the end of the course the student should be able to:
(1) Understand the evolution and development of science of dental material
(2) Explain purpose of dental materials to personnel concerned with the profession of the dentistry.
(3) Understand its physical and chemical properties.
(4) Understand biomechanical requirements of particular restorative procedure.
(5) Lay down standards or specifications of various materials to guide the manufactures as well as to help professionals.
(6) Search for newer and better materials which may fulfill our requirements.
(7) Understand and evaluate the claims made by manufactures of dental materials.

4. SYLLABUS:

4.1 Theory

Structure of Matter and Principles of Adhesion

(1) 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.

Important Physical Properties Applicable to Dental Materials

(1) Physical properties 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 i.e. 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 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.

Biological Considerations in use of Dental Materials

(1) Requirement of materials with biological compatibility. Classification or 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, mutagenicity and carcinogenicity. Disinfection of dental materials for infection control.

Gypsum & Gypsum Products

(1) Gypsum – its origin, chemical formula, Products manufactured from gypsum.
(2) Dental plaster, Dental stone, Die stone, high strength, high expansion stone.
(3) Application and manufacturing procedure of each, macroscopic and microscopic structure of each. Supplied as and commercial names.
(4) Chemistry of setting, setting reaction, theories of setting, gauging water, Microscopic structure of set material.
(5) Setting time : working time and setting time, measurement of setting time and factors controlling setting time.
(6) Setting expansion, Hygroscopic setting expansion – factors affecting each
(7) Strength : wet strength, dry strength, factors affecting strength, tensile strength
(8) Slurry – need and use.
(9) Care of cast
(10) ADA classification of gypsum products
(11) Description of impression plaster and dental investment
(12) Manipulation including recent methods of advanced methods.
(13) Disinfection : infection control, liquids, sprays, radiation
(14) Method of use of disinfectants
(15) Storage of material – shelf life

Impression Materials used in Dentistry

(1) Impression plaster, Impression compound, Zinc oxide eugenol impression paste & bite registration paste incl., non eugenol paste, Hydrocolloids, reversible and irreversible, Elastomeric impression materials. Polysulphide, Condensation silicones, Additon silicones, Polyether, Visible light cure polyether urethane dimethacrylate, Historical background and development of each impression material.
(2) Definition of impression, Purpose of making impression, ideal properties required and application of material, Classification as per ADA specification, general & individual impression material.
(3) 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 advancements in material and mixing devices. Study of properties: Working time, setting time, flow, accuracy, strength, flexibility, tear strength, dimensional stability, compatibility with cast & die materials incl., electroplating Biological propertis: tissue reaction, Shelf life & storage of material, Infection control – disinfection, Advantages & disadvantages of each material.

Synthetic Resins used in Dentistry

(1) Historical background and development of material, Denture base materials and their classification and requirement
(2) Classification of resins
(3) Dental resins – requirements of dental resins, applications, polymerisation, polymerisation mechanism stage in addition polymerisation, inhibition of polymerisation, co polymerization, molecular weight crosslinking, plastisizers, Physical properties of polymers, polymer structures types of resins.

Acrylic Resins

(1) Mode of polymerisation: Heat activated, Chemically activated, Light activated, Mode of supply, application, composition, polymerisation reaction of each Technical consideration: 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.

Restorative Resins

(1) 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 concersion, Polymerisation shrinkage Classification of Composites: Application, con position and properties of each Composites of posterior teeth, Prosthodontics resins for vencering. Biocompatibility microleakage pulpal reaction, pulpal protection Manipulation of composites: Techniques of insertion of Chemically activated, light activated, dual cure polymer sation, Finishing and polishing of restoration, Repair of composites Direct 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.

Metal and Alloys

(1) Structure and behaviour of metals, Solidification of metals, mechanism of crystallisation amorphous & crystalline, Classification of alloys, Solid solutions, Constitutes or equilibrium phase diagrams: Electric alloys, Physical properties Peritectic alloys, Solid state reaction other binary systems: Metallography & Heart treatment. Tarnish and corrosion. Definition: Causes of corrosion, protection against corrosion, Corrosion of dental restorations, clinical significance of galvanic current Dental Amalgam.

History

(1) Definition of dental amalgam, application, Alloy classification, manufacture of alloy powder composition – available as.
(2) Amalgamation : setting reaction & resulting structure, properties, Microleakage

(3) Dimensional stability, Strength, Creep, Clinical performance
(4) Manipulation: Selction 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

(1) Properties of pure gold, mode of adhesion of gold for restoration forms of direct filling gold for using as restorative material.
(2) Classification : Gold Foil, Electrolytic precipitate, powdered gold.
(3) Manipulation: Removal of surface impurities and compaction of direct filling gold.
(4) Physical properties of compacted gold, Clinical performance.

Dental Casting Alloys

(1) Historical background, desirable properties of casting alloys.
(2) 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)
(3) Classification of casting alloys: BY function & description.
(4) Recent classification, High noble (HN), Noble (N) and predominantly base metal (PB)
(5) 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.
(6) Casting shrinkage and compensation of casting shrinkage. Biocompatability – 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 consideration in casting. Heat source, furnaces.

Dental Waxes Including Inlay Casting Wax

(1) Introduction and importance of waxes. Sources of natural waxes and their chemical nature. Classification of Waxes :
(2) 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.
(3) Manipulation of inlay wax : Instruments & equipment required, including electrically heated instruments metal tips and thermostatically controlled was baths.
(4) Other waxes: Applications, mode of supply & properties.
(5) Casting Wax, Base plate wax, Processing wax, Boxing wax, Utility wax, Sticky wax, Impression wax for corrective impressions, Bite registration wax.

Dental Casting Investments

(1) Definition, requirements, classification
(2) Gypsum bonded- classification Phosphate bonded, Silica bonded
(3) Mode of Supply : Composition, application, setting mechanism, setting time & factors controlling.

(4) 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.

Soldering, Brazing and Welding

(1) Need of joining dental appliances, Terms & Definition
(2) 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 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.

Wrought Base Metal Alloys

(1) Applications and different alloys used mainly for orthodontics purpose
   (a) Stainless steel
   (b) Cobalt chromium nickel
   (c) Nickel titanium
   (d) Beta titanium
(2) Properties required for orthodontic wires, working range, springiness, stiffness, resilience, Formability, ductility, ease of joining, corrosion resistance, stability in oral environment, bio compatibility.
(3) 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.
   (a) Wrought cobalt chromium nickel alloys, composition, allocation, properties, heat treatment, physical properties.
   (b) Nickel – Titanium alloys, shape, memory & super elastic.
   (c) Titanium alloys, application, composition, properties, welding, Corrosion resistance

Dental Cements

(1) Definition & Ideal requirements
(2) Cements: Silicate, Glass ionomer, metal modified glass ionomer, resin modified glass ionomer, zinc oxide eugenol, modified zinc oxide eugenol, zinc phosphate, zinc silico phosphate, zinc poly carboxylate, Cavity liners and cement bases, Varnishes Calcium hydroxide, Gutta percha
(3 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.
(4) Agents for pulpal protection, Modifications and recent advances, Principles of cementation. Special emphasis on cavity liners and cement bases and luting agents.

Dental Ceramics

(1) Historical background & General applications.
(2) Dental ceramics : definition, classification, application, mode of supply, manufacturing procedure, methods of strengthening, Properties of fused ceramic: Strength and factors affecting, modulus of elasticity, surface hardness, wear resistance, thermal properties

specific gravity, chemical stability, esthetic properties, biocompatability, technical considerations.

(3) Metal Ceramics (PFM): Alloys – Types and composition of alloys. Ceramic – Type and composition.

(4) 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, estable ceramics, glass infiltrated alumina core ceramic (In ceram), ceramic veners, inlays and onlays, and CAD-CAM ceramic. Chemical attack of ceramic by fluoride. Porcelain furnaces.

Abrasion & Polishing Agents

(1) Definition of abrasion and polishing. Need of abrasion and polishing. Types of abrasives: Finishing, polishing & cleaning. Types of abrasives: Diamond, Emery, aluminium oxides garnet, pumice, Kieselgurh, tripoli, rouge, tin oxide, chalk, chromic oxide, sand, carbides, diamond, zirconium silicate Zinc oxide.

Abrasive Action

(1) Desirable characteristics of an abrasive, Rate of abrasion, Size of particle, pressure and speed.

(2) Grading of abrasive & polishing agents, Binder, Polishing materials & procedure used. Technical consideration – Material and procedure used for abrasion and polishing, Electrolytic polishing and burnishing.

Die and Counter Die Materials including Electroforming and Electropolishing

(1) Types – Gypsum products, Electroforming, Epoxy resin, Amalgan.

Dental Implants

(1) Evolution of dental implants, types and materials.

Mechanics of Cutting

(1) Burs and points.

(2) 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.

5. BOOKS:

(1) Phillips Science of Dental Materials – 10th edn. – Kenneth J. Anusavice

(2) Restorative Dental Materials – 10 edn. Robert G. Craig

(3) Notes on Dental Materials – E.C. Combe

Second BDS (III) **Dent. Mater. III**
(2230)

Second BDS (Main) Examination Month Year

Paper III
Dental Materials
Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Classify dental cements. Discuss the chemistry, uses and advantages of GIC. 10

Q.2 Short Notes: 10
a) Tarnish and corrosion
b) Dentin bonding agents

Q.3 Classify Dental Amalgam. Discuss the composition, properties and manipulation of high copper amalgam 10

Q.4 Short Notes: 15
a) Annealing
b) Cavity liners and base
c) Malleability and ductility

Section B

Q.5 Classify impression materials. Discuss the composition, properties, uses and manipulation of alginate impression material 10

Q.6 Short Notes 10
a) Gypsum bonded investment
b) Inlay wax

Q.7 Classify dental ceramics. Discuss the composition, properties and manipulation of feldspathic porcelain 10

Q.8 Short Notes 10
a) Casting defects
b) Polishing and finishing agents
c) Separating media

PRE-CLINICAL PROSTHODONTICS (2240)

Theory : 25 hrs
Practicals -200 hrs (10 hrs / week)

1. SYLLABUS :

1.1 Theory

Introduction to Prosthodontics - Scope and Definition

(1) Masticatory apparatus and function:
   (a) Maxillae & Mandible with & without teeth.
   (b) Muscles of mastication and accessory muscles of mastication.
   (c) Brief anatomy of TMJ.
   (d) Mandibular movements.
   (e) Functions of teeth.
(2) Branches of Prosthodontics and types of prostheses:
   (a) Scope & limitation.
   (b) Appliance v/s prosthesis.
   (c) Dental prosthesis v/s non-dental prosthesis.
(3) Effect of loss of teeth:
   (a) On general health.
   (b) On masticatory apparatus.
   (c) Need to replace lost teeth.
(4) Outline of Prosthodontics:
   (a) Types of Prosthesis.
   (b) Requirements of prosthesis- Physical, biological, esthetic considerations.

Introduction to components of Prosthesis

(1) Complete Denture Prosthesis:
   (a) Various surfaces (Border and surface anatomy).
   (b) Components - Base and Teeth.
(2) Removable Partial Denture:
   (a) Classification.
   (b) Major and minor Connectors.
   (c) Direct retainers.
   (d) Rests.
   (e) Indirect retainers.
   (f) Denture base.
   (g) Artificial teeth.
(3) Fixed Partial Denture:
   (a) Classification.
   (b) Retainers.
   (c) Pontics.
   (d) Connectors.

All related definitions and terminologies from Glossary of Prosthodontic Terms (GPT)

(1) Model
(2) Cast
(3) Impression
(4) Occlusion rim
(5) Temporary denture base

(6 Permanent denture base
(7) Occlusion
(8) Face Bow & Articulator
(9) Jaw relation - orientation, vertical and centric Christensten's phenomenon
(10) Key of occlusion
(11) Balanced occlusion
(12) Abutment etc…

Introduction to mouth preparation - in brief

(1) Complete Dentures
  (a) General considerations
  (b) Pre-prosthetic surgery
(2) Removable partial dentures
  (a) General considerations
  (b) Occlusal rest preparation
  (c) Modifying contours of the abutments
  (d) Guide planes
  (e) Elimination of undercuts
(3) Fixed Partial Dentures
  (a) Principles of tooth preparation - in brief
  (b) Retainers in brief

Introduction to all steps involved in fabrication of Complete Denture Prosthesis

(1) Clinical Steps in brief and laboratory steps in detail
(2) Impression Making
  (a) Definition and requirements and types of impressions
  (b) Various materials used for different impressions
  (c) Different theories of impression making
(3) Impression Trays
  (a) Definition, classification, materials, advantages and disadvantages
  (b) Selection of trays
  (c) Special trays
  (d) Spacer design
(4) Introduction to jaw relation record
  (a) Definition and type
  (b) Temporary denture base - Indications, Advantages, Disadvantages, materials used
  (c) Occlusion rims - materials, shape, dimensions
  (d) Clinical procedures of jaw relation recording in brief
(5) Articulators and face bow
  (a) Basic out line
  (b) Need for articulators
  (c) Definition, classification, parts, advantages, disadvantages of articulators
  (d) Definitions, classification, parts, advantages, disadvantages and purpose of face bow transfer
  (e) Demonstration of face bow transfer to an articulator on a dummy
(6) Selection of Teeth
  (a) Various guidelines for selection of teeth including dentogenic concept
  (b) Arrangement of teeth in detail with various factors of esthetics, overjet, overbite etc
(7) Occlusion
  (a) Balanced Occlusion - need and advantages
  (b) Various factors of balanced occlusion

(8) Try in Procedures
    (a) Anterior try - in
    (b) Posterior try - in
    (c) Waxing, carving, polishing and final try - in
(9) Processing Procedures
    (a) Flasking
    (b) Dewaxing
    (c) Packing
    (d) Curing, Finishing and polishing of acrylic dentures.

1.2 Practical

(1) Preparation of primary cast
(2) Fabrication of custom tray
(3) Fabrication of record base
(4) Fabrication of wax occlusal rims and articulation.
(5) Arrangement of artificial teeth in class I, II & III ridge relation.
(6) Students shall submit one processed denture mounted on an articulator for examination
(7) Surveying of partially edentulous models and preparing modified master cast.
(8) Construction of ideal RPD
(9) Denture Repair

2. SCHEME OF EXAMINATION:

(1) Practical Exercise: (Duration-3 hrs) : 60 Marks
    (a) Arrangement of teeth in class I relation, Waxing, Carving, Polishing
(2) University Viva-Voce : 20 marks
(3) Internal Assessment : 20 marks

3. BOOKS:

(1) Boucher, Prosthodontic Treatment of Edentulous Patients
(2) Heartwell, Syllabus of Complete Denture
(3) Tylman's, Theory and Practice of Fixed Prosthodontics
(4) Mc.Craken, Removable Partial Denture
(5) Skinners, Science of Dental Materials
(6) Craig, Dental Materials, Properties & Manipulation

PRE-CLINICAL CONSERVATIVE DENTISTRY & ENDODONTICS (2250)

1. SYLLABUS:

1.1 Theory

(1) Introduction to Conservative Dentistry.
(2) Definition, Aim & Scope of Conservative Dentistry & Endodontics
(3) Nomenclature of dentition; Tooth Numbering systems
(4) Restoration - Definition & Objectives
(5) Hand Instruments - Classification, Nomenclature, Design, Formula of hand cutting instruments, Grasps and Rests, Sterilization.
(6) Rotary Cutting instruments - Burs, Design, Types. Various speeds in tooth preparation. Hazards with cutting instruments.
(7) Dental caries – Aetiology, classification, caries terminology
(8) Fundamentals of Tooth preparation
(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.
(11) Contact and contour of teeth – different methods of tooth separation
(12) Matrices, Retainers, Wedges – methods of wedging
(13) Finishing & polishing of restorations.
(14) Chair side positions – patient and operator positions
(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.
(16) Access cavity and brief introduction of root canal instruments

1.2 Practical

(1) Exercises to improve the dexterity:
  (a) Preparation of plaster models of teeth
  (b) Finishing and polishing of plaster models
  (c) Marking of cavity as per Black's classification on these plaster models for Dental Amalgam fillings and inlays.
  (d) Preparation of cavities for Amalgam fillings and Inlays on plaster model
  (e) Restoration of the prepared cavities with modelling wax.
(2) Exercises for cavity preparation of Dental Amalgam Restoration on natural/ivory Teeth
  (a) Mounting of the Natural/Ivory teeth on phantom head.
  (b) Preparation of Cl. I/Cl.I Comp./Cl.II/Cl. V /M.O.D. cavities of posterior teeth with special emphasis on Cl. II cavities.
  (c) Cavity lining on all the prepared cavities
  (d)) Restoration & polishing of all teeth restored with Dental amalgam.
(3) Exercises for anterior teeth restoration.
  (a) Preparation of CI. III/Cl. IV cavities in anterior teeth.
  (b) Preparation of wax pattern for the same with inlay wax.

1.3 Demonstrations Only

(1) Casting procedures
(2) Restoration of fractured anterior teeth with composite resins.
(3) Opening of root canal for anterior/ posterior teeth.

Third B.D.S. Examination

Paper I : General Medicine (2410)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. OBJECTIVES:

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

(1) Special precautions/ contraindication of anaesthesia and various dental procedures in different systemic diseases.
(2) Oral manifestations of systemic diseases.
(3) Medical emergencies in dental practice.

A dental student should be taught in such a manner 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.

2. CLINICAL TRAINING:

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

3. SYLLABUS:

(1) Aims of medicine, Definitions of signs, symptoms, diagnosis, differential diagnosis treatment & prognosis.
(2) Infection - Enteric fever, AIDS, herpes simplex, herpes zoster, Syphilis diptheria.
    (a) Infectious mononuclosis mumps, measles, rubella, malaria
(3) G.I.T.:
    (a) Stomatitis, gingival hyperplasia, dysphagia, acid peptic disease, jaundice, acute and chronic hepatitis, cirrhosis of liver ascites.
        i. Diarrhea
        ii. Dysentery
        iii. Amoebiasis
        iv. Malabsorption
(4) CVS - Acute rheumatic fever, rheumatic valvular heart disease, hypertension, ischemic heart disease, infective endocarditis, common arrhythmias, congenital heart disease, congestive cardiac failure.
(5) Respiratory System - Pneumonia, COPD, Pulmonary TB, Bronchial asthma:
    (a) Lung Abscess
    (b) Pleural effusion
    (c) Pneumothorax
    (d) Bronchiectasis

(e) Lung cancers

(6) Hematology - Anemias, bleeding & clotting disorders, leukemias, lymphomas, agranulocytosis, splenomergaly, oral manifestations of hematologic disorders, generalized

(7) Renal System, Acute nephritis, Nephrotic syndrome:
   (a) Renal failure

(8) Nutrition - Avitaminosis
   (a) Balanced diet
   (b) PEM
   (c) Avitaminosis

(9) CNS - Facial palsy, facial pain including trigeminal neuralgia, epilepsy, headache including migraine:
   (a) Meningitis
   (b) Examination of comatose patient
   (c) Examination of cranial nerves

(10) Endocrines - Diabetes Melitus Acromegaly, Hypothyroidism, Thyrotoxicosis, Calcium metabolism and parathyroids:
   (a) Addison's disease, Cushing's syndrome.

(11) Critical care - Syncope, cardiac arrest, CPR, shock:
   (a) Acute LVF
   (b) ARDS

Third BDS (Main) Examination Month Year

Paper I

General Medicine

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Describe causes, clinical features and treatment of Acute Diarrhea. 10

Q.2 Short Notes: 10
a) Types of Diabetes Mellitus
b) Depression
c) Tuberculosis

Q.3 Describe the etiology, clinical features and management of infective endocarditis. 10

Q.4 Short Notes: 15
a) Iron Deficiency anemia
b) Treatment of coronary artery disease
c) Treatment of Bronchial Asthma

Section B

Q.5 Write Clinical Features, investigations and treatment of Pulmonary Tuberculosis. 10

Q.6 Short Notes: 10
a) Epilepsy
b) Cirrhosis of liver

Q.7 Describe complications and treatment options of type 2 diabetes mellitus. 10

Q.8 Short Notes: 15
a) Opportunistic infections of HIV
b) Causes of splenomegaly
c) Herpes zoster.

Paper II: General Surgery (2420)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be able to:
(1) Semonstrate understanding of general surgery relevant to dentistry

2. OBJECTIVES:

At the end of the course the student should be able to:
(1) Demonstrate knowledge of relevant diseases and surgical ailments related to head and neck region
(2) Differentiate benign and malignant lesions and decide if patient requires further evaluation

3. SYLLABUS:

3.1 Theory

(1) History of Surgery:
  (a) The development of surgery as a specialty over the years, the contributions made by various scientists, teachers and investigators and the relations of various specialties in the practice of modern surgery.
(2) General Principles of Surgery
  (a) Introduction to various aspects of surgical principles as related to orodental diseases. Classification of diseases in general. and their relevance to routine dental practice.
(3) Wounds:
  (a) Classification, wound healing, repair, treatment of wounds, medico-legal aspects of accidental wounds and complications of wounds.
(4) Inflammation:
  (a) Soft and hard tissues. Causes of inflammation, varieties, treatment and sequelae.
(5) Infections:
  (a) Acute and chronic abscess, skin infections, cellulitis, carbuncle, and erysepelas. Specific infections such as tetanus, gangrene, syphilis, gonorrhoea, tuberculosis, Actinomycosis, Vincent's angina, cancrum oris. Pyaemia, toxaemia and septicaemia.
(6) Transmissible Viral Infections:
  (a) HIV and Hepatitis B with special reference to their prevention and precautions to be taken in treating patients in a carrier state.
(7) Shock and Haemorrhage
  (a) 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 - transmission, clinical features and management especially in relation to minor dental procedures.

(8) Tumours, Ulcers, Cysts, Sinus and Fistulae :
   (a) Classification, clinical examination and treatment principles in various types of benign and malignant tumours, cysts, ulcers, sinus and fistulae.
(9) Diseases of Lymphatic System :
   (a) Especially those occurring in head and neck region. Special emphasis on identifying diseases such as tubercular infection, lymphomas, leukaemias, metastatic lymph node diseases.
(10) Diseases of the Oral Cavity:
   (a) 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.
(11) Diseases of Larynx, Nasopharynx :
   (a) Infections and tumours affecting these sites. Indications, procedure and complications of tracheostomy.
(12) Nervous System:
   (a) 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 presentation and treatment.
(13) Fractures :
   (a) General principles of fractures, clinical presentation and treatment with additional reference to newer methods of fracture. Special emphasis on fracture healing and rehabilitation.
(14) Principles of Operative Surgery :
   (a) 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.
(15) Anomalies in Development of Face :
   (a) Surgical anatomy and development of face. Cleft lip and cleft palate-principles of management.
(16) Disease of Thyroid and Parathyroid:
   (a) Surgical anatomy, pathogenesis, clinical features and management of dysfunction of thyroid and parathyroid glands. Malignant diseases of the thyroid-classification, clinical features and management.
(17) Swellings of the Jaw:
   (a) Differential diagnosis and management of different types of swellings of the jaw.
(18) Salivary glands : Surgical anatomy, pathogenesis, investigation & management

3.2 Practical:

(1) Biopsy :
   (a) Different types of biopsies routinely used in surgical practice.
   (b) Skills to be developed by the end of teaching is to examine a routine swelling, ulcer and other related diseases and to perform minor surgical procedures such as draining an abscess, taking a biopsy, putting skin stitches, removal of stitches, nasogastric intubation, IV cannulation etc.

Third BDS (Main) Examination Month Year

Paper II

General Surgery

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Define shock, classification of shock, clinical features and management of various types of shock. 10

Q.2 Short Notes on: 10
a) Carbuncle
b) Wound Healing

Q.3 Enumerate swelling in midline of neck, various stages of Tubercular Lymphadenitis and its management. 10

Q.4 Short notes: 15
a) Gangrene.
b) Basel Cell Carcinoma.
c) Complications of Blood Transfusion.

Section B

Q.5 Classify fracture mandible and describe various types of management. 10

Q.6 Short notes: 10
a) Trigeminal Neuralgia.
b) Indications of Tracheostomy and its complications.

Q.7 Describe clinical features and pathogenesis of Thyrotoxicosis and its management. 10

Q.8 Short notes: 15
a) Different Biopsies in surgical practice
b) Pre malignant conditions of oral cavity
c) Cleft Lip and Palate

Paper III : Oral Pathology & Oral Microbiology (2430)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be able to demonstrate understanding of relevant clinical application of oral pathology and oral microbiology to practice of dentistry.

2. OBJECTIVES:

(1) Knowledge : At the end of the Oral Pathology & Oral Microbiology course, the student should be able to comprehend-
   (a) Different types of pathological processes that involve the oral cavity.
   (b) Manifestations of common diseases, their diagnosis & correlation with clinical pathological processes.
   (c) Oral manifestations of systemic diseases to help in correlating with systemic physical signs & laboratory findings.
   (d) Physical signs & laboratory findings.
   (e) Underlying biological principles governing treatment of oral diseases.
   (f) Principle of certain basic aspects of forensic odontology.

(2) Skills
   (a) Microscopic study of common lesions affecting oral tissues through microscopic slides & projection slides.
   (b) Study of the disease process by surgical specimens.
   (c) Study of teeth anomalies/ polymorphisms through tooth specimens & plaster casts.
   (d) Microscopic study of plaque pathogens.
   (e) Study of haematological preparations (blood films) of anaemias & leukemias.
   (f) Basic exercise in forensic odontology such as histological methods of age estimation and appearance of teeth in injuries.

3. SYLLABUS:

3.1 Theory

(1) Different pathological processes involving the oral cavity, oral cavity involvement in systemic diseases, interrelationship between General Medicine, General Surgery & Oral pathology.

(2) Developmental disturbances of teeth, jaws and soft tissues of oral & paraoral region :
   (a) Introduction to developmental disturbances – Hereditary, Familial mutation, Hormonal etc.
   (b) Developmental distrubances of teeth–Aetiopathogenesis, clinical features, radiological features & histopathological features
   (c) The size, shape, number, structure & eruption of teeth & clinical significance of the anomalies.
   (d) Forensic Odontology.

(e) Developmental Disturbances of jaws – size & shape of the jaws.
(f) Developmental disturbances of oral & paraoral soft tissues – lip & palate – clefts, tongue, gingiva, mouth, salivary glands & face.

(3) Dental Caries :
(a) Aetiopathogenesis, microbiology, clinical features, diagnosis, histopathology, immunology, prevention of dental caries & its sequelae.

(4) Pulp & Periapical Pathology & Osteomyelitis:
(a) Aetiopathogenesis & interrelationship, clinical features, microbiology, histopathology & radiological features (as appropriate) of pulp & periapical lesion, osteomyelitis.
(b) Sequelae of periapical abscess – summary of space infections, systemic complications & significance.

(5) Periodontal Diseases :
(a) Aetiopathogenesis, microbiology, clinical features, histopathology & radiological features (as appropriate) of gingivitis, gingival enlargements & periodontitis. Basic immunological mechanisms of periodontal disease.

(6) Microbial infections of oral soft tissues :
(a) Microbiology, defence mechanisms including immunological aspects, oral manifestations, histopathology and laboratory diagnosis of common bacterial, viral & fungal infections namely:
(b) Bacterial : Tuberculosis, Syphilis, ANUG & its complications – Cancrum Oris.
(c) Viral : Herpes Simplex, Varicella zoster, Measles, Mumps & HIV infection.
(d) Fungal : Candidal infection. Apthous Ulcers.

(7) Common non – inflammatory diseases involving the jaws :
(a) Aetiopathogenesis, clinical features, radiological & laboratory values in diagnosis of :
i. Fibrous dysplasia, Cherubism, Osteogenesis Imperfecta, Paget's disease, Cleidocranial dysplasia, Rickets, Achondroplasia, Marfan's syndrome & Down's syndrome.

(8) Diseases of TM Joint :
(a) Ankylosis, summary of different types of arthritis & other developmental malformation, traumatic injuries & myofascial pain dysfunction syndrome.

(9) Cysts of the Oral & Paraoral region :
(a) Classification, etiopathogenesis, clinical features, histopathology, laboratory & radiological features (as appropriate) of Odontogenic cysts, Non-Odontogenic cysts, Pseudocysts of jaws & soft tissue cysts of oral & paraoral region.

(10) Tumours of the Oral Cavity :
(a) Classification of Odontogenic, Non-Odontogenic & Salivary Gland Tumours. Aetiopathogenesis, clinical features, histopathology, radiological features & laboratory diagnosis (as appropriate) of the following common tumours :
i. Odontogenic – all lesions.
ii. Non-odontogenic
- Benign Epithelial – Papilloma, Keratoacanthoma & Naevi.
- Benign Mesenchymal – Fibroma, Aggressive fibrous lesions, Lipoma, Haemangioma, Lymphangioma, Neurofibroma, Schwannoma, Chondroma, Osteoma & Tori.
- Malignant Mesenchymal – Fibrosarcoma, Osteosarcoma, Giant cell tumour, Chondrosarcoma, Angiosarcoma, Kaposi;s sarcoma, Lymphomas, Ewing's sarcoma & Other Reticuloendothelial tumours.

iii. Salivary Gland
- Benign Epithelial neoplasms – Pleomorphic Adenoma, Warthin's tumour, & Oncocytoma.

- Malignant Epithelial neoplasms – Adenoid Cystic Carcinoma, Mucoepidermoid Carcinoma, Acinic Cell Carcinoma & Adenocarcinomas.

iv. Tumours of Disputed Origin – Congenital Epulis & Granular Cell Myoblastoma.
v. Metastatic tumours – Tumors metastasising to & from oral cavity & the routes of metastatis.

(11) Traumatic, Reactive & Regressive lesions of Oral Cavity :
(a) Pyogenic & Giant cell granuloma, exostoses, Fibrous Hyperplasia, Traumatic Ulcer & calcifications & Resorption of teeth.
(b) Attrition, Abrasion, Erosion, Bruxism, Hypercementosis, Dentinal changes, pulp calcifications & Resorption of teeth.
(c) Radiation effect of oral cavity, summary of Physical & Chemical injuries including allergic reactions of the oral cavity.
(d) Healing of Oral wounds & complications – Dry socket.

(12) Non neoplastic Salivary Gland Diseases :
(a) Sialolithiasis, Sialosis, Sialadenitis, Xerostomia & Ptyalism.

(13) Systemic Diseases involving Oral cavity :
(a) Brief review & oral manifestations, diagnosis & significance of common systemic diseases.

(14) Mucocutaneous Lesions :
(a) Aetiopathogenesis, clinical features & histopathology of the following:- common lesions, Lichen Planus, Lupus Erythematosus, Pemphigus & Pemphigoid, Erythema Multiforme, Psoriasis, Scleroderma, Ectodermal Dysplasia, Epidermolysis Bullosa & White sponge nevus.

(15) Diseases of the Nerves :
(a) Facial neuralgias – Trigeminal & Glossopharyngeal. VII nerve paralysis, Causalgia.
(b) Psychogenic facial pain & Burning mouth syndrome.

(16) Pigmentation of Oral & Paraoral region & Discolouration of teeth :
(a) Causes & clinical manifestations.

(17) Diseases of Maxillary Sinus :
(a) Traumatic injuries to sinus, Sinusitis, Cysts & Tumours involving antrum.

(18) Oral Precancer – Cancer, Epidemiology, aetiology, clinical and histopatholotgical features, TNM classification, Recent advances in diagnosis, management and prevention.

(19) Biopsy : Types of biopsy, value of biopsy, cytology, histo chemistry & frozen sections in diagnosis of oral diseases.

(20) Principles of Basic Forensic Odontology (Pre clinical Forensic Odontology):
(a) Introduction, definition, aims & scope.
(b) Sex and ethnic (racial) differences in tooth morphology and histological age estimation
(c) Determination of sex & blood groups from buccal mucosa/ saliva.
(d) Dental DNA methods
(e) Bite marks, rugae patterns & lip prints.
(f) Dental importance of poisons and corrosives.
(g) Overview of forensic medicine and toxicology.

5. BOOKS:

(1) A Text Book of Oral Pathology - Shafer, Hine & Levy
(2) Oral Pathology – Clinical Pathological correlations - Regezi & Sciubba
(3) Oral Pathology - Soames & Southam
(4) Oral Pathology in the Tropics - Prabhu, Wilson, Johnson & Daftary

Third BDS (III) **Oral.Patho.Oral.Micro.-III**
(2430)

Third BDS (Main) Examination Month Year

Paper III

Oral Pathology and Oral Microbiology

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Define and classify cysts. Write in detail about the clinical, radiological and histological features of Radicular cyst. 10

Q.2 Short Notes: 10
a) Macroglossia
b) Treatment of Testicular cancer

Q.3 Classify disorders of blood. Write in detail about sickle cell anemia. 10

Q.4 Short Notes: 15
a) Cheilioscopy
b) Peripheral giant cell granuloma
c) ANUG

Section B

Q.5 Define Dental caries. Write in detail about enamel caries. 10

Q.6 Short Notes: 10
a) Renal stones
b) Antibiotic prophylaxis in surgery

Q.7 Classify skin lesions. Explain pemphigus vulgaris. 10

Q.8 Short Notes: 15
a) Candidiasis
b) Dry socket
c) Osteomyelitis

Fourth (Final) B.D.S. Examination

Paper I : Public Health Dentistry (2610)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

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

2. OBJECTIVES:

(1) Knowledge :At the end of the course, the student should be able to:
   (a) Demonstrate knowledge of the basics of public health, preventive dentistry, public health problems in India, nutrition, environment and it's role in health, basics of dental statistics, epidemiological methods, National oral health policy.
(2) Skill and attitude:
(a) Acquire 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 society and must take responsibilities in providing oral health care.
(3) Communication abilities:
(a) Communicate the needs of the community efficiently, inform the society of all the recent methodologies in preventing oral diseases.
(4) Competencies:
   (a) Apply the principles of health promotion and disease prevention.
   (b) Have knowledge of the organization and provision of health care in community and in the hospital service.
   (c) Have knowledge of the prevalence of common dental conditions in India.
   (d) Have knowledge of community based preventive measures.
   (e) Have knowledge of the social, cultural and environmental factors which contribute to health or illness.
   (f) Administer oral hygiene instructions, topical fluoride therapy and fissure sealing.
   (g) Educate patients concerning the aetiology and prevention of oral disease and encourage them to assume responsibility for their oral health.

3. SYLLABUS:

3.1 Theory

(1) Introduction to dentistry
   (a) Definition of dentistry
   (b) History of dentistry
   (c) Scope aims and objectives of dentistry
(2) Public health

(a) Health and disease: concepts, philosophy, definition and characteristics
(b) Public health: definition and concepts, history of public health
(c) General epidemiology: definition, objective, methods
(d) Environmental health: concepts, principles, protection, sources, purification, environmental sanitation of water, disposal of waste, sanitation and their role in mass disaster
(e) Health education: definition, concepts, principles, methods and health education aids
(f) Public health administration: priority, establishment, manpower, private practice management, hospital management
(g) Ethics and Jurisprudence: Professional liabilities, negligence, malpractice, consents, evidence, contracts, methods of identification in forensic dentistry
(h) Nutrition in oral health and disease
(i) Behavioural sciences: Definition of sociology, anthropology and psychology and their relevance in dental practice and community
(j) Health care delivery system: Center and state, oral health policy, primary health care, national programs and health organizations

(3) Dental public health
(a) Definition and difference between community and clinical health
(b) Epidemiology of dental diseases: dental caries, periodontal diseases, malocclusion, dental fluorosis and oral cancer
(c) Survey procedures: planning, implementation and evaluation, WHO oral health survey methods 1997, indices for dental diseases
(d) Delivery of dental care: Dental auxiliaries, operational and non operational, incremental and comprehensive health care, school dental health programs
(e) Payments for dental care: Methods of payments and dental insurance, government plans
(f) Preventive dentistry: definition, levels, role of individual, community and profession, fluorides in dentistry, plaque control programs

(4) Research methodology and dental statistics
(a) Health information: basic knowledge of computers, MS office, Windows 2000, statistical programs
(b) Research methodology: Definition, types of research, designing a written protocol
(c) Biostatistics: 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 trials and calibration.

(5) Practice management
(a) Place and locality
(b) Premises and layout
(c) Selection of equipments
(d) Maintenance of records/accounts/audits
(e) Dentist act 1948 with amendment
(f) Dental council of India and state dental councils : composition and responsibilities
(g) Indian dental association : head office, state and local branches

3.2 Practical

(1) These exercises are designed to help the students in:
(a) Understanding the community aspect of dentistry
(b) Take up leadership role in solving community oral health programme.

(2) Exercises:
(a) Collection of statistical data (demographic) on population in India, birth rates, morbidity and mortality, literacy, percapita 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, play 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.
(f) Visit to primary health center: to acquaint with activities and primary health care delivery.
(g) Visit to water purification plant/public health laboratory, centre for treatment of waste and sewage water.
(h) Visit to schools: to assess the oral health status of school children, emergency treatment, health education including possible preventive care at school (tooth brushing technique demonstration and oral rinse program etc.)
(i) Visit to institution for the care of the handicapped, physically, mentally or medically compromised patients.
(j) Preventive dentistry: In the department application of pi and fissure sealants, fluoride gel application, ART, comprehensive health care for 5 patients (at least 2 patients).

3.3 Internship

(1) The interns shall conduct health education sessions for individuals and groups on oral heath, public health, nutrition, behavioural sciences, environmental health, preventive dentistry and 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 demonstrations of:
  (a) Preventive and interceptive procedures for prevalent dental diseases.
  (b) Mouth-rinsing and other oral hygiene demonstrations – 5 cases
  (c) Tooth brushing technique – 5 cases
(4) Conduction of oral health education programmes at:
  (a) School setting - 2
  (b) Community setting - 2
  (c) Adult education programmes - 2
  (d) Preparation of health education material – 5
(5) Exposure to team concept and Nation 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 at least one National Health programme.
  (d) Observation of interlinkage of delivery of oral health care with Primary health care.

Note: Mobile dental clinics as and when available shall be provided for these teachings.

4. BOOKS:

(1) Oral Health Surveys: Basic Methods, 4th edition, 1997, published by W.H.O. Geneva available at the regional office New Delhi.
(2) Text Books of preventive and Social Medicine by Park and Park, 22nd edition.
(3) Essentials of Preventive and Community Dentistry by Dr. Soben Peter, 5th edition
(4) Introduction to Bio-statistics by B.K. Mahajan

(5) Textbook of Preventive and Community Dentistry by Ss Hiremath, 2nd edition, 2011, Elsevier publications.
(6) A textbook of Public Health Dentistry by CM Marya, 1st edition, 2011 jaypee brothers medical publishers.
(7) Dentistry, dental practice and community by David F Striffler and Brian A Burt, Edition 1983, WB Saunders company
(8) Principles of Dental Public Health by JM Dunning, 4th edition, 1986, Harvard university press
(9) Dental Public Health and community Dentistry by Anthony Jong, publication by the CV Mosby Company, 1981
(10) Community oral health – A system approach by Patricia P Cormier and Joyce I Levy Published by Appleton – century –crofts, New York, 1981
(11) Community Dentistry- a problem oriented approach by PC 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, 1980
(12) Dental Public Health- An Introduction to Community Dentistry. Edition by Geoffrey L. Slack and Brain Burt, published by John Wright and sons Bristol, 1980
(13) Preventive Dentistry by J.O. Forrest published by John Wright and sons Bristol, 1980.
(14) Preventive Dentistry by Murray, 1997.
(15) Public health Dentistry, by Poonam Sikri, 1st edition, 2011, CBS Publishers and distributors.
(16) Essentials of Dental Public Health by Blanaid Daly, 1st edition, 2003.
(17) Medical Ethics, Francis C.M. 1st edition, 1993 Jaypee Brothers, New Delhi.

Fourth BDS (I) **Pub.Heal.Denti.-I**
(2610)

Fourth BDS (Main) Examination Month Year

Paper I
Public Health Dentistry
Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Define epidemiology. Classify epidemiological methods. List the differences between case-control and cohort studies 10

Q.2 Short Notes: 10
a) Differences between public health dentistry and private practice
b) Composting as a solid waste disposal method

Q.3 Define health planning. Describe the steps of a planning cycle 10

Q.4 Short Notes: 15
a) World Health Organisation
b) Sampling methods
c) Consumer protection act

Section B

Q.5 Classify the fluoride delivery methods. Describe in detail the mechanism of action of fluoride in caries prevention. 10

Q.6 Short Notes: 10
a) Atraumatic resotrative treatment (ART)
b) Define data and methods of collection of data

Q.7 Define and classify dental auxiliaries. Discuss about the operating dental auxiliaries 10

Q.8 Short Notes: 15
a) Incidence and prevalence
b) Major ethical principles
c) Acute fluoride toxicity

Paper II : Periodontology (2620)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be able to:
(1) Demonstrate knowledge and skills in the science and practice of Periodontology

2. OBJECTIVES:

At the end of the course the student should be able to:
(1) Demonstrate skill to perform dental scaling, diagnostic tests of periodontal diseases, to use instruments for periodontal therapy and maintenance of same.
(2) Develop attitude to impart preventive measures like prevention of periodontal diseases and prevention of progress of diseases.
(3) Show strict asepsis in performing dental procedures.
(4) Prevent iatrogenic diseases by conserving tooth as best as possible by maintaining periodontal health and refer patients to higher centres if needed.

3. SYLLABUS:

3.1 Theory

(1) Introduction:
  (a) Definition of Periodontology, Periodontics, Periodontia, Brief historical background, Scope of Periodontics
(2) Development of periodontal tissues
  (a) Micro-structural anatomy and biology of periodontal tissues. In detail about Gingiva. Junctional epithelium, Epithelial-Mesenchymal interaction, periodontal ligament, Cementum and Alveolar bone.
(3) Defensive mechanisms in the oral cavity:
  (a) Role of –Epithelium, Gingival fluid, Saliva and other defensive mechanisms in the oral environment.
(4) Age changes in periodontal structures and their significance in Geriatric dentistry:
  (a) Age changes in teeth and periodontal structures and their association with periodontal diseases
(5) Classification of Periodontal diseases:
  (a) Need for classification, Scientific basis of classification, Classification of gingival and periodontal diseases as described in AAP World Workshop 1989, AAP International workshop 1999
  (b) Gingivitis: Plaque associated, ANUG, steroid hormone influenced, Medication influenced, Desquamative gingivitis, other forms of gingivitis as in nutritional deficiency, bacterial and viral infections etc.

(c) Periodontitis: Chronic periodontitis, Rapidly progressive periodontitis A&B, aggressive periodontitis (localized, generalized and post-juvenile), Prepubertal periodontitis, Refractory periodontitis

(6) Gingival diseases:
   (a) Localized and generalized gingivitis, papillary, marginal and diffuse gingivitis.
   (b) Etiology, pathogenesis, clinical signs, symptoms and management of
      i. Plaque associated gingivitis
      ii. Systemically aggravated gingivitis(sex hormones, drugs and systemic diseases)
      iii. ANUG
      iv. Desquamative gingivitis-Gingivitis associated with lichen planus, pemphigoid, pemphigus and other vesiculobullous lesions
      v. Allergic gingivitis
      vi. Infective gingivitis-Herpetic, bacterial and candidial
      vii. Pericoronitis
      viii. Gingival enlargement (classification and differential diagnosis)

(7) Epidemiology of periodontal diseases:
   (a) Definition of index, incidence, prevalence, epidemiology, endemic, epidemic and pandemic
   (b) Classification of indices(Irreversible and reversible)
   (c) Deficiencies of earlier indices used in periodontics
   (d) Detailed understanding of Silness & Loe Plaque Index
   (e) Loe&Silness Gingival Index, CPITN & CPI.
   (f) Prevalence of periodontal diseases in India and other countries.
   (g) Public health significance(All these topic are covered at length under community dentistry, Hence, the topics may be discussed briefly. However, questions may be asked from the topics for examination)

(8) Extension of inflammation from gingiva:
   (a) Mechanism of spread of inflammation from gingival area to deeper periodontal structures
   (b) Factors that modify the spread

(9) Periodontal Pocket:
   (a) Definition, signs and symptoms, classification, pathogenesis, histopathology, root surface changes and contents of the pocket

(10) Etiology:
   (a) Dental Plaque (Biofilm)
   (b) Definition, New concept of biofilm
   (c) Types, Composition, bacterial colonization, growth, maturation & disclosing agents
   (d) Role of dental plaque in periodontal diseases
   (e) Plaque microorganisms in detail and bacteria associated with periodontal diseases
   (f) Plaque retentive factors
   (g) Materia alba
   (h) Food debris
   (i) Calculus
      i. Definition
      ii. Types, composition, attachment, theories of formation
      iii. Role of calculus in disease
   (j) Food Impaction
      i. Definition
      ii. Types, Etiology
      iii. Hirschfelds' classification

iv. Signs, symptoms & sequelae of treatment

(k) Trauma from occlusion
   i. Definition, Types
   ii. Histopathological changes
   iii. Role in periodontal disease
   iv. Measure of management in brief

(l) Habits
   i. Their periodontal significance
   ii. Bruxim & parafunctional habits, tongue thrusting, lip biting, occupational habits

(11) Iatrogenic Factors

(a) Conservative Dentistry
   i. Restorations
   ii. Contact point, marginal ridge, surface roughness,
   iii. Overhanging restorations, interface between restoration and teeth

(b) Prosthodontics
   i. Interrelationship
   ii. 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.

(c) Orthodontics
   i. Interrelationship, removable appliances & fixed appliances
   ii. Retention of plaque, bacterial changes

(d) Systemic diseases
   i. Diabetes, sex hormones, nutrition (Vit. C & proteins)
   ii. AIDS & periodontium
   iii. Homorrhagic diseases, Leukemia, clotting factor disorders, PMN disorders

(12) Risk factors:

(a) Definition. Risk factor for periodontal diseases

(13) Host response:

(a) Mechanism of initiation and progression of periodontal diseases

(b) Basic concept about cells, Mast cells, neutrophils, macrophages, lymphocytes, immunoglobulins, complement system, immune mechanisms & cytokines in brief

(c) Stages in gingivitis-Initial, early, established & advanced periodontal disease activity, continuous paradigm, random burst & asynchronous multiple burst hypothesis.

(14) Periodontitis:

(a) Etiology, histopathology, clinical signs & symptoms, diagnosis and treatment of adult periodontitis

(b) Periodontal abscess; definition, classification, pathogenesis, differential diagnosis and treatment

(c) Furcation involvement, Glickmans' classification, prognosis and management

(d) Chronic periodontitis

(e) Aggressive periodontitis: Localized and generalized

(f) Periodontitis associated with systemic diseases

(g) Refractory periodontitis

(15) Diagnosis:

(a) Routine procedures, methods of probing, types of probes, (according to case history)

(b) Halitosis: Etiology and treatment. Mention advanced

(c) Diagnostic aids and their role in brief.

(16) Prognosis:

(a) Definition, types, purpose and factors to be taken into consideration

(17) Treatment plan – Factors to be considered:
(18) Periodontal therapy:
  (a) General principles of periodontal therapy. Phase I, II, III, IV therapy.
    i. Definition of periodontal regeneration, repair, new attachment and reattachment.
  (b) Plaque control
    i. Mechanical tooth brushes, interdental cleaning aids, dentifrices
  (c) Chemical; classification and mechanism of action of each & pocket irrigation
(19) Pocket eradication procedures:
  (a) Scaling and root planning:
  (b) Indications
  (c) Aims & objectives
  (d) Healing following root planning
  (e) Hand instruments, sonic, ultrasonic & piezoelectric scalers
  (f) Curettage & present concepts
    i. Definition
    ii. Indications
    iii. Aims & objectives
    iv. Procedures & healing response
  (g) Flap surgery
    i. Definition
    ii. Types of flaps, Design of flaps, papilla preservation
    iii. Indications & contraindications
    iv. Armamentarium
    v. Surgical procedure & healing response
(20) Osseous defects in periodontal disease:
  (a) Osseous defects in periodontal disease
    i. Definition
    ii. Classification
    iii. Surgery: resective, additive osseous surgery (osseous grafts with classification of grafts)
    iv. Healing response
  (b) Other regenerative procedures; root conditioning
  (c) Guided tissue regeneration
(21) Mucogingival surgery & periodontal plastic surgeries:
  (a) Definition
  (b) Mucogingival problems: etiology, classification of gingival recession (P.D. Miller Jr. and Sullivan and Atkins)
  (c) Indications & objectives
  (d) Gingival extension procedures: Lateral pedicle graft, frenectomy, frenotomy
  (e) Crown lengthening procedures
  (f) Periodontal microsurgery in brief
(22) Splints:
  (a) Periodontal splints
  (b) Purpose & Classification
  (c) Principles of splinting
(23) Hypersensitivity:
  (a) Causes, Theories & management
(24) Implants:
  (a) Definition, types, scope & biomaterials used.

(b) Periodontal considerations: such as implant-bone interface, implant-gingiva interface, implant failure, peri-implantitis & management

(25) Maintenance phase (SPT):
(a) Aims, objectives and principles
(b) Importance
(c) Procedures
(d) Maintenance of implants

(26) Pharmaco-therapy:
(a) Periodontal dressings
(b) Antibiotics & anti-inflammatory drugs
(c) Local drug delivery systems

(27) Periodontal management of medically compromised patients:
(a) Topics concerning periodontal management of medically compromised patients

(28) Inter-disciplinary care:
(a) Pulpo-periodontal involvement
(b) Routes of spread of infection
(c) Simons' classification
(d) Management

(29) Systemic effects of periodontal diseases in brief:
(a) Cardiovascular diseases, Low birth weight babies etc.

(30) Infection control protocol:
(a) Sterilization and various aseptic procedures

(31) Ethics

3.2 Tutorials During Clinical Posting

(1) Infection control
(2) Periodontal instruments
(3) Chair position and principles of instrumentation
(4) Maintenance of instruments (sharpening)
(5) Ultrasonic, Piezoelectric and sonic scaling – demonstration of technique
(6) Diagnosis of periodontal disease and determination of prognosis
(7) Radiographic interpretation and lab investigations
(8) Motivation of patients- oral hygiene instructions

Students should be able to record a detailed periodontal case history, determine diagnosis, prognosis and plan treatment. Students should perform scaling, root planning, local drug delivery and SPT shall be given demonstration of all periodontal surgical procedures

3.3 Demonstrations

(1) History taking and clinical examination of the patients
(2) Recording different indices
(3) Methods of using various scaling and surgical instruments
(4) Polishing the teeth
(5) Bacterial smear taking
(6) Follow up procedures, post operative care and supervision
(7) Surgical procedures- gingivectomy, gingivoplasty and flap operations
(8) Demonstration to patients about different oral hygiene aids

3.4 Requirements

(1) Diagnosis, treatment planning and discussion and total periodontal treatment – 25 cases

(2) Dental scaling, oral hygiene instructions – 50 complete cases/equivalent
(3) Assistance in periodontal surgery – 5 cases
(4) 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. Students should have to complete the work prescribed by the concerned department from time to time and submit a certified record for evaluation.

4. BOOK:

(1) Glickman's Clinical Periodontology – Carranza (2011)
(2) Essentials of Periodontology and Periodontics –Torquil MacPhee (1981)
(3) Contemporary Periodontics- Cohen (1990)
(4) Periodontal therapy- Goldman(1980)
(5) Orbans' Periodontics- Orban (1972)
(6) Oral Health Survey- W.H.O. (1997, 2013)
(7) Community Dentistry – Soben Peter (2000)
(8) Dental Public Health – GL Slack (1980)
(9) Advanced Periodontal Disease- John Prichard (1972)
(10) Preventive Dentistry- Forrest (1980)
(11) Clinical Periodontology- Jan Lindhe (2008)
(12) Essentials of Public Health Dentistry – Soben Peter (2013)

Fourth BDS (Main) Examination Month Year

Paper II
Periodontology
Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Define Gingiva. Describe in detail about its macroscopic and microscopic features. 10

Q.2 Short Notes 10
a) ANUG.
b) Functions of Periodontal ligament.

Q.3 Classify Gingival enlargements. Add a note on Drug induced gingival enlargements 10

Q.4 Short Notes 15
a) Supra & Sub-gingival calculus
b) Cellular & Acellular Cementum
c) DNA Probe

Section B

Q.5 Define and classify periodontal flaps. Write in detail about Modified Widman flap 10

Q.6 Short Notes 10
a) Grade II Furcation Involvement & its management
b) Periodontal Splints

Q.7 Classify & describe various types of bone grafts used in Periodontal therapy & discuss the advantages & disadvantages of each. 10

Q.8 Short Notes 15
a) Chemical Plaque control
b) Periodontal abscess & its management.
c) Gingival Recession

Paper III : Orthodontics & Dentofacial Orthopaedics (2630)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should acquire necessary skills and professionalism to carry out activities related to general dental practice involving the prevention, diagnosis and treatment of anomalies and diseases of the teeth, mouth, jaws and associated tissues.

2. OBJECTIVES:

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

(1) Diagnose, analyse and treat common orthodontic problems by preventive, interceptive and corrective orthodontic procedures.

3. SYLLABUS:

3.1 Theory

(1) Introduction:
   (a) Definition, Historical Background, Aims and Objectives of Orthodontics and need for Orthodontic care.
(2) Growth & Development : In General:
   (a) Definition
   (b) Growth spurts and Differential growth
   (c) Factors influencing growth & development
   (d) Methods of measuring growth
   (e) Growth Theories (Genetic, Sicher's, Scott's, Moss's, Petrovic's, Multifactorial)
   (f) Genetic & Epigenetic factors in growth
   (g) Cephalocaudal gradient of growth.
(3) Morphological 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 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
(6) Malocclusion –In General:
   (a) Concept on normal occlusion
   (b) Definition of malocclusion
   (c) Description of different types of dental, skeletal and functional malocclusion

(7) Classification of malocclusion:
   (a) Principle, description, advantages and disadvantages of classification of malocclusion by Angle's, Simon's, Lischer's and Ackerman and Proffit's
(8) Normal and abnormal function of stomatognathic system:
(9) Etiology of malocclusion:
   (a) Definition, importance, classification, local and general etiological factors.
   (b) Etiology of following different types of malocclusion:
      i. Midline diastema
      ii. Spacing
      iii. Crowding
      iv. Cross-bite: anterior/posterior
      v. Class III malocclusion
      vi. Class II malocclusion
      vii. Deep bite
      viii. Open bite
(10) 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
      i. Definition
      ii. Description and use of cephalostat
      iii. Description and uses of anatomical landmarks lines and angles used in cephalometric analysis
      iv. Analysis- Steiner's, Down's, Tweed's, Rickett's – E-line
   (g) Electromyography and its uses in orthodontics
   (h) Wrist X-rays and its importance in orthodontics
(11) General principles in orthodontic treatment planning of dental and skeletal malocclusions.
(12) Anchorage in orthodontics-definition, classification, types and stability of anchorage.
(13) Biomechanical principles in orthodontic tooth movement
   (a) Different types of tooth movements
   (b) Tissue response to orthodontic force application
   (c) Age factor in orthodontic tooth movement
(14) Preventive Orthodontics:
   (a) Definition
   (b) Different procedures undertaken in preventive orthodontics and their limitations.
(15) Interceptive Orthodontics:
   (a) Definition
   (b) Different procedures undertaken in interceptive orthodontics.
   (c) Serial extractions:
      i. Definition, indication, contraindication, technique, advantages and disadvantages.
   (d) Role of muscle exercises as an interceptive procedure.
(16) Corrective Orthodontics:
   (a) Definition, factors to be considered during treatment planning.
   (b) Model analysis: Pont's, Ashley Howe's, Bolton, Careys, Moyer's Mixed Dentition analysis.

(c) Methods of gaining space in the arch – Indications, Relative merits and demerits of proximal striping, arch expansion and extractions.
(d) Extractions in orthodontic – indications & selections of teeth for extractions.

(17) Orthodontic appliances : General:
(a) Requisites for orthodontic appliances.
(b) Classifications, indications of removable and functional appliances.
(c) Methods of force application
(d) Materials used in construction of various orthodontic appliances – uses of stainless steel, technical considerations in curing of acrylic, principles of welding and soldering, fluxes and antifluxes.
(e) Preliminary knowledge of acid etching and direct bonding
(f) Removable Orthodontic Appliances
i. Components of removable appliances
ii. Different types of clasps and their uses
iii. Different types of labial bows and their uses
iv. Different types of springs and their uses
v. Expansion appliance in orthodontics
- Principles
- Indications for arch expansion
- Description of expansion appliances and their different types of expansion devices and their uses
- Rapid Maxillary expansion
(g) Fixed Orthodontic Appliances
i. Definition, indications & contraindications
ii. Components parts and their uses
iii. Basic principles of different techniques: Edgewise, Beggs & Straight wire.
(h) Extra Oral Appliances
i. Headgears
ii. Chin cups
iii. Reverse pull headgears
(i) Myofunctional Appliances
i. Definition and principles
ii. Muscles exercise and their uses in orthodontics
iii. Functional appliances:
- Activator, oral screens, Frankels function regulator, Bionator, Twin blocks, Lip bumper
- Inclined planes – upper and lower

(18) Orthodontic management of cleft lip and palate

(19) Principles of surgical orthodontics:
(a) Brief knowledge of correction of:
i. Mandibular prognathism and retrognathism
ii. Maxillary prognathism and retrognathism
iii. Anterior open bite & deep bite
iv. Cross bite

(20) Principle, Differential Diagnosis & Methods of Treatment of :
(a) Midline diastema
(b) Cross bite
(c) Open bite
(d) Deep bite
(e) Spacing

(f) Crowding
(g) Class II - division 1, division 2
(h) Class III Malocclusion – true and pseudo class III

(21) Retention and relapse:
(a) Definition, need for retention, causes of relapse, methods of retention, different types of retention devices, duration of retention, theories of retention.

3.2 Practical

Clinical Training During II Year B.D.S.

(1) Basic wire bending exercises Gauge 22 or 0.7 mm
(a) Straightening of wires (4 No.s)
(b) Bending of equilateral triangle
(c) Bending of a rectangle
(d) Bending of a square
(e) Bending of a circle
(f) Bending of u.v.

(2) Construction of clasps (Both sides upper/lower) Gauge 22 or 0.7 mm
(a) 3/4 clasp (c-clasp)
(b) Full clasp (Jacksons crib)
(c) Adams clasp
(d) Triangular clasp

(3) Construction of springs (on upper both sides) Gauge 24 or 0.5 mm
(a) Finger spring
(b) Single cantilever spring
(c) Double cantilever spring (Z-spring)
(d) T-spring of premolars

(4) Construction of canine retractors Gauge 23 or 0.6 mm
(a) U-loop canine retractors (Both sides on upper and lower)
(b) Helical canine retractor (Both sides on upper and lower)
(c) Buccal canine retractors:
i. Self supported buccal canine retractors with
- Sleeve – 5 mm wire or 24 guage.
- Sleeve – 19 guage needle on any one sides.
(d) Palatal canine retractor on upper both sides.
i. Guage 23 or 0-6 mm

(5) Labial bow
(a) Guage 22 or 0.7 mm (one on both upper and lower)

Clinical Training During III Year B.D.S.

(1) Making upper Alginate impression.
(2) Making lower Alginate impression.
(3) Study Model preparation.
(4) Model Analysis.
(a) Pont's Analysis
(b) Ashley's Howe's Analysis
(c) Carey's Analysis
(d) Bolton's analysis
(e) Moyer's Mixed dentition Analysis

Clinical Training During Final B.D.S.

(1) Case history taking
(2) Case discussion
(3) Discussion on the given topic
(4) Cephalometric tracing
    (a) Down's analysis
    (b) Steiner's analysis
    (c) Tweed's analysis

Practical Training During Final Year
(1) Adam's clasp on anterior teeth gauge 0.7 mm
(2) Modified Adam's clasp on upper arch gauge 0.7 mm
(3) High Labial bow with apron spring on upper arch (Gauge of labial bow 0.9 mm, Apron spring 0.3 mm)
(4) Coffin spring on upper arch gauge 1 mm - Appliance construction in acrylic
    (a) Upper and Lower Hawley's appliances
    (b) Upper Hawley's with anterior bite plane
    (c) Upper habit breaking appliances
    (d) Upper Hawley's with posterior bite plane with 'Z' Spring
    (e) Construction of activator
    (f) Lower inclined place/Catalan's appliances
    (g) Upper Expansion plate with Expansion screw

4. BOOKS:

(1) Contemporary Orthodontics -William Profit
(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

Fourth BDS (Main) Examination Month Year

Paper III

Orthodontics and Dentofacial Orthopaedics

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Classify the Etiology of malocclusion and write in detail about the local factors in etiology of malocclusion. 10

Q.2 Short Notes: 10
a) Cephalometrics
b) Dental arches

Q.3 Discussion in detail Andrew's six keys to normal occlusion with diagrams. 10

Q.4 Short Notes: 15
a) Scammon's growth curve
b) Angle's classification and drawbacks
c) Pressure tension theory of tooth movement.

Section B

Q.5 Classify anchorage. Write in detail about extra oral anchorage in Orthodontics. 10

Q.6 Short Notes: 10
a) Midline diastema
b) Mandibular prognathism & retrognathism

Q.7 Define retention and relapse and discuss in detail theorems of retention. 10

Q.8 Short Notes: 15
a) Different types of orthodontic tooth movement
b) Twin block appliance
c) Slenderisation in Orthodontics

Paper IV : Oral Medicine and Radiology (2640)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

(1) To train the students to diagnosis the common disorders of Orofacial region by clinical examination and with the help of such investigations as may be required and medical management of orofacial disorders with drugs and physical agents.
(2) To train the students about the importance, role, use and techniques of radiographs/digital radiograph and other imaging methods in diagnosis.
(3) The principles of the clinical and radiographic aspects of Forensic Odontology.

The syllabus in Oral Medicine & Radiology is divided into two main parts :
(a) Diagnosis, Diagnostic methods and Oral Medicine
(b) Oral Radiology.

Again part I is sub-divided into three sections -
(a) Diagnostic methods,
(b) Diagnosis and differential diagnosis,
(c) Oral Medicine & Therapeutics.

2. COURSE CONTENTS:

(1) Emphasis should be laid on oral manifestations of systemic diseases and ill-effects of oral sepsis on general health.
(2) 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.

3. SYLLABUS:

3.1 Theory

(1) The syllabus in Oral Medicine & Radiology is divided into two main parts.
(2) Diagnosis, Diagnostic methods and Oral Medicine (ii) Oral Radiology. Part (i) is subdivided into three sections (A) Diagnostic methods (B) Diagnosis and differential diagnosis (C) Oral medicine & Therapeutics. Emphasis has been laid on oral manifestations of systemic diseases and ill-effects of oral sepsis on general health.

Part-1: Oral Medicine and Diagnostic Aids

Section (A) – Diagnostic Methods

(1) Definition and importance of Diagnosis and various types of diagnosis
(2) Method of Clinical examinations.
(3) General physical examination by inspection.
(4) Oro-facial region by inspection, palpation and other means

(5) To train the students about the importance, role, use of saliva and techniques of diagnosis of saliva as part of oral disease
(6) Examination of lesions like swellings, ulcers, erosions, sinus, fistula, growths, pigmented lesions, white and red patches
(7) Examination of lymph nodes
(8) Forensic examination – Procedures for post-mortem dental examination, maintaining dental records and their use in dental practice and post-mortem identification;
(9) Jurisprudence and ethics.
(10) Investigations
(11) Biopsy and exfoliative cytology
(12) Haematological, Microbiological and other tests and investigations necessary for diagnosis and prognosis

Section (B) – Diagnosis, Differential Diagnosis: While learning the following chapters, emphasis shall be given only to diagnostic aspects including differential diagnosis

(1) Teeth : Developmental abnormalities, causes of destruction of teeth and their sequelae and discolouration of teeth
(2) Diseases of bone and Osteodystrophies: Development disorders: Anomalies, Exostosis and tori, infantile cortical hyperostosis, osteogenisis imperfecta, Marfan's syndrome, osteopetrosis. Inflammation – Injury, infection and spread of infection, fascial space infections, osteoradionecrosis
   (a) Metabolic disorders – Histiocytosis
   (b) Endocrine: Acro-megaly and hyperparathyroidism
   (c) Miscellaneous – Paget's disease, Mono and polyostotic fibrous dysplasia. Cherubism.
(3) Temparomandibular joint: Developmental abnormalities of the condyle. Rheumatoid arthritis, Osteoarthritis, Sub-luxation and luxation.
(4) Common cysts and Tumors:
   (a) Cysts of soft tissue: Mucocele and Ranula
   (b) Cysts of bone: Odontogenic and nonodontogenic.
      i. Tumors:
         - Soft Tissue:
            1) Epithelial: Papilloma, Carcinoma, Melanoma
            2) Connective tissue: Fibroma, Lipoma, Fibrosarcoma
            3) Vascular: Haemangioma, Lymphangioma
         - Nerve Tissue: Neurofibroma, Traumatic Neuroma, Neurofibromatosis
         - Salivary Glands: Pleomorphic adenoma, Adenocarcinoma, Warthin's Tumor, Adenoid cystic carcinoma.
         - Hard Tissue:
            1) Non Odontogenic: Osteoma, Osteosarcoma, Osteoclastoma, Chondroma, Chondrosarcoma, Central giant cell tumor and Central haemangioma
            2) Odontogenic: Enameloma, Ameloblastoma, Calcifying Epithelial Odontogenic tumor, Adenomatoid Odontogenic tumor, Periapical cemental dysphasia and odontomas
(5) Periodontal diseases: Gingival hyperplasia, gingivitis, periodontitis, pyogenic granuloma
(6) Granulomatous diseases: Tuberculosis, Sarcoidosis, Midline lethal granuloma, Crohn's Disease and Histiocytosis X
(7) Miscellaneous Disorders: Burkitt lymphoma, Sturge – Weber syndrome, CREST syndrome, Rendu-Osler-Weber disease

Section (C) - Oral Medicine And Therapeutics: The following chapters shall be studied in detail including the aetiology, pathogenesis, clinical features, investigations, differential diagnosis, management and prevention

(1) Infections of oral and paraoral structures:
   (a) Bacterial: Streptococcal, tuberculosis, syphilis, Vincent's, leprosy, actinomycosis, diphtheria and tetanus
   (b) Fungal: Candida albicans
   (c) Virus: Herpes simplex, Herpes zoster, Ramsay Hunt syndrome, measles, herpangina, mumps, infectious mononucleosis, AIDS and hepatitis B

(2) Important common mucosal lesions:
   (a) White lesions: Chemical burns, leukoedema, leukoplakia, Fordyce spots, stomatitis nicotina palatinus, white sponge nevus, candidiasis, lichen planus, discoid lupus erythematosus
   (b) Vesiculo-bullous lesions: Herpes simplex, herpes zoster, herpangina, bullous lichen planus, pemphigus, cicatricial pemphigoid, erythema multiforme.
   (c) Ulcers: Acute and chronic ulcers
   (d) Pigmented lesions: Exogenous and endogenous
   (e) Red lesions: Erythroplakia, stomatitis venenata and medicamentosa, erosive lesions and denture sore mouth.

(3) Cervico-facial lymphadenopathy

(4) Facial pain:
   (a) Organic pain: pain arising from the diseases of orofacial tissues like teeth, pulp, gingival and periodontal tissue, mucosa, tongue, muscles, blood vessels, lymph tissue, bone paranasal sinus, salivary glands etc.,
   (b) Pain arising due to C.N.S. diseases:
      i. Pain due to intracranial and extracranial involvement of cranial nerves. (Multiple sclerosis, cerebrovascular diseases, Trotter's syndrome etc.)
      (ii) Neuralgic pain due to unknown causes: Trigeminal neuralgia, glossopharyngeal neuralgia, sphenopalatine ganglion neuralgia, periodic migrainous neuralgia and atypical facial pain
   (c) Referred pain: pain arising form distant tissues like heart, spine etc.

(5) Altered sensations: Cacogeusia, halitosis

(6) Tongue in lical and systemic disorders: (Aglossia, ankyloglossia, bifid tongue, fissured tongue, scrotal tongue, macroglossia, microglossia, geographic tongue, median rhomboid glossitis, depapillation of tongue, hairy tongue, atrophic tongue, reactive lymphoid hyperplasia, glossodynia, glossopyrosis, ulcers, white and red patches etc.)

(7) Oral manifestations of:
   (a) Metabolic disorders:
      i. Porphyria
      ii. Haemochromatosis
      iii. Histocytosis X diseases
   (b) Endocrine disorders:
      i. Pituitary: Gigantism, acromegaly, hypopituitarism
      ii. Adrenal cortex: Addison's disease (Hypofuntion) Cushing's syndrome (Hyperfunction)
      iii. Parathyroid glands: Hyperparathyroidism.
      iv. Thyroid gland: (Hypothyroidism) Cretinism, myxoedema
      v. Pancreas: Diabetes
   (c) Nutritional deficiency: Vitamins: riboflavin, nicotinic acid, folic acid Vitamin B12, Vitamin C (Scurvy)

(d) Blood disorders:
    i. Red blood cell diseases: Deficiency anaemias: (Thalassemia, sickle cell anaemia, erythroblastosis foetalis)
        - Aplastic anaemia
        - Polycythemia
    ii. White Blood cell diseases: Neutropenia, cyclic neutropenia, agranulocytosis, infectious mononeucleosis and leukemias
    iii. Heamorrhagic disorders: Thrombocytopenia, purpura, haemophilia, Christmas disease and Von Willebrand's disease

(8) Diseases of salivary glands:
    (a) Development disturbances: Aplasia, atresia and aberration
    (b) Functional disturbances: Xerostomia, ptyalism
    (c) Inflammatory conditions: Nonspecific sialadenitis, mumps, sarcoidosis Heerdfordt's syndrome(Uveoparotid fever), Necrotising sialometaplasia
    (d) Cysts and tumors: Mucocele, ranula, pleomorphic adenoma, mucoepidermoid carcinoma
    (e) Miscellaneous: Sialolithiasis, Sjogren's syndrome, Mikulicz's disease and sialosis

(9) Dermatological diseases with oral manifestations:
    (a) Ectodermal dysplasia
    (b) Hyperkerotosis palmarplantaris with periodontopathy
    (c) Scleroderma
    (d) Lichen planus including ginspan's syndrome
    (e) Lupus erythematosus (f) Pemphigus (g) Erythema multiforme (h) Psoriasis

(10) Immunological diseases with oral manifestations
    (a) Leukemia
    (b) Lymphomas
    (c) Multiple myeloma
    (d) AIDS clinical manifestations opportunistic infections, neoplasms
    (e) Thrombcytopenia
    (f) Lupus erythematosus
    (g) Scleroderma
    (h) Dermatomyositis
    (i) Submucous fibrosis
    (j) Rheumatoid arthritis
    (k) Recurrent oral ulcerations including Behcet's syndrome and Reiter's syndrome

(11) Allergy: Local allergic reactions, anaphylaxis, serum sickness (local and systemic allergic manifestations to food, drugs and chemicals)

(12) Foci of oral infection and their ill effects on general health

(13) Management of dental problems in medically compromised persons:
    (a) Physiological changes: Puberty, pregnancy and menopause
    (b) The patients suffering with cardiac, respiratory, liver, kidney and bleeding disorders, hypertension, diabetes and AIDS. Post-irradiated patients.

(14) Precancerous lesions and conditions

(15) Nerve and muscle diseases:
    (a) Nerves:
        - Neuropraxia
        - Neurotemesis
        - Neuritis
        - Facial nerve paralysis including Bell's palsy, Heerfordt's syndrome, Melkerson Rosenthal syndrome and Ramsay Hunt syndrome

- Neuroma
- Neurofibromatosis
- Frey's syndrome

(b) Muscles:
- Myositis ossificans
- Myofascial pain dysfunction syndrome
- Trismus

(16) Forensic odontology:
(a) Medicolegal aspects of orofacial injuries
(b) Identification of bite marks
(c) Determination of age and sex
(d) Identification of cadavers by dental appliances, Restorations and tissue remnants

(17) Therapeutics : General therapeutic measures – drugs commonly used in oral medicine viz., antibiotics, chemotherapeutic agents, anti-inflammatory and analgesic drugs, astringents, mouth washes, styptics, demelucents, local surface anaesthetic, sialogogues, antisialogogues and drugs used in the treatment of malignancy

(18) Laser Treatment in Oral Medicine

Part-II: Behavioural Sciences and Ethics

Part: III: Oral Radiology

(1) Scope of the subject and history of origin
(2) Physics of radiation:
(a) Nature and types of radiations
(b) Source of radiations
(c) Production of X-rays
(d) Properties of X-rays
(e) Compton effect
(f) Photoelectric effect
(g) Radiation measuring units
(3) Biological effect of radiation
(4) Radiation safety and protection measures
(5) Principles of image production
(6) Radiographic techniques:
(a) Intra-Oral:
- Periapical radiographs (Bisecting and parallel technics)
- Bite wing radiographs
- Occlusal radiographs

(b) Extra-oral :
- Lateral projections of skull and jaw bones and paranasal sinuses
- Cephalograms
- Orthopantomograph
- Projections of temperomandibular joint and condyle of mandible
- Projections of Zygomatic arches

(c) Specialised techniques :
- Sialography
- Xeroradiography
- Tomography

(7) Factors in production of good radiographs:
(a) K.V.P. and mA. of X-ray machine

(b) Filters
(c) Collimations
(d) Intensifying screens
(e) Grids
(f) X-ray films
(g) Exposure time
(h) Techniques
(i) Dark room
(j) Developer and fixer solutions
(k) Film processing

(8) Radiographic normal anatomical landmarks
(9) Faulty radiographs and artefacts in radiographs
(10) Interpretation of radiographs in various abnormalities of teeth, bones and other orofacial tissues
(11) Principles of radiotherapy of oro-facial malignancies and complications of radio therapy
(12) Contrast radiography and basic knowledge of radio-active isotopes
(13) Radiography in Forensic Odontology – Radiographic age estimation and post-mortem radiographic methods

3.2 Practical:

(1) Student is trained to arrive at proper diagnosis by following a scientific and systematic procedure of history taking and examination of the orofacial region. Training is also imparted in management wherever possible. Training also shall be imparted on saliva diagnostic procedures. Training also shall be imparted in various radiographic procedures and interpretation of radiographs.
(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 following is the minimum of prescribed work for recording
(a) Recording of detailed case histories of interesting cases.....10
(b) Intra-oral radiographs (Periapical, bitewing, occlusal).....25
(c) Saliva diagnostic check as routine procedure

4. BOOKS:

(1) Burkit – Oral Medicine – J.B. Lippincott Company
(2) Coleman-Principles of Oral Diagnosis – Mosby Year Book
(3) Jones – Oral Manifestations of Systemic Diseases – W.B. Saunders Company
(4) Mitchell – Oral Diagnosis & Oral Medicine
(5) Kerr – Oral Diagnosis
(6) Miller – Oral Diagnosis & Treatment
(7) Hutchinsos – Clinical Methods
(8) Oral Pathology – Shafers
(9) Sonis S.T., Fazio R.C. and Gang. L. – Principles and practice of Oral Medicine
(10) White & Goaz – Oral Radiology – Mosby year Book
(11) Weahrman – Dental Radiology – C.V. Mosby Company
(12) Stafne – Oral Roentgenographic Diagnosis _ W.B. Saunders Co.,
(13) Derek H. Clark – Practical Forensic Odontology – Butterworth- Heinemann (1992)
(14) C. Michael Bowers, Gary Bell – Manual of Forensic Odontology – Forensic Pr (1995)

Fourth BDS (Main) Examination Month Year

Paper IV

Oral Medicine And Radiology

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Classify vesiculo-bullous lesions of the oral cavity. Describe etiology, clinical features and differential diagnosis of Pemphigus vulgaris. Also mention various treatment modalities, complications and the management of the complications. 10

Q.2 Short Notes:
a) Emergencies in a dental clinic 10
b) Dentrifices

Q.3 Discuss in detail management of a pregnant patient in routine dental care 10

Q.4 Short notes: 15
a) Antibiotics in oral medicine
b) Leukoplakia
c) Herpes simplex

Section B

Q.5 Discuss in detail radiation protection 10

Q.6 Short Notes: 10
a) Film processing
b) Dental X Rays

Q.7 What are the principles of projection geometry as applied to radiology 10

Q.8 Short notes: 15
a) Collimation and Filtration
b) Slob Technique
c) Sialolithiasis

Paper V : Oral & Maxillofacial Surgery (2650)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be:

(1) Competent in performing extraction of teeth under both local and general anaesthesia, prevent and manage related complications, 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.

2. OBJECTIVES:

(1) Knowledge & Understanding : At the end of the course and the clinical training the graduate is expected to-

(a) Apply the knowledge gained in the related medical subjects like pathology, microbiology and general medicine in the management of patients with oral surgical problem.

(b) Diagnose, manage and treat (understand the principles of treatment of) patients with oral surgical problems.

(c) Demonstrate knowledge of range of surgical treatments.

(d) Decide the requirement of a patient to have oral surgical specialist opinion or treatment.

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

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

(g) Demonstrate knowledge of ethical issues and should be able to communicate effectively.

(2) Skills:

(a) Examine any patient with an oral surgical problem in an orderly manner and request various clinical and laboratory investigations and be able to formulate differential diagnosis.

(b) Be competent in the extraction of teeth under both local and general anaesthesia.

(c) Be able to carry out certain minor oral surgical procedures under L.A. Like frenectomy, alveolar procedures & biopsy etc.

(d) Assess, prevent and manage various complications during and after surgery.

(e) Provide primary care and manage medical emergencies in the dental office.

(f) Understand management of major oral surgical problems

3. SYLLABUS:

3.1 Theory

(1) Introduction, definition, scope, aims and objectives.

(2) Diagnosis in oral surgery:

(a) History taking
(b) Clinical examination
(c) Investigation

(3) Principles of infection control and cross- infection control with particular reference to HIV/AIDS and Hepatitis.

(4) Principles of oral surgery
  (a) Asepsis : definition measures to prevent introduction of infection during surgery.
    i. Preparation of the patient .
    ii. Measures to be taken by operator
    iii. Sterilisation of instruments- various methods of sterilization etc.
    iv. Surgery setup
  (b) Painless surgery:
    i. Pre- anaesthetic considerations. Pre – medication: purpose, drugs used.
    ii. Anaesthetic considerations-
      - Local (b) Local with IV sedation
    iii. Use of general anaesthetic
  (c) Access:
    i. Intra-oral: Mucoperiosteal flaps, principles, commonly used intra oral incisions.
    ii. Bone removal: Methods of bone removal
    iii. Use of burs: Advantages & precautions
    iv. Bone cutting instruments: Principles of using chisel & osteotome.
    v. Extra-oral: Skin incisions – principles, various extra-oral incision to exspose facial skeleton
      - Submandibular
      - Pre auricular
      - Incision to expose maxilla &orbit
      - Bicoronal incision
  (d) Control of haemorrhage during surgery
    i. Normal haemostasis
    ii. Local measures available to control bleeding
    iii. Hypotensive anaesthesia etc.
  (e) Drainage &Debridement
    i. Purpose of drainage in surgical wounds
    ii. Types of drains used
    iii. Debridement: purpose, soft tissue & bone debridement
  (f) Closure of wounds
    i. Suturing: Principles, suture material, Classification, bony response to various materials etc.
  (g) Post operative care
    i. Post operative instructions
    ii. Physiology of cold and heat
    iii. Control of pain – analgesics
    iv. Control of infection – antibiotics
    v. Control of swelling – anti- inflammatory drugs
    vi. Long term post operative follow up –significance.

(5) Exodontia: General considerations
  (a) Ideal Extraction
  (b) Indications for extraction of teeth
  (c) Extractions in medically compromised patients.
  (d) Methods of extraction-

i. Forceps or intra-alveolar or closed method.
   - Principles, types of movement, force etc.
ii. Trans-alveolar, surgical or open method, indications, surgical procedure. Dental elevators: uses, classification, principles in the use of elevators, commonly used elevators.

(e) Complications of Exodontia
(f) Complications during exodontia
(g) Common to both maxilla and mandible.
(h) Post –operative complications
(i) Prevention and management of complications.

(6) Impacted teeth :
(a) Incidence ,definition ,aetiology.
i. Impacted mandibular third molar.
ii. Classification ,reasons for removal,
iii. Assessment –both clinical and radiological
iv. Surgical procedures for removal.
v. Complications during and after removal.
vi. Prevention and management

(b) Maxillary third molar
i. Indications for removal, classification
ii. Surgical procedure for removal

(c) Impacted maxillary canine
i. Reasons for canine impaction
ii. Localisation, indications for removal
iii. Methods of management, labial and palatal approach.
iv. Surgical exposure, transplantation, removal etc.

(7) Pre- prosthetic surgery:
(a) Definition, classification of procedures
i. Corrective procedures: Alveoloplasty, Reduction of maxillary tuberosities, Frenectemies and removal of tori
ii. Ridge extension or sulcus extension procedures
   - Indications and various surgical procedures
iii. Ridge augmentation and reconstruction
iv. Indications, use of bone graft, Hydroxyapatite
v. Implants –concept of Osseo integration
vi. Knowledge of various types of implants and
vii. Surgical procedures to place implants

(8) Diseases of the maxillary sinus
(a) Surgical anatomy of the sinus
(b) Sinusitis both acute and chronic
(c) Surgical approach of sinus- Caldwell –luc procedure
(d) Removal of root from the sinus
(e) Oro-antral fistula-aetiology, clinical features and various surgical methods of closure

(9) Disorders of T.M. joint
(a) Applied surgical anatomy of the joint
(b) Dislocation-types, aetiology, clinical features and management
(c) Ankylosis- definition, aetiology, clinical features and management
(d) Myo-facial pain dysfunction syndrome, aetiology, clinical features, management – nonsurgical and surgical
(e) Internal derangement of the joint.

(f) Arthritis of T.M. joint

(10) Infections of oral cavity
- (a) Introduction, factors responsible for infection, course of odontogenic infections
- (b) Spread of odontogenic infections through various fascial spaces.
- (c) Dentoalveolar abscess-aetiology, clinical features and management
- (d) Osteomyelitis of the jaws- definition, aetiology, predisposing factors,
- (e) Classification, clinical features and management
- (f) Ludwig's angina –definition, aetiology, clinical features, management and complications

(11) Benign cystic lesions of jaws
- (a) Definition, classification, pathogenesis.
- (b) Diagnosis-clinical features, radiological, aspiration biopsy, use of media and histopathology
- (c) Management – Types of surgical procedures, Rationale of the techniques, indications, procedures, complications etc.

(12) Tumors of oral cavity:
- (a) General considerations
- (b) Non odontogenic benign tumours occurring in oral cavity- fibroma, Papilloma, lipoma, ossifying fibroma, myxoma etc.
- (c) Amebolastoma – clinical features, radiological appearance and methods of management
- (d) Carcinoma of oral cavity-
  - i. Biopsy types
  - ii. TNM classification
  - iii. Outline of management of squamous cell carcinoma: surgery,
  - iv. Radiation and chemotherapy
  - v. Role of dental surgeons in the prevention and early detection of oral cancer.

(13) Fractures of the jaw:
- (a) General considerations, types of fracture, aetiology, clinical
- (b) Features and general principles of management
- (c) Mandibular fractures – applied anatomy , classification
- (d) Diagnosis – clinical and radiological
- (e) Management reduction closed and open
- (f) Fixation and immobilization methods
- (g) Outline of rigid and semi-rigid internal fixation
- (h) Fractures of the condyle - aetiology , classification ,clinical features
- (i) Principles of management
- (j) Fractures of the middle third of face
- (k) Definition of the mid face, applied surgical anatomy, classification
- (l) Clinical features and outline of management
- (m) Alveolar fractures – methods of management
- (n) Fractures of the Zygomatic complex
- (o) Classification, clinical features, indications for treatment, various methods of reduction and fixation
- (p) Complications of fractures- delayed union, non-union and malunion

(14) Salivary gland diseases:
- (a) Diagnosis of salivary gland diseases
- (b) Sialography, contrast media, procedure
- (c) Infections of the salivary glands
- (d) Sialolithiasis – submandibular duct and gland and parotid duct.

(e) Clinical Features, management.
(f) Salivary fistulae
(g) Common tumours of salivary glands like Pleomorphic adenoma
(h) Including minor salivary glands.

(15) Jaw deformities:
(a) Basic forms –Prognathism, Retrognathism and open bite.
(b) Reasons for correction.
(c) Outline of surgical methods carried out on mandible & maxilla.

(16) Neurological disorders:
(a) Trigeminal neuralgia-definition, aetiology, clinical features and methods of management including surgical.
(b) Facial paralysis –aetiology, clinical features.
(c) Nerve injuries –classification, neurorhaphy etc.

(17) Cleft lip and palate:
(a) Aetiology of the clefts, incidence, classification, role of dental Surgeon in the management of cleft patients. Outline of the closure procedures

(18) Medical Emergencies in dental practice:
(a) Primary care of medical emergencies in dental practice particurarly-
i. Cardio vascular
ii. Respiratory
iii. Endocrine
iv. Anaphylactic reaction
v. Epilepsy

(19) Emergency drugs, Intra muscular, I.V. injections:
(a) Applied anatomy, ideal location for giving these injections, techniques etc.

(20) Oral Implantology

(21) Ethics

Local Anaesthesia

(1) Introduction, concept of L.A., classification of local anaesthetic agents, Ideal requirements, mode of action, types of local anaesthesia, Complications.
(2) Use of vaso constrictors in local anaesthetic solution
(3) Advantages, contraindications, various vaso constrictors used. Anaesthesia of the mandible-
(4) Pterygomandibular space-boundaries,contents etc.
(5) Inferior dental nerve block- various techniques and complications
(6) Mental foramen nerve block
(7) Anaesthesia of maxilla-
(8) Infra-orbital nerve block
(9) Posterior superior alveolar nerve block
(10) Maxillary nerve block – techniques

General Anaesthesia

(1) Concept of general anaesthesia
(2) Indications of general anaesthesia in dentistry
(3) Pre- anaesthetic evaluation of the patient.
(4) Pre –anaesthetic medication – advantages, drugs used.
(5) Commonly used anaesthetic agents.
(6) Complications during and after G.A.
(7) I.V. sedation with diazepam and medozolam.
(8) Indications, mode of action, technique etc.

(9) Cardiopulmonary resuscitation
(10) Use of oxygen and emergency drugs.
(11) Tracheostomy.

4. BOOKS:

(1) Impacted teeth - Alling John F et al
(2) Principles of oral and maxillofacial surgery(vol 1,2&3) – Peterson LJ
(3) Text book of oral and maxillofacial surgery –Srinivasan B
(4) Handbook of medical emergencies in the dental office –Malamed SF
(5) Killeys Fractures of the mandible- Banks P
(6) Killeys Fractures of the middle 3rd of the facial skeleton-Banks P
(7) The maxillary sinus and its dental implication- McGovanda
(8) Killeys and Kays outline of oral surgery –part-1 –Seward GR & etal
(9) Essentials of safe dentistry for medically compromised patient-McCarthy FM
(10) Oral and maxillofacial surgery (vol 2) –Laskin DM
(11) Extraction of teeth –Howe GL
(12) Minor oral surgery –Howe GL
(13) Contemporary oral and maxillofacial surgery –Peterson I.J. & EA
(14) Oral and maxillofacial infections –Topazian RG & Goldberg MH
(15) Text Book of oral & Maxillofacial Surgery - Neelima Anil Malik
(16) Hand Book of Local Anaesthesia - Stanley F. Malamed

Fourth BDS (V) **Oral.Maxillofac.Surg.-V**
(2650)

Fourth BDS (Main) Examination Month Year

Paper V

Oral and Maxillofacial Surgery

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Classify mandibular third molar impactions. Describe WAR lines, radiographic diagnosis and management 10

Q.2 Short Notes 10
a) Classification of cleft lip and palate
b) Trigeminal neuralgia

Q.3 Classify mandibular fractures .Describe management of mandibular fractures. 10

Q.4 Short Notes (3) 15
a) Mechanism of action of LA
b) Eutectic mixture
c) Principles of elevators

Section B

Q.5 What is ameloblastoma? Describe in detail. 10

Q.6 Short Notes: 10
a) Subluxation
b) Trigeminal neuralgia management

Q.7 What is haemorrhage? Describe various modalities for haemostasis? Also write management of patient with haemophilia 10

Q.8 Short Notes: 15
a) Maxillary sinus
b) Preanesthetic medication
c) Pterygomandibular space

Paper VI : Conservative Dentistry & Endodontics (2660)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. SYLLABUS:

1.1 Pre-Clinical Conservative Dentistry & Endodontics

Practical Exercises

(1) Exercise to improve the dexterity:
   (a) Preparation of plaster models of teeth
   (b) Finishing and polishing of plaster models
   (c) Marking of cavity as per Black's classification on these plaster models for Dental Amalgam fillings and inlays.
   (d) Preparation of cavities for Amalgam fillings and inlays on plaster model
   (e) Restoration of the prepared cavities with modelling wax.
(2) Exercise for cavity preparation of Dental Amalgam Restoration on natural/ivory
   (a) Mounting of the Natural/Ivory teeth on phantom head.
   (b) Preparation of Cl.I/Cl. I Comp/Cl.II/Cl.V/M.O.D. cavities of posterior teeth with special emphasis on Cl. II cavities.
   (c) Cavity lining on all the prepared cavities.
   (d) Restoration & polishing of all teeth restored with dental amalgam.
(3) Exercises for anterior teeth restoration:
   (a) Preparation of Cl. III/Cl. IV cavities in anterior teeth.
   (b) Preparation of wax pattern for the same with inlay wax.

Demonstrations Only

(1) Casting procedures
(2) Restoration of fractured anterior teeth with composite resins.
(3) Opening of root canal for anterior/posterior teeth.

Topic for II year

(1) Introduction to Conservative Dentistry
(2) Definition, Aim & Scope of Conservative Dentistry & Endodontics
(3) Nomenclature of dentition; Tooth Numbering systems
(4) Restoration : Definition & Objectives
(5) Hand Instruments : Classification, Nomenclature, Design, Formula of hand cutting instruments, Grasps and Rests, Sterilization.
(6) Rotary Cutting instruments: Burs, Design, Types, Various speeds in tooth preparation, Hazards with cutting instruments.
(7) Dental caries – Etiology, Classification, Caries terminology
(8) Fundamentals in Tooth preparation

(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, V amalgam restoration, Failure of amalgam restoration.
(11) Contact and contour of teeth – different methods of tooth separation
(12) Matrices, Retainers, Wedges – methods of wedging
(13) Finishing & polishing of restorations
(14) Chair side positions – patient and operator positions
(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
(16) Access cavity and brief introduction of root canal instruments

Topic for III Year

(1) Nomenclature of Dentition
   (a) Tooth numbering systems: ADA, Zigmondy Palmer, and FDI systems 1
(2) Gnathological concepts of Restoration
   (a) Physiology of occlusion, normal occlusion, ideal occlusion mandibular movements and occlusal analysis, Occlusal rehabilitation and restoration
(3) Dental Caries
   (a) Aetiology, classification clinical features, morphological features, microscopic features, clinical diagnosis and sequel of dental caries, Caries treatment.
(4) Treatment Planning for Restorative Procedure:
   (a) Patient assessment, clinical examination, radiographic examination, tooth vitality tests, diagnosis and treatment planning, preparation of the case sheet, Patient and operator position
(5) Preventive measures in restorative practice
   (a) Plaque control, Pit and Fissure sealants, Fluorides, Dietary measures, restorative procedures and periodontal health.
(6) Armamentarium for Tooth Preparation:
   (a) General classification of operative instruments
      i. Hand cutting instruments
      ii. Terminology and classification
      iii. Design, formula and sharpening of instruments, Chair positioning
      iv. Grasp Rest and application
   (b) Rotary cutting instruments
      i. Dental bur, mechanism of cutting
      ii. Common design characteristics
      iii. Diamond and other abrasive instruments
      iv. Cutting mechanism
      v. Hazards and precautions
      vi. Sterilization and maintenance of instruments, Basic Instrument tray set up, Speed in Dentistry
(7) Isolation of Operating Field:
   (a) Control of moisture, Purpose and methods of isolation, rubber dam isolation in detail, antisialogogues
(8) Infection Control
   (a) Routes of transmission of dental infection
   (b) Personal barrier protection, Control of infection from aerosol, spatter

(c) Sterilization procedures for dental equipment and instruments, monitoring, sterilization, disinfection of operatory, Dental water line contamination and Biofilm, Disposal of waste

(9) Pulp Protection
   (a) Liners, Varnishes, Bases
   (b) Affected and infected dentin, Caries detector dyes, Concepts of Remaining Dentin Thickness
(10) Pain control in restorative procedures
(11) Amalgam Restoration:
   (a) Indication, contraindication
   (b) Physical and mechanical properties, Clinical behaviour, Advantages and disadvantages
   (c) Tooth preparation for Class I, II, V and III
   (d) Stepwise procedure for tooth preparation and restoration including modified designs
   (e) Bonded amalgam, Failure and repair of amalgam restorations
(12) Contacts and contour
   (a) Tooth separation, Matrices, Retainers, and Wedges, Methods of wedging
(13) Management of Deep Carious Lesions
   (a) Technique of caries excavation – Hand and rotary
   (b) Indirect and Direct Pulp Capping, Pulpotomy
(14) Dentinal Hypersensitivity
   (a) Theories of hypersensitivity and its Management
(15) Non Carious tooth lesions

Topic for IV Year

(1) Complex amalgam restorations
(2) Pin Amalgam Restoration
   (a) Indications, Contraindication, 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
   (b) Gingival Tissue Management
   (c) Indication and methods, including recent techniques for gingival retraction
   (d) Adhesion to tooth structure
   (e) Definition and mechanism
   (f) Enamel and Dentin bonding
   (g) Classification and recent development in dentin bonding systems components of dentin bonding agents critical steps in dentin bonding
(3) Anterior Restorations
   (a) Selection of cases, selection of material, shade selection, Clinical technique for anterior composite restorations
   (b) Composition, classification, properties
   (c) Recent advances in composite resins
   (d) Indications, contraindications, advantages, disadvantages
   (e) Steps wise procedures of tooth preparation for composite restorations, Finishing and polishing of composite restoration.
(4) Minimal Invasive Dentistry
   (a) Principles of MID, caries risk assessment, materials and techniques
(5) Alternate methods of tooth preparation for restorations
   (a) Air abrasion, chemo mechanical method, lasers

Endodontics

(1) Introduction, definition, scope and future of Endodontics

(2) Rationale and principles of Endodontics
    (a) Case selection, indication and contraindications for root canal treatments
(3) Clinical diagnostic methods
    (a) Case history, diagnosis and treatment plan
(4) Microbiology of endodontics infection
    (a) Rubber dam application, Isolation
(5) Endodontics instruments
    (a) Hand instruments, Power driven instruments
    (b) Standardization, Principles of using endodontics instruments, Sterilization
(6) Pulpal diseases
    (a) Classification, etiology, diagnosis, management
(7) Periapical diseases:
    (a) Classification, etiology, diagnosis, management
(8) Vital pulp therapy:
    (a) Indirect and direct pulp capping
    (b) Pulpotomy types and medicaments used
    (c) Apexogenesis and apexification and problems of open apex

Esthetics in dentistry

(1) Introduction and scope
(2) Anatomy and physiology of smile, Role of colour and translucency
(3) Asthetic recontouring, Alteration of tooth form, shape, size and colour Management of discoloured teeth
(4) Composite restoration
    (a) Recent advances in posterior composite resins
    (b) Indications, contraindications, advantages and disadvantages
    (c) Stepwise procedure of tooth preparation for composite restoration
    (d) Clinical technique for posterior direct composite restorations
    (e) Finishing and polishing of composite restoration
    (f) Indirect posterior composite restoration
(5) Casts Restorations
    (a) Indications, contraindications, advantage and disadvantages
    (b) Materials used
    (c) Class II cavity preparation for inlays, Types of bevels in cast restoration
    (d) Fabrication of wax patterns
    (e) Differences in tooth preparation for amalgam and cast restorations
(6) Casting
    (a) Die materials and preparation of dies
    (b) Refractory materials, Alloys used for casting
    (c) Casting machines, Casting procedure
    (d) Casting defects, Cementation of restoration
(7) Temporisation or interim restoration
    (a) Materials and procedure
(8) Root Caries
    (a) Etiology clinical features and management
(9) Non carious destruction of tooth structure
    (a) Definition, etiology, diagnosis, clinical features and management
(10) Ceramic Restorations
    (a) Recent advances in ceramic materials & techniques including CADCAM (in brief)

(b) Ceramic laminates, inlays, onlays and crowns, Indications, contraindications, advantages, disadvantages and techniques (in brief)

(11) Direct Filling gold Restorations
   (a) Introduction
   (b) Types of direct filling gold
   (c) Indications, contraindications, advantages, disadvantages tooth preparation and restoration

Endodontics

(1) Emergency endodontics procedures
(2) Anatomy of pulp space
   (a) Root canal anatomy of maxillary and Mandibular teeth
   (b) Classification of canal configuration and variations in pulp space
(3) Access preparation
   (a) Objectives
   (b) Principles
   (c) Instruments used, Sequential steps of access preparation for individual tooth
(4) Preparation of root canal space
   (a) Determination of working length definition and methods of determining working length
   (b) Cleaning and shaping of root canals
   (c) Objectives, Principles, Instruments used, Techniques – hand and rotary, Step back & Crown down methods
(5) Disinfection of root canal space
   (a) Irrigants, Functions, Requirements, Types, Methods and techniques of irrigation
   (b) Intracanal medicaments
   (c) Functions, Requirements, Types, Method of placement and limitations
(6) Problems during cleaning and shaping of root canal system
   (a) Perforation and its management, Broken instruments and its management
   (b) Management of curved root canals
(7) Obturation of the root canal system
   (a) Materials
      i. Ideal root canal filling material, classification of materials
   (b) Obturation techniques, Classification and procedure
(8) Root canal sealers
   (a) Ideal properties, Classification, Functions, Manipulation and application of root canal sealers
(9) Post endodontic restoration
   (a) Principles of post endodontic restorations
   (b) Post and core materials and procedure (in brief)
(10) Smear layer and its importance in endodontics and conservative treatment
(11) Discoloured teeth and its management
   (a) Bleaching agents, Vital and non vital bleaching methods
(12) Traumatized teeth
   (a) Classification of fractured teeth, Management of fractured tooth, Luxated teeth and its management
(13) Endodontic surgeries
   (a) Indication contraindications, pre-operative preparation
   (b) Surgical instruments and techniques, Apicoectomy, retrograde filling
   (c) Post operative sequale, Trephination, hemisection
   (d) Radisectomy, Reimplantation (both intentional and accidental)

(14) Root Resorption, Etiology and management
(15) Success and failures of endodontic treatments
(16) Retreatment in Endodontics
(17) Use of specialized equipments like lasers and microscopes in conservative dentistry and Endodontics.
(18) Regenerative Endodontics

Fourth BDS (VI) **Conser.Denti.Endodon.-VI**
(2660)

Fourth BDS (Main) Examination Month Year

Paper VI
Conservative Dentistry and Endodontics
Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Classify Composite Resin. Discuss the Acid Etching procedure & its Importance in Composite Restoration 10

Q.2 Short Notes 10
a) Self Etching Primers
b) Reverse Bevel

Q.3 Classify Silver Alloys .Describe in detail the setting reaction of low copper alloy and its Disadvantages 10

Q.4 Short Notes 15
a) Miracle Mix
b) Hybrid Layer
c) Cavity Liner & bases

Section B

Q.5 Classify fracture of Teeth. Discuss in detail the management of Ellis Class III Fracture 10

Q.6 Short Notes 10
a) Internal resorption
b) NI-TI Files

Q.7 Crown Down Technique-Advantages, disadvantages & Biologic Benefits 10

Q.8 Short Notes 15
a) Root canal Irrigation
b) Golden Medium files
c) EDTA

Paper VII : Prosthodontics and Crown And Bridge (2670)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be able to work competently in the community carrying out the prosthodontic procedures safely.

2. OBJECTIVES:

At the completion of the undergraduate training program the graduates shall be competent in the following.-

(1) Able to understand and use various dental materials
(2) Competent to carry out treatment of conventional complete and partial removable dentures and fabricate fixed partial dentures
(3) Able to carry out treatment of routine prosthodontic procedures
(4) Familiar with the concept of osseointegration and the value of implant supported Prosthodontic procedures.

3. SYLLABUS:

3.1 Theory

Complete Dentures

(1) Applied Anatomy and Physiology:
    (a) Introduction
    (b) Biomechanics of the edentulous state.
    (c) Residual ridge resorption.
(2) Communicating with the patient:
    (a) Understanding the patient's mental attitude.
    (b) Instructing the patient.
(3) Diagnosis and treatment planning for patients:
    (a) With some teeth remaining.
    (b) With no teeth remaining.
        i. Systemic status.
        ii. Local factor.
        iii. The geriatric patient.
        iv. Diagnostic procedures.
(4) Articulators- definition, classification, uses and advantages
(5) Improving the patient's denture foundation and ridge relation -an overview.
    (a) Pre-operative examination.
    (b) Initial hard tissue & soft tissue procedure.
    (c) Secondary hard & soft tissue procedure.
    (d) Implant procedure.

(e) Congenital deformities.
(f) Postoperative procedure.

(6) Principles of Retention, Support and Stability

(7) Impressions - detail
(a) Muscles of facial expression.
(b) Biologic considerations for maxillary and mandibular impression including anatomy landmark and their interpretation.
(c) Impression objectives
(d) Impression materials.
(e) Impression techniques.
(f) Maxillary and mandibular impression procedures.
i. Preliminary impressions.
ii. Final impressions.

(8) Record bases and occlusion rims
(a) Materials & techniques.
(b) Useful guidelines and ideal parameters.
(c) Recording and transferring bases and occlusal rims.

(9) Biological consideration in jaw relation & jaw movements - craniomandibular relations.
(a) Mandibular movements.
(b) Maxillo -Mandibular relation including vertical and horizontal jaw relations.
(c) Concept of occlusion- discuss in brief.

(10) Relating the patient to the articulator
(a) Face bow types & uses- discuss in brief.
(b) Face bow transfer procedure - discuss in brief.

(11) Recording maxilla-mandibular relation
(a) Vertical relations.
(b) Centric relation records.
(c) Eccentric relation records.
(d) Orientation relations.

(12) Tooth selection and arrangement
(a) Anterior teeth.
(b) Posterior teeth.
(c) Esthetic and functional harmony.

(13) Relating inclination of teeth to concept of occlusion- in brief
(a) Neutrocentric concept.
(b) Balanced occlusal concept.
(c) Lingualised Occlusion

(14) Trial dentures

(15) Laboratory procedures
(a) Wax contouring.
(b) Investing of dentures.
(c) Preparing of mold.
(d) Preparing & packing acrylic resin.
(e) Processing of dentures.
(f) Recovery of dentures.
(g) Lab remount procedures.
(h) Recovering the complete denture from the cast.
(i) Finishing and polishing the complete denture.
(j) Plaster cast for clinical denture remount procedure.

(16) Denture insertion

(a) Insertion procedures.
(b) Clinical errors.
(c) Correcting occlusal disharmony.
(d) Selective grinding procedures.

(17) Treating problems with associated denture use - discuss in brief.
(18) Treating abused tissues - discuss in brief.
(19) Relining and rebasing of dentures- discuss in brief.
(20) Immediate complete dentures construction procedure- discuss in brief.
(21) The single complete denture- discuss in brief.
(23) Overdentures - discuss in brief.
(24) Dental implants in complete denture - discuss in brief.

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

(1) Definition
(2) Diagnosis (of the particular situation /patient selection /treatment planning)
(3) Types / Classification
(4) Materials
(5) Methodology - Lab /Clinical
(6) Advantages & disadvantages
(7) Indications, contraindications
(8) Maintenance Phase

Removable Partial Dentures

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

(19) Removable Partial Dentures opposing Complete denture

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

(1) Definition
(2) Diagnosis (of the particular situation /patient selection /treatment planning)
(3) Types / Classification
(4) Materials
(5) Methodology - Lab /Clinical
(6) Advantages & disadvantages
(7) Indications, contraindications
(8) Maintenance Phase

Fixed Partial Dentures

(1) Introduction
(2) Fundamentals of occlusion - in brief.
(3) Articulators - in brief.
(4) Treatment planning for single tooth restorations.
(5) Treatment planning for the replacement of missing teeth including selection and choice of abutment teeth.
(6) Fixed partial denture configurations.
(7) Principles of tooth preparations.
(8) Preparations for full veneer crowns - in detail.
(9) Preparations for partial veneer crowns - in brief.
(10) Provisional Restorations
(11) Fluid Control and Soft Tissue Management
(12) Impressions
(13) Working Casts and Dies
(14) Wax Patterns
(15) Pontics and Edentulous Ridges
(16) Esthetic Considerations
(17) Finishing and Cementation
(18) Failures in FPD

Topics to be Covered in Brief-

(1) Soldered Joints and Other Connectors
(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 Partial Denture

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

(1) Definition
(2) Diagnosis (of the particular situation /patient selection /treatment planning)
(3) Types / Classification
(4) Materials
(5) Methodology - Lab /Clinical

(6) Advantages & disadvantages
(7) Indications, contraindications
(8) Maintenance Phase

3.2 Clinical Demonstration to the Undergraduates

(1) Cleaning and sterilization of instruments.
(2) Special Impression procedures for distal extension RPD.
(3) Impression procedure for FPD using elastomeric impression material
(4) Facebow record procedure
(5) Surveying of a cast.

3.3 Additional Assignments

(1) Educational and academic charts: The third and final year students are given specific tasks of making educational and academic charts for the department. These charts are displayed in the clinics and the practical lab which are used as teaching aids. Three or four students are allotted a particular topic for preparing the chart under the guidance of staff.
(2) Seminars and group discussions: These are used as a means of additional teaching/learning tools for students. The students are allotted basic topics in prosthodontics to prepare and present seminars in the department. The students present seminar in the presence of staff. At the end of seminar there is an evaluation and discussion. Group discussions are conducted for developing communicative skills for the students. The students debate on an assigned topic in the presence of staff.
(3) Case presentations: Interesting cases are presented and discussed on a monthly basis in the seminar room on power point.

4. BOOKS:

(1) Restorative Dental Materials, Elsevier (Robert C Craig)
(2) Science of Dental Materials, Elsevier (Anusavice KJ)
(3) Dental Materials: properties and Manipulation, Elsevier (Robert C Craig)
(4) Treatment for completely edentulous patients, Elsevier (Zarb)
(5) Syllabus of complete dentures (Charles M Heartwell)
(6) Essentials of complete denture prosthodontics, Medico Dental Media International (Sheldon Winkler)
(7) Clinical Dental prosthetics, CBS Publishers (HRB Fenn)
(8) Complete denture prosthodontics, McGraw-Hill (John J Sharry)
(9) McCraken's removable partial prosthodontics, Mosby Elsevier (William L McCraken)
(10) Clinical Removable partial prosthodontics, Medico Dental Media International (Kenneth W Stewart)
(11) Tylman's theory and practice of fised prosthodontics, Ishiyaku EuroAmerica (William FP Malone)
(12) Contemporary Fixed Prosthodontics, Mosby Elsevier (Stephen F Rosenstiel)
(13) Fundamentals of fixed prosthodontics, Quintessence (Herbert T. Shillingburg)

Fourth BDS (Main) Examination Month Year

Paper VII

Prosthodontics and Crown And Bridge

Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q. 1 Define impression. Discuss theories of impression making for complete dentures with their merits and demerits 10

Q.2 Short Notes 10
a) Facebow
b) Squint test.

Q.3 Define Centric Relation. Discuss the methods of recording centric relation. 10

Q.4 Short Notes 15
a) Circumferential clasp
b) Path of insertion of RPD
c) Denture stomatitis

Section B

Q.5 Define major connector. List their ideal requirements. Discuss in brief mandibular major connectors. 10

Q.6 Short Notes 10
a) Resin bonded prosthesis
b) Pontic designs

Q.7 Discuss principles of tooth preparation. 10

Q.8 Short Notes 15
a) Removable dies
b) Laminates and veneers
c) Partial veneer crown

Paper VIII : Paediatrics & Preventive Dentistry (2680)
(Having Section A & B)

Theory: 70 marks
Oral (Viva): 20 marks
Internal Assessment: 10 marks
Practical: 90 marks
Internal Assessment: 10 marks
Total: 200 marks
Maximum Marks: 70
Duration: 3 hrs.

1. GOAL:

At the end of the course the student should be competent to practice paediatric and preventive dentistry in the community effectively.

2. OBJECTIVES:

At the completion of the undergraduate training programme the graduates shall be competent in the following.-

(1) Able to instill a positive attitude and behaviour in children towards oral health and understand the principles of prevention and preventive dentistry right from birth to adolescence.

(2) Able to guide and counsel the parents in regards to various treatment modalities including different facets of preventive dentistry.

(3) Able to treat dental diseases occurring in child patient.

(4) Able to manage the physically and mentally challenged disabled children effectively and efficiently, tailored to the needs of individual requirement and conditions.

3. SYLLABUS:

3.1 Theory

(1) Introduction to Pedodontics & Preventive Dentistry:
   (a) Definition, Scope, Objectives and Importance.

(2) Growth & Development:
   (a) Importance of study of growth and development in Pedodontics.
   (b) Prenatal and Postnatal factors in growth & development.
   (c) Theories of growth & development.
   (d) Development of maxilla and mandible and related age changes.

(3) Development of Occlusion from Birth through Adolescence:
   (a) Study of variations and abnormalities.

(4) Dental Anatomy and Histology:
   (a) Development of teeth and associated structures.
   (b) Eruption and shedding of teeth.
   (c) Teething disorders and their management.
   (d) Chronology of eruption of teeth.
   (e) Differences between deciduous and permanent teeth.
   (f) Development of dentition from birth to adolescence.
   (g) Importance of first permanent molar.

(5) Dental Radiology related to Pedodontics:

(6) Oral Surgical Procedures in Children:

(a) Indications and contraindications of extractions of primary and permanent teeth in children.
(b) Knowledge of Local and General Anesthesia.
(c) Minor surgical procedures in children.

(7) Dental Caries:
(a) Historical background.
(b) Definition, aetiology & pathogenesis.
(c) Caries pattern in primary, young permanent and permanent teeth in children.
(d) Rampant caries, early childhood caries and extensive caries:
i. Definition, aetiology, Pathogenesis, Clinical features, Complications & Management
- Role of diet and nutrition in Dental Caries.
- Dietary modifications & Diet counseling.
- Caries activity, tests, caries prediction, caries susceptibility & their clinical application.

(8) Gingival & Periodontal Diseases in Children:
(a) Normal gingiva & periodontium in children.
(b) Definition, aetiology & Pathogenesis.
(c) Prevention & Management of gingival & Periodontal diseases.

(9) Child Psychology:
(a) Definition.
(b) Theories of child psychology.
(c) Psychological development of children with age.
(d) Principles of psychological growth & development while managing child patient.
(e) Dental fear and its management.
(f) Factors affecting child's reaction to dental treatment.

(10) Behaviour Management:
(a) Definitions.
(b) Types of behaviour encountered in the dental clinic.
(c) Non-pharmacological & pharmacological methods of Behaviour Management.

(11) Pediatric Operative Dentistry:
(a) Principles of Pediatric Operative Dentistry.
(b) Modifications required for cavity preparation in primary and young permanent teeth.
(c) Various Isolation Techniques.
(d) Restorations of decayed primary, young permanent and permanent teeth in children using various restorative materials like Glass Ionomer, Composites & Silver Amalgam, Stainless steel, Polycarbonate & Resin Crowns.

(12) Pediatric Endodontics:
(a) Principles & Diagnosis.
(b) Classification of Pulpal Pathology in primary, young permanent & permanent teeth.
(c) Management of Pulpally involved primary, young permanent & permanent teeth.
i. Pulp capping – direct & indirect.
ii. Pulpotomy
iii. Pulpectomy
iv. Apexogenesis
v. Apexification
vi. Obturation Techniques & material used for primary, young permanent & permanent teeth in children.

(13) Traumatic Injuries In Children:
(a) Classifications & Importance.

(b) Sequelae & reaction of teeth to trauma.
(c) Management of Traumatized teeth.

(14) Preventive & Interceptive Orthodontics:
(a) Definitions.
(b) Problems encountered during primary and mixed dentition phases & their management.
(c) Serial extractions.
(d) Space management.

(15) Oral Habits In Children:
(a) Definition, Aetiology & Classification.
(b) Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
(c) Management of oral habits in children.

(16) Dental Care of Children with Special Needs:
(a) Definition, Aetiology, Classification, Behavioural and Clinical features & Management of children with:
i. Physically handicapping conditions.
ii. Mentally compromising conditions.
iii. Medically compromising conditions.
iv. Genetic disorders.

(17) Congenital Abnormalities in Children:
(a) Definition, Classification, Clinical features & Management.

(18) Dental Emergencies in Children & their Management

(19) Dental Materials Used in Pediatric Dentistry

(20) Preventive Dentistry:
(a) Definition.
(b) Principles & Scope.
(c) Types of prevention.
(d) Different preventive measures used in Pediatric Dentistry including pit and fissure sealants and caries vaccine.

(21) Dental Health Education & School Dental Health Programmes

(22) Fluorides:
(a) Historical background.
(b) Systemic & Topical fluorides.
(c) Mechanism of action.
(d) Toxicity & Management.
(e) Defluoridation techniques.

(23) Case History Recording:
(a) Outline of principles of examination, diagnosis & treatment planning.

(24) Setting Up Of Pedodontic Clinic

3.2 Practical
III Year BDS
Wire bending exercises:
(1) Straight Wire
(2) Triangle
(3) Square
(4) Circle
(5) UV Loop
Cavity Preparation: (with micro-motor)
Class I Cavity preparation on

Class II Extracted teeth / typhodont
Class III With Amalgam / GIC restoration
Class V
Cavity Preparation: (with air-rotor)
Class I Cavity preparation on extracted teeth
Class II
Dental Camps and Health Education:
(1) One dental camp in clinical posting
Discussion Topics
(1) Introduction to pediatric dentistry
(2) Case history
(3) Tooth numbering system
(4) Plaque control
(5) Instruments used in pediatric dentistry
(6) Sterilization
(7) Difference between Primary & Permanent teeth
(8) Fluorides
(9) Principals of Cavity Preparation

IVth year BDS

Clinical Quota:

(1)	Class I restoration	25
(2)	Class II restoration	
	(a) Oral Prophylaxis	20
	(b) Fluoride Application	05
	(c) Extraction	10
	(d) Pit & fissure sealant	3
	(e) Space Maintainer / RPD	1
	(f) Composite Restoration	1
	(g) Case History Recording & Treatment Planning	10

Lab Quota:

(1)	Wire bending	
	(a) C - Clasp	
	(b) Adams Clasp	
	(c) Labial Bow	
	(d) Helical canine retractor	
(2)	Oral Screen –	1
(3)	Habit breaking appliance –	1 Ideal Cast
(4)	Hawley's Appliances –	1
(5)	Activator – 1	
(6)	Space Maintainer –	2(Functional & Non functional)

Carving:

Dental Camps and Health Education:

(1) Two dental camps in final year with dental health education module teaching and educating patients about oral hygiene measures like tooth brushing, flossing etc

Discussion Topics

(1) Isolation of teeth
(2) Deep caries management
(3) LA in pediatric dentistry
(4) Cavity modifications
(5) Interception of habits
(6) Crowns used in pediatric dentistry
(7) Management of lower anterior crowding
(8) Pit and fissure sealants
(9) Clinical considerations of medically compromised child
(10) Obturating materials in pediatric dentistry
(11) Uses and maintenance of dental equipment
(12) Restorative materials used in pediatric dentistry
(13) Exodontia
(14) Commonly used drugs in pediatric dentistry

Clinical Demonstration to the Undergraduates:

(1) Cleanliness and sterilization of instruments
(2) Conventional and modified cavity preparation in deciduous teeth.
(3) Pit and fissure sealant placement
(4) Technique of composite restorations
(5) Using of dental equipment
(6) Administration of local anesthesia in children
(7) Methodology of exodontia in children
(8) Usage of fluorides

4. BOOKS:

(1) Pediatric Dentistry (Infancy through Adolescences) – Pinkham.
(2) Kennedy's Pediatric Operative Dentistry – Kennedy & Curzon.
(3) Clinical Pedodontics – Finn.
(4) Pediatric Dentistry – Mathewson.
(5) Pediatric Oral & Maxillofacial Surgery – Kaban.
(6) Dentistry for the Child and Adolescence – Mc. Donald.
(7) Understanding of Dental Caries – Niki Foruk.
(8) Pediatric Dentistry – Shobha Tandon
(9) Textbook of Pediatric Dentistry – Nikhil Marwah
(10) Pediatric dentistry – Muthu MS
(11) Pediatric Dentistry – Damle S. G.
(12) Textbook of Pediatric Dentistry – Arthi Rao
(13) Primary Preventive Dentistry – Norman O. Harris.
(14) Preventive Dentistry – Forrester.
(15) Clinical Use of Fluorides – Stephen H. Wei.
(16) Behaviour Management – Wright
(17) Traumatic Injuries – Andreason.

Fourth BDS (Main) Examination Month Year

Paper VIII
Pediatric and Preventive Dentistry
Section A & B

Time: Three Hours
Maximum Marks: 70

Use separate answer book for each section
Question No. 4 & 8 are Compulsory
Attempt Two out of remaining Three from each Section A & B

Section A

Q.1 Define growth, development and maturation. Describe in detail post natal growth of maxilla and mandible in detail. 10

Q.2 Short notes: 10
a) Growth spurts
b) TSD technique

Q.3 Define space maintanence .Classify space maintainers and give a detailed account of different types of space maintainers with their modifications. 10

Q.4 Short Notes: 15
a) Serial extractions
b) Leeway space of nance
c) Oral screen

Section B

Q.5 Define dental caries. Explain in detail the etiopathology of a deep carious lesion. 10

Q.6 Short Notes 10
a) Snyder's test.
b) Air abrasion.

Q.7 Define habit .Enumerate the various deleterious oral habits .Discuss in detail the etiology, clinical features and management of thumb sucking habit. 10

Q.8 Short Notes 15
a) Down"s syndrome
b) Ankyloglossia
c) Pulpotomy

ANNEXURE – A

CURRICULUM OF DENTAL INTERNSHIP PROGRAMME

1. CURRICULUM OF DENTAL INTERNSHIP PROGRAMME:

(1) The duration of Internship shall be one year.
(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) The Intern shall be paid stipendiary allowance during the period of an internship not extending beyond a period of one year.
(4) The internship shall be compulsory and rotating as per the regulations prescribed for the purpose.
(5) The degree shall be granted after completion of internship.

2. DETERMINANTS OF CURRICULUM FOR INTERNSHIP FOR DENTAL GRADUATES:

The curricular contents of internship training shall be based on.
(1) Dental health needs of the society.
(2) Financial, material and manpower resources available for the purpose.
(3) National Dental Health Policy.
(4) Socio-economic conditions of the people in general.
(5) Existing Dental as also the primary health care concept, for the delivery of health services.
(6) Task analysis of what graduates in Dentistry in various practice setting, private and government service actually perform.
(7) 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.

3. OBJECTIVES:

At the end of the internship, student should be able to:
(1) Reinforce knowledge and techniques in a sociocultural setting
(2) Transit from a shared to a full responsibility.
(3) Achieve competence in
  (a) History taking.
  (b) Clinical Examination.
  (c) Performance and interpretation of essential laboratory data.
  (d) Data analysis and inference.
  (e) Communication skills.
  (f) developing working relationship in the Clinical setting and Community team work.
(4) Provide comprehensive care
(5) Take due care and sterilization of instruments used.
(6) To perform and interpret essential laboratory tests and other relevant investigations.
(7) Demonstrate proper use of antibiotics, anti-inflammatory and other drugs, as well as other therapeutic modalities.
(8) Perform education of patients, their relatives and community on all aspects of dental health care while working in the institution as also in the field.
(9) Understand legal rights of patients and obligations of dental graduate under forensic jurisprudence.
(10) Maintain knowledge by Continuing Dental Education.

(11) Understand Right and dignity of patients.

(12) Communicate with other professionals and refer patients to seniors/institutions as needed understand concepts of disease prevention and dental health promotion, at the level of individuals facilities and the community.

4. CONTENT (Subject matter)

The compulsory rotating paid Dental Internship shall include training in Oral Medicine & Radiology: Oral & Maxillofacial Surgery; periodontics; Conservative Dentistry; Pedodontics, Oral Pathology & Microbiology; Orthodontics and Community Dentistry.

5. GENERAL GUIDELINES:

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 Colleges and associated Institutions.

(1) Oral Medicine & Radiology:

(a) Standardized examination of patients	25 Cases
(b) Exposure to clinical, Pathological laboratory procedures and biopsies.	5 Cases
(c) Effective training in taking of Radiographs:	2 months
(Intra-oral) I.O. (Extra oral) E.O.	1
Cephalogram	1
(d) Effective management of cases in wards	2 Cases

(2) Oral and Maxillofacial Surgery

(a) The Interns during their posting in oral surgery shall perform the following procedures :

i. Extractions	50
ii. Surgical extractions	2
iii. Impactions	2
iv. Simple Intra Maxillary Fixation	1
v. Cysts enucleations	1
vi. Incision and drainage	2
vii. Alveoloplasties, Biopsies & Frenectomies, etc	3

(b) The Interns shall perform the following on Cancer Patients:

i. Maintain file work.
ii. Do extractions for radiotherapy cases.
iii. Perform Biopsies.
iv. Observe varied cases of oral cancers.

(c) The Interns shall have 15 days posting in emergency services of a dental/general hospital with extended responsibilities in emergency dental care in the wards. During this period they shall attend to all emergencies under the direct supervision of oral surgeon.

i. Emergencies

(i) Toothache; (ii) trigeminal neuralgia; (iii) Bleeding from mouth due to trauma, post extraction, bleeding disorder or haemophilia; (iv) 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.

ii. Work in I.C.U. with particular reference to resuscitation procedures.

iii. Conduct tutorials on medico-legal aspects including reporting on actual cases coming to casualty. They should have visits to law courts.

(3) Prosthodontics

The dental graduates during their internship posting in Prosthodontics shall make:-

(a) Complete denture (upper & lower) 2
(b) Removable Partial Denture 4
(c) Fixed Partial Denture 1
(d) Planned cast partial denture 1
(e) Miscellaneous-like reline/overdenture/repairs of Maxillofacial Prosthesis 1
(f) Learning use of Face bow and Semi anatomic articulator technique1
(g) Crowns
(h) Introduction of Implants

(4) Periodontics

(a) The dental graduates shall perform the following procedures
- Prophylaxis 15 Cases
- Flop Operation 2 Cases
- Root Planning 1 Case
- Curettage 1 Case
- Gingivectomy 1 Case
- Perio-Endo cases 1 Case

(b) During their one week posting in the community health centers, the interns shall educate the public in prevention of Periodontal diseases.

(5) Conservative Dentistry

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:

(a) Restoration of extensively mutilated teeth 5 Cases
(b) Inlay and onlay preparations 1 Case
(c) Use of tooth coloured restorative materials 4 Cases
(d) Treatment of discoloured vital and non-vital teeth 1 Case
(e) Management of dento alveolar fracture 1 Case
(f) Management of pulpless, single-rooted teeth without periapical lesion. 4 Cases
(g) Management of acute deto alveolar Infections 2 Cases
(h) Management of pulpless, single-rooted teeth with peripheral lesion period 1 Case
(i) Non-surgical management of traumatised teeth during formative period.

(6) Pedodontics and Preventive Dentistry

(a) Topical application of fluorides including varnish 5 Cases
(b) Restorative procedures of carious deciduous teeth in children 10 Cases
(c) Pulpotomy 2 Cases
(d) Pulpectomy 2 Cases
(e) Fabrication and insertion of space mainteners 1 Cases
(f) Oral habits breaking appliances 1 Case

(7) Oral pathology and microbiology

The interns shall perform the following :

(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

(8) Orthodontics

(a) The interns shall observe the following procedures during their posting in orthodontics :

i. Detailed diagnostic procedures for 5 patients
ii. Laboratory techniques including wire-bending for removable appliances, soldering and processing of myo-functional appliances.
iii. Treatment of plan options and decisions.
iv. Making of bands, bonding procedures and wire insertions.
v. Use of extra oral anchorage and observation of force values.
vi. Retainers.
vii. Observe handling of patients with oral habits causing malocclusions.

(b) The dental graduates shall do the following laboratory work :

i. Wire bending for removable appliances and space maintainers including welding and heat treatment procedure. 5 Cases
ii. Soldering exercises, banding & bonding procedures 2 Cases
iii. Cold-cure and heat-cure acrylisation of simple Orthodontics appliances 5 Cases

(9) Public health Dentistry

(a) The interns shall conduct health education sessions for individuals and groups on oral health public health nutrition, behavioral sciences, environmental health, preventive dentistry and epidemiology.
(b) They shall conduct a short term epidemiological survey in the community, or in the alternate, participate in the planning and methodology.
(c) They shall arrange effective demonstrations of :

i. Preventive and interceptive procedurees for prevalent dental diseases. 5 Cases
ii. Mouth-rinsing and other oral hygiene demonstrations 5 Cases
iii. Tooth brushing techniques 2

(d) Conduction of oral health education programmes at

i. School Setting 2
ii. Community setting 2
iii. Adult education 5

(e) Preparation of Health Education Materials
(f) Exposure to team concept and National Health Care systems:

i. Observation of functioning of health infrastructure.
ii. Observation of functioning of health casre team including multipurpose workers male and female, health educators and other workers.
iii. Observation of at-least one National Health Programme.
iv. Observation of interlinkages of delivery of oral health care with Primary Health care. Mobile dental clinics, as and when available, should be provided for this teaching.

(10) Elective Posting

The Internes shall be posted for 15 days in any of the dental departments of their choice mentioned in the foregoing.

1. Organisation of content : The Curriculum during the 4 years of BDS 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 supervisors

should see to it that proper facilities are provided in all departments and attached institutions for their performance.

2. Specification of teaching activities : Didactic lectures are delivered during the four years training in BDS. These shall be avoided during the internship programme. Emphasis shall be on chair-side teaching, small group teaching and discussions, tutorials, seminars, ward posting, laboratory posting, field visits and self learning.
3. Use of Resource Materials: Overhead projectors, slide projectors, film projectors, charts, diagrams, photographs, posters, specimens models and other audiovisual aids shall be provided in all the Dental Colleges and attached institutions and field area. If possible, television, video and tapes showing different procedures and techniques to be mastered by the interns should be provided.

6. EVALUATION

(1) Formative Evaluation :
Day-to-day assessment of the interns 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 books by all interns. This will not only provide a demonstrable evidence of the processes of training but more importantly, of the interns own acquisition of competencies as related to performance. It shall from a part of formative evaluation and shall also constitute a component of final grading of interns.

(2) Summative Evaluation :
It shall be based on the observation of the supervisors of different departments and the records and performance data book maintained by the interns. Grading shall be done accordingly.

7. RURAL SERVICES

In the rural services, the student will have to participate in -

(1) Community Health Monitoring programmes and services which include Preventive, Diagnostic and corrective procedures
(2) To create educational awareness about dental hygiene and diseases.
(3) Conduction of Oral Health Education Programe at -
  (a) School Setting 5
  (b) Community Setting 5
  (c) Adult Education Programe 5
(4) Compulsory setup of satellite clinics in remote areas 1
(5) Lectures to create awareness and education in public forums about the harmful effects of tobacco consumption and the predisposition to oral cancer - two lecturers per student.

8. PERIOD OF POSTINGS

(1) Oral Medicine & Radiology	1 month
(2) Oral & Maxillofacial Surgery	1 ½ month
(3) Prosthodontics	1 ½ month
(4) Periodontics	1 month
(5) Conservative Dentistry	1 month
(6) Pedodontics	1 month
(7) Oral Pathology & Microbiology	15 days
(8) Orthodontics	1 month
(9) Community Dentistry / Rural Services	3 months
10. Elective	15 days

9. RULES FOR THE AWARD OF GRACE MARKS FOR BDS EXAMINATIONS

A student who obtains the required minimum pass marks in the total aggregate but fails to obtain the minimum pass marks in one subject in theory and / or practical as the case may be, will be awarded the grace marks upto a maximum of 05 marks according to the following scale, provided the candidate passes the examination by award of such grace marks:

(1) For 1 to 6 marks above the minimum aggregate = 2 grace marks
For 7 to 12 marks above the minimum aggregate = 3 grace marks
For 13 to 18 marks above the minimum aggregate = 4 grace marks
For 19 and above the minimum aggregate = 5 grace marks

(2) No grace marks would be awarded to a candidate who appears in part / supplementary/ remanded examination.

(3) A candidate who passes in a paper /practical or the aggregate by the award of grace marks will be deemed to have obtained the necessary minimum for a pass in that paper/practical or in the aggregate and shown in the marks sheet to have passed by grace. Grace marks will not be added to the marks obtained by a candidate from the examiners.

(4) If a candidate passes the examination but misses First or Second Division by one mark, his aggregate will be raised by one marks so as to entitle him/her for the first or second division, as the case may be. This one mark will be added to the paper in which he gets the least marks and also in the aggregate by showing +1 in the tabulation register below the marks actually obtained by the candidate. The marks entered in the marks-sheet will be inclusive of one grace mark and it will not be shown separately.

(5) Non appearance of a candidate in any paper will make him ineligible for grace marks. The place of a passed candidate in the examination list will, however, be determined by the aggregate marks he secures from the examiners.

(6) Distinction won in any subject at the examination is not to be forfeited on the score that a candidate has secured grace marks to pass the examination.