Institute of Dentistry
CMH Lahore Medical College

Study Guide

Department of Operative & Pediatric Dentistry
(2022 – 2023)

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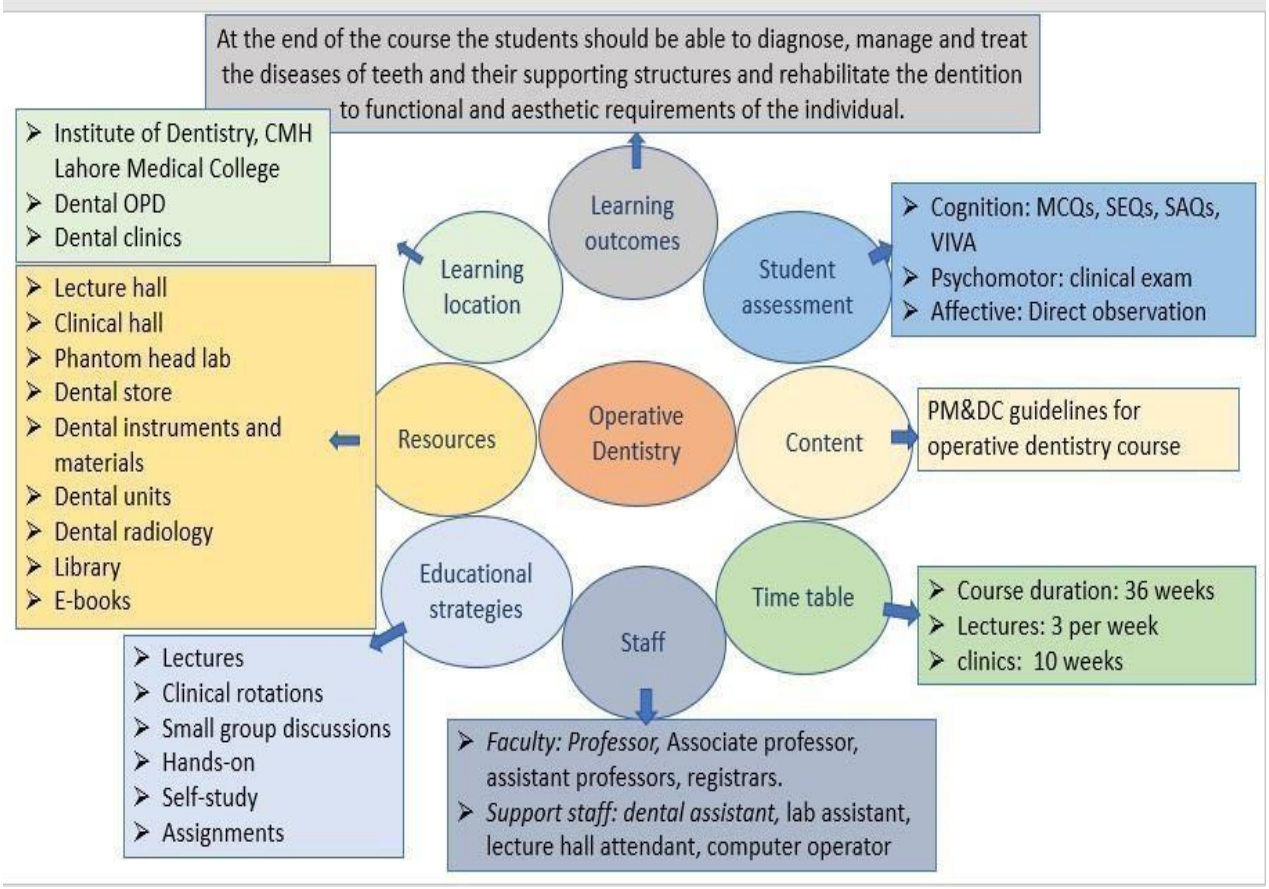
INTRODUCTION TO OPERATIVE DENTISTRY/ PEDIATRIC DENTISTRY

This is a subject which includes diagnosis, prevention and treatment of the problems and conditions of natural teeth vital or non-vital so as to preserve natural dentition and restore it to the best state of health, function and aesthetics. It has been recognized as the foundation of dentistry and base from which most other aspects of dentistry evolved.

Curricular Map of Operative Dentistry/ Pediatric Dentistry



Resources

- Teaching resources
- Supporting staff
- Infrastructure resources

Teaching resources

OPERATIVE DENTISTRY			
Sr. #.	Faculty Name	Designation as per PM & DC certificate	Qualification
1	Prof. Dr. Nasir Saleem	Professor	BDS, FCPS, MSc
2	Dr. Umm e Rubab Sherazi	Associate professor	BDS, FCPS
3	Dr. Sobia Masood Tirmazi	Associate professor	BDS, FCPS
4	Col. Dr. Imran Khan	Assistant Professor	BDS, FCPS
5	Dr. Razia Zia	Demonstrator	BDS
6	Dr. Sannan Qayyum	Demonstrator	BDS
7	Dr. Ali Kazmi	Demonstrator	BDS
8	Dr. Mehak Jaffery	Demonstrator	BDS
9	Dr. Mahnoor Sikander	Demonstrator	BDS
10	Dr. Umair Hamid	Post graduate resident	BDS
11	Dr. Sarmad Fayyaz Farooqi	Post graduate resident	BDS
12	Dr. Mian Muhamad Shan Nafees	Post graduate resident	BDS
13	Dr. Khadija Akhtar	Post graduate resident	BDS
14	Dr. Mahwash Alavi	Post graduate resident	BDS
15	Dr Umm e Ammarah	Post graduate resident	BDS
16	Dr. Mahum Mansoor	Post graduate resident	BDS
17	Dr. Amber Jahangir	Post graduate resident	BDS
18	Dr. Haseeb Hassan	Post graduate resident	BDS
19	Dr. Qurat ul Ain	Post graduate resident	BDS
20	Dr Malika Sundus	Post graduate resident	BDS
21	Dr Said Ali	Post graduate resident	BDS

22	Dr Hassan Yousaf	Post graduate resident	BDS
23	Dr. Syed Moiz Ali	Post graduate resident	BDS
24	Dr. Baneen Khawar	Post graduate resident	BDS
25	Dr. Sajjad Hussain	Post graduate resident	BDS
PEDIATRIC DENTISTRY			
1	Prof. Dr. Amjad H Wyne	Professor/HOD/Dean	BDS, BSc, MDS, Dr. Med. Dent. FADI, FASDC
2	Dr. Arham Nawaz Chohan	Associate Professor/Acting HOD	BDS, MSc, FADI, FPFA
3	Dr. Erum Zahid	Demonstrator	BDS
4	Dr. Mannal Sohail	Demonstrator	BDS
5	Dr. Memoona Javed	Demonstrator	BDS

Supporting Staff

Operative Dentistry		
1	Mehvish Asghar	Computer Operator
2	Salma Ammanat	Dental Surgery Assistant
3	Zainab Bashir	Dental Surgery Assistant
4	Waqar Afzal	Dental Surgery Assistant
5	Muhammad Kaleem	Dental Surgery Assistant
6	Muhammad Asif	Dental Surgery Assistant
7	Amir Gulzar	Dental Surgery Assistant
8	Abida Shehbaz	Dental Surgery Assistant
9	Zulifqar Ali	Dental Surgery Assistant
10	Waheed Akbar	Dental Surgery Assistant
11	Waqas Arshad	Dental Surgery Assistant
12	Rai Furqan Ali	Dental Surgery Assistant
13	Iqra Zafar	Dental Surgery Assistant
14	Tasnim Ahmad	Dental Surgery Assistant
15	Hamza Ali Bhukhari	Lab Attendant
16	Sohail Akhtar	Peon
PEDIATRIC DENTISTRY		
17	Haris Husnain Kazmi	Computer Operator
18	Umber Chohan	Dental Hygienist
19	Usman Butt	Dental Surgery Assistant
20	Usman Shoukat	Dental Surgery Assistant
21	Waqar Hussain	Lab Attendant
22	Abdul Wahab	Peon

Infrastructure resources

Sr.#	Infrastructure Resources	Quantity
01	**Operating Hall** • **Operative Dentistry** • **Paediatric Dentistry**	• 01 • 06 Surgeries
02	**Dental Units** • **Operative Dentistry** • **Paediatric Dentistry**	• 21 • 06
03	**Dental Stools** • **Operative Dentistry** • **Paediatric Dentistry**	• 21 • 06
04	**Specialist Clinic**	• 01
05	**Phantom Head Labs** • **Lab A- Phantom Head** • **Lab B- Phantom Head**	• 02 • 20 • 20
06	**Reception**	01
07	**Instrument Delivery Room**	01
08	**Locker Room**	01
09	**Small group discussion room**	01
10	**Faculty offices**	05

TEACHING AND LEARNING STRATEGIES

Multiple educational methods are used comprising of interactive lectures, group discussions, clinical training/practical, manual dexterity sessions and self-study.

(i) Methods for Achieving Cognitive Objectives

- Diagnosis and treatment planning
- Interactive lectures using audio visual aids through power point presentation
- Group discussions both large groups and small groups
- Tutorials
- Collaborative learning
- Self-study and reading from reference resources recommended.

(ii) Methods for Achieving Psychomotor Objectives

- Clinical Demonstrations
- Hands-on Clinical Training
- Individual Clinical Supervision

(iii) Methods for Achieving Effective Objectives

- Interaction with peers, group members, teachers, support staff etc.
- Group discussions (small and large)
- Oral presentations by the students

LEARNING METHODOLOGIES

The following teaching /learning methods are used to promote better learning:

- Interactive Lectures
- Clinical Demonstrations
- Small Group Discussions
- Case- Based Learning
- Clinical Rotations
- Individual Skills Sessions
- E- Learning
- Self- Directed Study

INTERACTIVE LECTURES
In large group, the lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients, interviews, exercise etc. students are actively involved in the learning process.

CLINICAL DEMONSTRATIONS:
In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical science of the relevant module.

SMALL GROUP DISCUSSIONS (SGD)
This format helps students to clarify concepts acquire skills or attitudes. Sessions are structured with the help of specific exercise such as patient case, interviews or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

CASE- BASED LEARNING
A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained in clinical and basic health sciences during the module.

CLINICAL ROTATIONS (CR)
Clinical rotations for clinical subjects like Operative Dentistry, Orthodontics, Prosthodontics and Oral Surgery are scheduled for student learning.

INDIVIDUAL SKILLS SESSION
Skills relevant to respective module are observed and practiced where applicable in skills laboratory.

SELF DIRECTED STUDY
Students' assume responsibilities of their own learning through individual study, sharing and discussing with peer, seeking information from Learning Resource center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

E- LEARNING

E-L earning is a strategy by which learning occurs through the utilization of electronic media, typically the Internet. The basic aspects of medical professionalism and ethics will be addressed through and E-Learning course.

CURRICULUM IMPLEMENTATION

Curriculum implementation refers to putting into practice the official document including course content, objectives, learning and teaching strategies. Implementation process helps the learner to achieve knowledge, skills and attitudes required of the learning tasks. Learners are a pertinent component of the implementation process. Implementation occurs when the learner achieves the intended learning experiences, knowledge, ideas, skills and attitudes which are aimed to make the learner an effective part of the society. Curriculum implementation also refers to the stage at which curriculum is put into effect. There has to be an implementing agent as well. Teacher is an important part of this process and implementation of the curriculum is the way the teacher selects and utilizes various components of the curriculum. Implementation occurs when the teacher's formulated course content, teacher's personality and teaching and learning environment interact with the learners.
Therefore, curriculum implementation is how the officially 0planned course of study is translated and reflected by the teacher into schemes of work, lesson plans, syllabus and resources are effectively transferred to the learners. Curriculum implementation can be affected by certain factors such as teachers, learners, learning environment, resource materials and facilities, culture and ideology, instructional supervision and assessments.

Personnel involved in teaching and facilitation:

I. Lectures delivery by:

Operative Dentistry

- Prof. Dr Muhammad Nasir Saleem
- Dr. Umm e Rubab sherazi
- Dr. Sobia Masood Tirmzi
- Col. Dr. Imran Khan

Pediatric Dentistry

- Prof. Dr. Amjad H Wyne
- Prof. Dr. Arham Nawaz Chohan

II. Registrars and PGRs for clinics/practical and small group discussion sessions:Operative Dentistry

- Dr Razia Zia
- Dr Sannan Qayyum
- Dr Ali Kazmi
- Dr Mehak Jaffery
- Dr Mahnoor Sikander
- Dr. Umair Hamid
- Dr Mian M. Shan Nafees
- Dr. Khadija Akhtar
- Dr. Sarmad Fayyaz
- Dr. Umm e Ammarah
- Dr. Mahum Mansoor
- Dr. Amber Jahangir
- Dr. Haseeb Hassan
- Dr. Mahwash Alavi
- Dr Hassan Yousaf
- Dr. Qurat ul Ain
- Dr. Malika Sundas
- Dr Said Ali
- Dr. Syed Moiz Ali

- Dr. Baneen Khawar
- Dr. Sajjad Hussain

Pediatric Dentistry

- Dr. Erum Zahid
- Dr. Mannal Sohail

III. Support staff:

Operative Dentistry

- Dental assistants: 14
- Lab attendants: 01
- Peon: 01

Pediatric Dentistry

- Dental assistants: 02
- Dental Hygienist: 01
- Lab attendants: 01
- Peon: 01

IV. Computer assistant: 01 (Operative Dentistry)
01 (Pediatric Dentistry)

Time frame

Course duration:

- Lectures: 35 weeks
- Clinical rotations: 07 weeks per rotation

Lectures:

Operative Dentistry

- Monday (8:00 to 8:50am)
- Friday: (8:50 to 9:40 am)

Pediatric Dentistry

- Wednesday: (8:50 to 9:40 am)
- Friday: (8:00 to 8:50am)

Practical/Clinical training:

- Monday – Friday (10:00 to 3:00 pm) [1PM – 2PM Jumma Prayers Break]

Self-study:

- 25 hours during the course

Course outline

Section I Operative Dentistry

This subject introduces the students to diagnosis and formulating treatment planning with integrated management of diseases of teeth and the rehabilitation of the dentition to functional and aesthetic requirements of the individual. This section familiarizes students with a number of key themes and subjects regarding different types of direct restorative materials and techniques used in dentistry. It is designed to provide detailed information regarding historical background, types, properties, biological consideration, clinical applications, limitations and selection criteria of direct restorative materials. The aim of this section is to allow students to gain didactic knowledge and develop psychomotor skills.

This subject deals with the diseases of the dental pulp and tissues surrounding the roots of the teeth. Endodontic treatment or root canal treatment, treats the soft pulp tissues inside the tooth. It introduces students to different types of endodontic materials classified according to their intended clinical uses. It involves the study of composition, properties and mode of application of various disinfectants, lubricants, sealers and obturating materials used in endodontics.

Section II Pediatric Dentistry

This subject of Pediatric Dentistry deals with diagnosis and comprehensive dental/oral management of children from birth through adolescence including those with special care needs. The major focus is on preventive strategies to reduce the burden of dental diseases in children, who make 40% of the population in the country. The Department's philosophy is centered on evidence-based treatment planning and comprehensive patient care. Guidance is provided to the students in behavior management of children through various psychological behavior management techniques. The students are also familiarized with pharmaceutical behavioral management techniques such as minimal sedation and complete oral rehabilitation under GA.

Didactic and clinical training is imparted in the areas of pulp therapy in primary and young permanent teeth, and restoration of primary and young permanent teeth including full crown coverage through classical and latest options available. Prevention and management of dental trauma to primary and young permanent teeth is also taught. Management of various deleterious oral habits in children and prevention of its detrimental sequelae are also taught and practiced.

The students are trained in minor oral surgery concentrating mainly on safe administration of local anesthesia and extraction techniques in young children. Various areas of interceptive orthodontics are also taught focusing on space maintenance and space maintainers after immature loss of primary teeth.

The students are also taught about developmental dental disturbances, periodontal diseases in children, oral manifestations of infection diseases in children, dental management of intellectually challenged children and those with systemic diseases.

The students are educated how to manage various dental emergencies in children emphasizing focus on the whole child rather than just the dental injury; and managing the children's behavior and parental concerns at those critical times.

Table of specification for teaching, learning objectives and assessment

At the end of the year students will be able to know:

Operative Dentistry									
TOPICS AND OBJECTIVES	**FACULTY**	**LEARNING DOMAIN (CPA)**	**LEARNING STRATEGY**	**ASSESSMENT**					
				Clinical	**Viva**	**OSPE**	**NUMS MCQs**	**NUMS SEQs**	**Weightage %**
1.Introduction to silver Amalgam Time allocation: Lecture: 9 hr. Clinical: 38 hr.				✓	✓	**X**	**2**	**1**	**7.7 %**
Define dental amalgam	Prof. Dr. Nasir Saleem	C	Interactive lecture/ small group discussion						
Discuss advantages and disadvantages of dental amalgam		CPA	Interactive lecture/ small group discussion						
Classify silver amalgam		C	Interactive lecture/ small group discussion						
Explain manipulation, finishing and polishing of amalgam		CPA	Interactive lecture/ practical						
Discuss clinical considerations related to dental amalgam		CPA	Interactive lecture/ practical						
Discuss hazards and hygiene of mercury		C	Interactive lecture/ small group discussion						
Enlist the steps used for preparation of complex amalgam restoration		CPA	Interactive lecture/ practical						
Class I cavity preparation for Amalgam restoration									
Simple class I cavity preparation a. Enlist steps of cavity preparation		CPA	Interactive lecture/case-based discussion/ practical/						

b. Write down different dimensions of cavity preparation Explain the restorative techniques	Prof. Dr. Nasir Saleem		small group discussion						
Class I occluso-lingual preparation a. Enlist steps of cavity preparation b. Write down different dimensions of cavity preparation Explain the restorative techniques		CPA	Interactive lecture/ case-based discussion/ practical/ small group discussion						
Class II cavity preparation for Amalgam restoration									
Enlist steps of cavity preparation	Prof. Dr. Nasir Saleem	CPA	Interactive lecture/ case-based discussion / practical/ small group discussion						
Write down different dimensions of cavity preparation		CPA	Interactive lecture/ case-based discussion/ practical/ small group discussion						
Explain the restorative techniques		CPA	Interactive lecture/ case-based / practical/ small group discussion						
Explain the importance of bevel		CPA	Interactive lecture/ case-based discussion/ practical/ small group discussion						
Explain the importance of reverse S curve		CPA	Interactive lecture/ case-based discussion/ practical/ small group discussion						

2.Composites Time allocation: Lecture: 9 hr. Clinical: 38 hr.				√	√	**X**	**2**	**1**	**7.7 %**
Composition of composite resin materials	Prof. Dr Nasir Saleem	C	Interactive lecture/ small group discussion						
Classify composite resin materials		C	Interactive lecture						
Explain manipulation, finishing and polishing of composite resin materials		CPA	Interactive lecture/ practical/ small group discussion						
Enamel and dentine adhesion									
Discuss different challenges in dentine bonding		CA	Interactive lecture/ small group discussion						
Discuss current strategies for adhesion of resin to dentine		C	Interactive lecture/ case-based discussion						
Discuss C-Factor and polymerization shrinkage		C	Interactive lecture/ small group discussion						
Discuss clinical considerations during adhesion		CPA	Interactive lecture/ case-based discussion/ Practical/ small group discussion						
Class III cavity preparation for composite restoration									
Give classification of class III cavity design		C	Interactive lecture/ small group discussion						

Explain different approaches for cavity preparation	Prof. Dr. Nasir Saleem	C	Interactive lecture/ case-based discussion/ small group discussion						
Enlist indications of each approach		C	Interactive lecture/ small group discussion						
Enlist contraindications of each approach		C	Interactive lecture/ small group discussion						
Explain the importance of conventional class III type		C	Interactive lecture/ case-based discussion/ small group discussion						
Explain the importance of Beveled class III type		C	Interactive lecture/ case-based discussion/ small group discussion						
Explain the importance of modifies class III type		C	Interactive lecture/ case-based discussion						
Demonstrate the steps of cavity preparation		CPA	Interactive lecture/ case-based discussion/ small group discussion						
Class IV cavity preparation for composite restoration									

Give classification of class IV cavity design	Prof. Dr. Nasir Saleem	CPA	Interactive lecture/ case-based discussion/ practical/ small group Discussion						
Explain different approaches for cavity preparation		CPA	Interactive lecture/ case-Based discussion/ practical/ small group Discussion						
Enlist contraindications of each approach		C	Interactive lecture/ small group Discussion						
Enlist indications of each approach		C	Interactive lecture/ small group discussion						
Explain the importance of conventional class IV type		CPA	Interactive lecture/ case-Based discussion/ practical/ small group Discussion						
Explain the importance of Beveled class IV type		CPA	Interactive lecture/ case-Based discussion/ practical/ small group Discussion						
Explain the importance of modified class IV type		CPA	Interactive lecture/ case-based discussion/ practical/ small group Discussion						

Demonstrate the steps of cavity preparation			Interactive lecture/ case-based discussion/ small group discussion						
Class V cavity preparation for composite						X			
Explain the importance of conventional class V type	Prof. Dr. Nasir Saleem	CPA	Interactive lecture/ case-based discussion/ practical						
Explain the importance of Beveled class V type		C	Interactive lecture/ case-based discussion/ practical						
Explain the importance of modified class V type		CPA	Interactive lecture/ case-based discussion/ practical						
Enlist secondary retentive features of class V cavity design		CPA	Interactive lecture/ case-based discussion/ practical						
Demonstrate the steps of cavity preparation		CPA	Interactive lecture/ case-based discussion/ small group discussion						
3.Veneers Time allocation: Lecture: 9 hr.				**X**	√	**X**	**2**	**1**	**7.7 %**
Enlist indications and contraindications of veneers		C	Interactive lecture/case-based discussion						
Enlist different types of veneers	Prof. Dr Nasir Saleem	C	Interactive lecture/ case-based discussion						
Enlist clinical techniques for different types of veneers		C	Interactive lecture/ case-based p discussion						

4.Pin-retained restoration				**X**	√	X	1		1.1 %
Define pin retained restorations	Prof. Dr. Nasir Saleem	C	Interactive lecture						
Enlist indications of pin retained restorations		C	Interactive lecture						
Enlist contraindications of pin retained restorations		C	Interactive lecture						
Enlist advantages of pin retained restorations		C	Interactive lecture / case-based discussion						
Enlist disadvantages of pin retained restorations		C	Interactive lecture / case-based discussion						
Explain the cavity preparation procedure for pin retained restorations		C	Interactive lecture / case-based discussion						
Enlist the types of pins		C	Interactive lecture						
Enlist the factors affecting the retention of the pin in dentine and amalgam		C	Interactive lecture / case-based discussion						
Discuss the techniques for the placement of pins		C	Interactive lecture / case-based discussion						
Discuss the clinical considerations before placement of pins		C	Interactive lecture / case-based discussion						
Discuss the problems that arise during the placement of pins		C	Interactive lecture / case-based discussion						
5.CAD and CAM				**X**	√	X	1		1.1 %
Define CAD		C	Interactive lecture						

Define CAM	Prof. Dr Nasir Saleem	C	Interactive lecture						
Discuss the need for CAD/CAM		C	Interactive lecture / case-based discussion						
Discuss the applications of CAD/CAM		C	Interactive lecture / case-based discussion						
Enlist the advantages of CAD/CAM		C	Interactive lecture / case-based discussion						
Enlist the limitations of CAD/CAM		C	Interactive lecture / case-based discussion						
Discuss the steps in CAD/CAM		C	Interactive lecture / case-based discussion						
Enlist the types of scanner		C	Interactive lecture						
Discuss the materials used in CAD/CAM		C	Interactive lecture						
Discuss the milling tools in CAD/CAM		C	Interactive lecture						
Partial coverage and indirect tooth colored restoration									
Explain advantages and disadvantages	Prof. Dr. Nasir Saleem	C	Interactive lecture/case-based discussion						
Enlist indications and contraindications		C	Interactive lecture/case-based discussion						

Discuss steps of indirect tooth colored restoration		C	Interactive lecture						
Discuss steps of cementation		C	Interactive lecture						
6.Radiology and radiography Time allocation: Lecture: 9 hr.				**X**	√	**X**	**2**	**0**	**2.2 %**
Discuss basic principles and interpretations of dental radiography	Prof. Dr. Nasir Saleem	C	Interactive lecture/ practical/ small group discussion				To be shared with item # 18.		
Discuss clinical techniques for performing periapical radiographs		CPA	Interactive lecture/ practical/ small group discussion						
Demonstrate the interpretation and rectify the errors in periapical radiographs		CPA	Interactive lecture/ practical/ patient interaction/ small group discussion						
Demonstrate the interpretation OPG radiographs for diagnosis		CPA	Interactive lecture/practical/ patient interaction/ small group discussion						
7.Management of medically compromised patients Time allocation: Lecture: 10 hr. Clinical: 14 hr.				**X**	√	X	2	1	7.7 %
Manage a dental patient with problems of following systems 1. CVS 2. Pulmonary 3. Hepatic 4. Renal 5. Neurological 6. hematological	Prof. Dr. Nasir Saleem	CPA	Interactive lecture/ case -based learning/ patient interaction				To be share with item #32		
Manage pregnant and postpartum patient		CPA	Interactive lecture/ case -based learning/ patient interaction						

Demonstrate the Prevention medical emergencies in dental patients		CPA	Interactive lecture/ case based learning/ patient interaction						
Identify risk factors related to medically compromised patients		C	Interactive lecture						
Discuss necessary pre-requisites for handling the patients before performing any operative procedure		CPA	Interactive lecture/ case-based discussion/ patient interaction						
8.Occlusion				**X**	**√**	**X**	**2**		**2.2 %**
Define occlusion	Prof. Dr. Nasir Saleem	C	Interactive lecture/ case-based discussion						
Define ideal occlusion		C	Interactive lecture/ case-based discussion						
Discuss the importance of ideal occlusion		C	Interactive lecture/ case-based discussion						
Define optimum occlusion		C	Interactive lecture/ case-based discussion						
Define following terms centric relation maximum intercuspation centric occlusion		C	Interactive lecture/ case-based discussion						
Explain the concept of uni-laterally balanced occlusion		C	Interactive lecture/ case-based discussion						
Explain bilaterally balanced occlusion		C	Interactive lecture/ case-based discussion						
Explain mutually protected occlusion		C	Interactive lecture/ case-based discussion						
Enlist the features of mutually protected occlusion		C	Interactive lecture/ case-						

			based discussion						
Define anterior group function		C	Interactive lecture/ case-based discussion						
Explain occlusal interferences		C	Interactive lecture/ case-based discussion						
Explain pathogenic occlusion		C	Interactive lecture/ case-based discussion						
9.Discoloration of the teeth				X	√	**X**	**2**		**2.2 %**
Identify different types of discoloration of teeth	Prof. Nasir Saleem	C	Interactive lecture/ case-based discussion/ small group discussion						
Describe different techniques used to treat discolored teeth		C	Interactive lecture/ small group discussion						
Define different artistic elements		CPA	Interactive lecture						
Discuss the treatment of altered shape of natural teeth		CPA	Interactive lecture/ practical						
Discuss the treatment of altered embrasure		C	Interactive lecture/ case-based discussion						
Discuss the management of diastemas		CPA	Interactive lecture						
Explain microabrasion		C	Interactive lecture/ case-based discussion						
Explain macroabrasion		C	Interactive lecture/ case-based discussion						
10.Bleaching				**X**	√	**X**	**3**		**3.3 %**
Explain different types of bleaching techniques		C	Interactive lecture/ case-based discussion						

Explain Non vital bleaching procedure In office vital bleaching technique Walking bleach technique	Prof. Dr. Nasir Saleem	C	Interactive lecture/ case-based discussion						
Enlist vital bleaching procedures In office vital bleaching technique Home -applied technique		C	Interactive lecture/ case-based discussion						
11.Diagnosis and Treatment planning Time allocation: Lecture: 14 hr. Clinical: 36hr.				√	√	**X**	**2**	**1**	**7.7 %**
Evaluate a patient • taking history of a patient • examination of a patient	Prof. Dr. Nasir Saleem	CPA	Interactive lecture/ case-based discussion/ patient interaction/ practical/ small group discussion				To be share with item # 17		
Discuss Different diagnostic aids		CPA	Interactive lecture/ small group discussion/ practical						
Demonstrate how to diagnose pulpal and periapical diseases by combining the clinical and radiographic examination		CPA	Interactive lecture/case-based discussion/ Practical/ patient interaction/ small group discussion						
Plan and formulate a treatment in a sequential manner and according to the problem list		CPA	Interactive lecture/ Practical/ patient interaction/ small group discussion						
Dental Cariology									
Define dental caries	Prof. Dr. Nasir Saleem	C	Interactive lecture/case-based discussion						
Discuss different etiological factors of dental caries		C	Interactive lecture/ case-						

			based discussion						
Discuss the classification of dental caries		CPA	Interactive lecture/case-based discussion/ practical/ small group discussion						
Discuss clinical characteristics of normal and altered enamel		C	Interactive lecture/case-based discussion/ practical/ small group discussion						
Discuss different zones of enamel caries		C	Interactive lecture/ case-based discussion						
Discuss different zones of dentinal caries		C	Interactive lecture						
Describe different dentinal reactions to caries		C	Interactive lecture						
Identification of risk factors		C	Interactive lecture/ Case based learning						
Enlist the methods of caries treatment by medical model		CPA	Interactive lecture/case-based discussion/ small group discussion/ practical						
Discuss different treatment strategies		CPA	Interactive lecture/ case-based learning/ practical/ small group discussion						
Discuss clinical considerations in caries prevention		CPA	Interactive lecture/ case based learning/ practical/ small group Discussion						

Fundamentals of tooth preparation and pulp protection									
Discuss fundamentals of tooth preparation for dental caries	Dr. Umm e Rubab Sherazi	C	Interactive lecture/case-based discussion						
Enlist factors to be considered before and during tooth preparation		CPA	Interactive lecture/case-based discussion/ small group discussion						
Classification of tooth preparation for dental caries		CPA	Interactive lecture/ practical						
Discuss the steps of tooth preparation		CPA	Interactive lecture/practical/ case-based discussion/ small group discussion						
12.Clinical classification of pulpal and periodontal diseases				✓	✓		**2**		**2.2 %**
Explain the development of dental pulp	Prof. Dr. Nasir Saleem	C	Interactive lecture				To be share with item # 30		
Enlist the functions of pulp		C	Interactive lecture						
Name different cells of dental pulp with their functions		C	Interactive lecture						
Define cementum and its types		C	Interactive lecture						
Write a note on innervation of dental pulp		C	Interactive lecture						
Pulp and periapical pathosis		C	Interactive lecture/ case-based discussion/ small group discussion						
Enlist the names of irritants of pulp and peri-radicular tissues		C	Interactive lecture/ case-based discussion						

Write down the classification of pulpal diseases	Prof. Dr. Nasir Saleem	C	Interactive lecture/ case-based discussion/ small group discussion						
Define pulp calcifications and discuss its types		C	Interactive lecture/ case-based discussion						
Define resorption and discuss its types		C	Interactive lecture/ case-based discussion						
Classify periapical lesions		C	Interactive lecture/ case-based discussion/ small group discussion						
Discuss various factors that influence healing of the pulp		C	Interactive lecture/ case-based discussion						
Give differential diagnosis of non-endodontic periradicular pathosis		C	Interactive lecture/ case-based discussion						
Endodontic microbiology		C	Interactive lecture						
Discuss different routes of root canal infections		C	Interactive lecture/ case-based discussion						
Enlist bacterial genera represented in endodontic infections		C	Interactive lecture/ case-based discussion						
Enlist microorganisms detected in root canal treated teeth associated with persistent apical Periodontitis		C	Interactive lecture						
Endo-perio lesions									
Name pathways of communication between the dental pulp and periodontium		C	Interactive lecture/case-based discussion						
Describe effects of pulpal diseases and endodontic procedures on periodontium		C	Interactive lecture/case-based discussion/						

			small group discussion						
Describe effects of periodontal diseases on the pulp		C	Interactive lecture/case-based discussion/ small group discussion						
Demonstrate how to diagnose endo-perio lesion		C	Interactive lecture/case-based discussion/ small group discussion						
Classify endo-perio lesions		C	Interactive lecture/case-based discussion/ small group discussion						
Give the DD of endo-perio lesions		C	Interactive lecture/case-based discussion						
13.Non odontogenic diseases mimicking pulpal and periodontal diseases				X	✓	**X**	**1**		**1.1%**
Enlist the different non odontogenic diseases mimicking pulpal and periapical diseases	Prof. Dr. Nasir Saleem	C	Interactive lecture/ case-based discussion						
Enlist the differentiating features that help in diagnosing the non-odontogenic diseases		CA	Interactive lecture/ small group discussion						
14.Therapeutics Time allocation: Lecture: 15 hr. Clinical: 26hr.				✓	✓	**X**	**3**	**1**	**8.8 %**
Internal morphology and access opening	Prof. Dr. Nasir Saleem / Dr. Sobia Masood						To be share with item # 24		
Explain different types of canal systems		CA	Interactive lecture/ case-based discussion/ small group discussion						
Discuss different alterations in internal canal anatomy		CA	Interactive lecture/ case-based discussion						

Explain different components of pulp		CA	Interactive lecture						
Discuss the variations of root and pulp anatomy		CA	Interactive lecture/ case-based discussion						
State general principles for endodontic access		C	Interactive lecture/ small group discussion						
Discuss errors in access opening		CPA	Interactive lecture/ practical/ small group discussion						
Enlist basic steps in access preparation		CPA	Interactive lecture/ small group discussion practical						
Demonstrate how to determine working length		CPA	Interactive lecture/ small group discussion/ practical						
Instruments									
Define a basic set of instruments appropriate for diagnosis, emergency treatment, canal preparation, obturation and bleaching	Prof. Dr. Nasir Saleem	CPA	Interactive lecture/ practical/ small group discussion						
Describe the general physical properties of endodontic instruments and show how these characteristics are related to their use		CPA	Interactive lecture/ practical/ small group discussion						
Describe basic design of canal preparation instruments and their mode of use		C	Interactive lecture/ small group discussion/ practical						
Differentiate between conventional files and files of alternative design		C	Interactive lecture/ small group discussion/ practical						
Describe proper use of instruments to prevent breakage into the canal		C	Interactive lecture/ case-based						

			discussion/ small group discussion						
Identify procedures and chemicals that might cause deterioration of files		CA	Interactive lecture						
Cleaning and shaping									
Explain principles of cleaning	Prof. Dr. Nasir Saleem	C	Interactive lecture/ small group discussion						
Explain principles of shaping		C	Interactive lecture/ small group discussion						
Discuss principles of cleaning and shaping techniques		C	Interactive lecture/ small group discussion/ practical						
Enlist ideal properties of endodontic irrigants		C	Interactive lecture/ small group discussion						
Enlist endodontic irritants		C	Interactive lecture						
Explain advantages and disadvantages of sodium hypochlorite		C	Interactive lecture						
Discuss procedural errors in preparation of canal		C	Interactive lecture/ small group discussion						
Describe different preparation techniques		CPA	Interactive lecture/ practical/ small group discussion						
Enlist steps in combination technique		CPA	Interactive lecture/ practical						
Enlist criteria for evaluating cleaning and shaping		CPA	Interactive lecture/ Practical/ small group discussion						
Enlist commonly used intracanal medicaments		CPA	Interactive lecture/ practical/ small group discussion						

Explain objectives of temporization		C	Interactive lecture						
Root canal sealers and obturation									
Enlist objectives of obturation	Prof. Dr. Nasir Saleem	C	Interactive lecture						
Enlist potential causes of failure		CA	Interactive lecture/case-based discussion/ small group discussion						
Enlist desirable properties of obturating materials		C	Interactive lecture						
Enlist different obturating materials		C	Interactive lecture/ small group discussion						
Enlist advantages and disadvantages of obturating materials		CA	Interactive lecture/case-based discussion						
Enlist ideal properties of sealers		C	Interactive lecture						
Explain different obturating techniques		CPA	Interactive lecture/practical/ small group discussion						
Enlist advantages and disadvantages of obturating techniques		CA	Interactive lecture/case-based discussion						
Failure in endodontics									
Discuss causes of perforation, types of perforation and how to prevent it	Dr Umm e Rubab Sherazi	C	Interactive lecture/ case-based discussion/ small group discussion						
Define ledge, its causes and management		CA	Interactive lecture/ case-based discussion/ small group discussion						
Artificial canal creation, its causes and management		C	Interactive lecture/ case-						

			based discussion						
Discuss instrument separation, causes, prevention and management		CA	Interactive lecture/ case-based discussion/ small group discussion						
Explain accidents during obturation		C	Interactive lecture/ case-based discussion/ small group discussion						
Discuss accidents during post space preparation		C	Interactive lecture						
Restoratin of Endodontically treated teeth									
Enlist special features of endodontically treated teeth	Prof. Dr. Nasir Saleem	C	Interactive lecture						
Describe different clinical procedures to restore endodontically treated teeth		C	Interactive lecture						
Surgical endodontics and re-treatment									
Enlist indications for nonsurgical endodontic re-treatment	Prof. Dr. Nasir Saleem	C	Interactive lecture						
Enlist are contraindications to nonsurgical endodontic re-treatment		C	Interactive lecture						
Enlist indications for surgical re-treatment		C	Interactive lecture						
Explain risks and benefits of re-treatment		C	Interactive lecture/case-based discussion						
Explain endodontic re-treatment procedures		C	Interactive lecture/case-based discussion						
Explain post treatment complications		C	Interactive lecture/case-based discussion						
Discuss the role of endodontic surgery in treatment planning for a patient		C	Interactive lecture/case-						

			based discussion						
Recognize situation in which surgery is the treatment of choice		CA	Interactive lecture/case-based discussion						
Define the terms incision and drainage, apical curettage, root-end resection, root-end preparation, root amputation, root hemisection and bicuspidization		C	Interactive lecture/case-based discussion						
Briefly describe the step by step procedures		C	Interactive lecture/case-based discussion						
Discuss indications for each procedure		C	Interactive lecture						
State the principles of flap design		C	Interactive lecture						
Describe indications, advantages and disadvantages of each flap design		C	Interactive lecture/case-based discussion						
Enlist the more common root end filling materials		C	Interactive lecture						
Review the basic principles of suturing		C	Interactive lecture/case-based discussion						
Describe general pattern of soft and hard tissue healing		C	Interactive lecture/case-based discussion						
Write down instructions to be given to the patients concerning postoperative care after endodontic surgery		C	Interactive lecture						
15.Sterilization and infection control				✓	✓	**X**	**1**		**1.1 %**
Enlist exposure risks and effects of infections in Dentistry	Dr. Sobia Masood	CA	Interactive lecture/ small group discussion						
Explain different modes of contamination		C	Interactive lecture/ case-based Discussion						
Describe personal barrier protection		CPA	Interactive lecture/ case-						

			based discussion/ practical/ small group discussion						
Discuss different precautions to avoid injury exposure		C	Interactive lecture/ case-based discussion/ small group discussion						
• Overview of aseptic techniques • Disinfection Sterilization with its different types		CP	Interactive lecture/ practical/ small group discussion						
State the recommended guidelines for sterilization of dental operatories and dental instruments		C	Interactive lecture/ small group discussion						
16. Traumatic emergencies				✓	✓	**X**	**2**		**2.2 %**
Discuss inter-appointment emergencies	Dr Umm e Rubab Sherazi	C	Interactive lecture/case-based discussion/ small group discussion				To be share with item # 28		
Explain pharmacotherapy for flare-ups		C	Interactive lecture/ small group discussion						
Discuss simple analgesic strategy to guide drug selection based on patient history		C	Interactive lecture/ case-based discussion/ small group discussion						
Longitudinal tooth fractures			Interactive lecture/case-based discussion/ small group discussion						
Explain the categories of longitudinal tooth fractures		C	Interactive lecture/ small group discussion						

Discuss considerations for longitudinal fractures	Dr Umm e Rubab Sherazi	CA	Interactive lecture/ case-based discussion/ small group discussion						
Discuss craze lines		CPA	Interactive lecture/case-based discussion/ small group discussion						
Explain the management of fractured cusps		CPA	Interactive lecture/ small group discussion						
Explain the management of cracked tooth		CPA	Interactive lecture/ case-based discussion/ small group discussion						
Explain the management of split tooth		C	Interactive lecture/case-based discussion/ small group discussion						
Explain the management of vertical root fractures		C	Interactive lecture/ small group discussion						

PEDIATRIC DENTISTRY

Topics and objectives	Faculty	Learning domain (CPA)	Teaching/ learning strategies	Assessment					
				Clinical	VIVA	OSPE	NUMS MCQs	NUMS SEQs	Weightage
17. Philosophy of planning dental treatment in children Time allocation: Lecture: 2 hr. Clinical: 10 hrs.				✓	✓	**X**	**0**	**1**	**2%**
Treatment planning, important principles of treatment planning, factors considered in treatment planning, determination of treatment priorities, presentation of treatment plan to the parents, criteria for referral, medical and dental history, child's fear associated with infection control gear.	Prof. Wyne	CPA	Interactive lecture/case -based discussion/ Clinical/ Small group discussion						
18. Dental & oral radiographs in children Time Allocation: Lecture: 1 hr. Clinical: 05 hrs.				✓	✓	**X**	**1**	0	1%
Introduction to radiography. Radiation safety and protection. Radiograph selection criteria. Radiographic examination. Radiographic techniques (intra oral view, extra oral view). Interpretation. Digital radiography in children.	Prof. Chohan	CPA	Interactive lecture/case -based discussion/ Clinical						
19. Local Anesthesia in Children Time Allocation: Lecture: 1 hr. Clinical: 5 hrs.				✓	✓	X	1	0	1%
Definition of pain and anesthesia. Topical anesthesia. Contents of local anesthesia solution. Maximum recommended doses. Anesthetizing various teeth. Supplemental injection techniques. Complications. New techniques.	Prof. Chohan	CA	Interactive lecture/case -based discussion/ Clinical						

20. Dental caries in children and adolescent Time allocation: Lecture: 2 hr. Clinical: 10 hr.				✓	✓	**X**	**1**	**0**	**2%**
Caries prevalence in preschool children. Caries prevalence in schoolchildren. Theories of the causes of dental caries. Caries in the primary, mixed and young permanent dentition. Primary and secondary factors in dental caries. Rampant dental caries. Nursing caries.	Prof. Wyne	CA	Interactive lecture/case -based discussion						
21.Prevention of dental diseases in children Time allocation: Lecture: 2 hr. Clinical: 10 hr.				X	✓	**X**	**1**	**0**	1%
Need for prevention. Comprehensive prevention program for dental diseases for various age groups including those with special care needs. Oral hygiene practices. Feeding/dietary advice. Fluorideadministration: dentifrices, home use fluorides, professionally applied fluoride, fluoride supplements, mechanism of action. Systemic versus topical fluorides, safety and toxicity.	Prof. Wyne	CPA	Interactive lecture/ patient interaction/ practical/ small group discussion						
22. Psychological management of children's behaviors Time allocation: 2 hr. Clinical: 10 Hr.				✓	✓	X	1	0	2%
Pediatric treatment triangle, age-related psychological traits and skills, variables influencing children's behavior, functional inquiry, strategies of the dental team, pre-appointment behavior modification, fundamentals of behavior management, communication with children, different behavior modification techniques and practical considerations, limitation of the dentist.	Prof. Chohan	CPA	Interactive lecture/ patient interaction/ practical						

23. Restorative dentistry including full coverage of primary teeth. **Time allocation: 5 hr. Clinical: 20 Hr.**				✓	✓	X	1	1	3%
Anatomic differences between Primary and permanent Teeth. Various classes of restorations in primary teeth. Sealants and conservative adhesive restorations. Full coverage options for primary incisors and canines. Indications for full coverage restorations of primary incisors and canines. Description of Strip Crown full coverage technique. Use of stainless steel crown (SSC) in primary dentition and for first permanent molars. Indications for use of SSC. Steps of tooth preparation and SSC selection. Finishing and cementation. Special considerations for SSC. Placement of adjacent crowns. Preparing crowns in areas of space loss.	Prof. Wyne	CPA	Interactive lecture/ patient interaction/ practical/Clinical						

24. Pulp therapy in primary and young permanent teeth. Time allocation: 5 hr. Clinical: 20 Hr.				✓	✓	X	0	1	2%
Pulpal assessment. Pulp treatment procedures including caries control, Indirect Pulp Capping, Direct Pulp Capping, Pulpotomy, Apexogenesis, and Apexification. Case Selection for various procedures. Various medicaments used. Follow-up of pulp therapy in young permanent teeth. Pulpal assessment in young permanent teeth. Pulp treatment procedures including caries control, Indirect Pulp Capping, Direct Pulp Capping, Pulpotomy, Apexogenesis, and Apexification. Case Selection for various procedures. Various medicaments used. Follow-up of pulp therapy in young permanent teeth.	Prof. Chohan	CPA	Interactive lecture/ patient interaction/ practical/ Clinical						
25. Minor oral surgery in children Time allocation: 2 hr. Clinical: 10 Hr.				✓	✓	**X**	**1**	**0**	1%
Pre-operative medical evaluation, dental pre-operative evaluation, tooth extractions, aspiration/swallowing of foreign objects during treatment, minor soft tissues surgical procedures.	Prof. Wyne	C	Interactive lecture/ case-based discussion						
26. Space maintenance and space maintainers Time allocation: 2 hr. Clinical: 10 Hr.				X	✓	X	1	0	.5%
General considerations. Appliance therapy: Band and loop, lingual arch, Nance appliance, trans-palatal arch, distal shoe, removable appliances. Additional considerations for space maintenance in mixed dentition.	Prof. Wyne	CPA	Interactive lecture/ case-based discussion/ Practical/ Clinical						

27. Anomalies of developing dentition Time allocation: 2 hr. Clinical: 10 Hr.				X	✓	X	1	0	.5%
Anomalies of number, size, size and shape, shape, of structure (enamel, heritable defects, environmentally induced defects), enamel, hypocalcification, dentine (dentinogenesis imperfecta, dentine dysplasia, odontodysplasia, other dentine abnormalities), cementum, of color, eruption and exfoliation.	Prof. Chohan	CPA	Interactive lecture/case -based discussion/ small group discussion/ practical						
28. Dental trauma to primary and young permanent teeth Time allocation: 4 hr. Clinical: 20 Hr.				**X**	✓	**X**	**1**	**0**	**1%**
Managing traumatic injuries in the primary dentition, etiology and epidemiology of trauma in the primary dentition, classification of injuries to the teeth, history, clinical examination, treatment of traumatic injuries to the primary dentition, trauma to supporting structures. Pathological sequelae of trauma to primary teeth. Etiology of epidemiology of trauma in the young permanent dentition, classification of injuries to young permanent teeth, history, clinical examination, treatment of traumatic injuries to the permanent dentition, managing sequelae to dental trauma. Treating luxation injuries in permanent dentition.	Prof. Chohan	CPA	Interactive lecture/ Clinical/ small group discussion						

29. Minimal sedation in pediatric dental patients including Nitrous Oxide-Oxygen sedation. **Time allocation: 2 hr. Clinical: 10 Hr.**				X	✓	X	0	0	.5%
.Indications, mechanisms of action, contraindications, advantages, disadvantages, adverse effect, equipment, procedure for administration minimal sedation and Nitrous Oxide-Oxygen sedation.	Prof. Wyne	CPA	Interactive lecture/ case-based discussion/ practical/ small group discussion						
30. Periodontal diseases in children **Time allocation: 1 hr. Clinical: 05 Hr.**				X	✓	X	1	0	.5%
Epidemiology, etiology, characteristic of healthy periodontium in the primary dentition, periodontal conditions in preschooler, periodontal condition in the school age children, acute gingival disease, chronic non-specific gingivitis, gingival enlargement.	Prof. Chohan	C	Interactive lecture/ case-based discussion/ Case-based discussion/ Clinical						
31. Oral manifestations of infectious diseases in children **Time allocation: 1 hr. Clinical: 05 Hr.**				X	✓	X	1	0	.5%
Oral manifestations of following infectious diseases and their management possibilities. Bacterial (scarlet fever, impetigo, diphtheria, tuberculosis), viral (primary herpes, recurrent herpes, chicken pox, mumps, cat scratch disease, herpengina, hand and foot and mouth disease, rubeola measles, rubella, infectious mononucleosis, and hepatitis).	Prof. Wyne		Interactive lecture/ case-based discussion/ Case-based discussion/ Clinical						
32. Dental management of children with systemic diseases **Time allocation: 2 hr. Clinical: 10 Hr.**				X	✓	X	1	0	.5%
Dental care of children with heart diseases, prophylactic regimens for prevention of bacteria, endocarditic. Bacteremia-producing dental procedures. Bleeding and coagulation disorders. Oral Manifestations of thrombocytopenia, hemophilia A, hemophilia B, and Von Willebrands disease.	Prof. Chohan		Interactive lecture/ case-based discussion/ Case-based discussion/ Clinical						

33. Dental emergencies in children **Time allocation: 3 hr. Clinical: 10 Hr.**				X	✓	X	1	0	.5%
Definition of dental emergency. Dental emergencies of carious origin, periodontal origin, eruption related and other reasons. Management of dental emergencies. Behavioral considerations of children and parents. Legal aspects. Prevention of dental emergencies	Prof. Wyne		Interactive lecture/ case-based discussion/ Case-based discussion/ Clinical						
34. Hospital Dentistry For Pediatric Dental Patients **Time allocation: 2 hr. Clinical: 10 Hr.**				X	✓	X	1	0	.5%
Introduction to hospital dentistry. Who are the patients needing hospital dentistry. Description of procedures for admissions, investigations, clinical notes, medications, and discharge. General anesthesia team and dental team in operation theater (Protocols). How to obtain hospital privilege.	Prof. Chohan		Interactive lecture/ case-based discussion/ Observation in GA Sessions						

SMALL GROUP DISCUSSIONS

Operative Dentistry

Days: Wednesday and Thursday

Time: 10:30am to 12:00pm

Setting: Conference room (Operative Dentistry)

Sr. #.	Topics of Small Group Discussion (SGD)	Facilitator
1	**Diagnosis and Treatment planning** • Evaluate a patient by taking history ✓ Presenting complaint ✓ History of presenting complaint ✓ Medical history ✓ Dental history ✓ Family history ✓ Investigations ✓ Diagnosis ✓ Treatment planning • Different diagnostic aids • Diagnosis of pulpal and periapical diseases by history and clinical examination • Classification of dental caries • Clinical characteristics of normal and altered enamel • Methods of caries treatment by medical model • Different treatment strategies for caries • Clinical considerations in caries prevention • Fundamentals of tooth preparation **Radiology and radiography** • Principles and interpretations of OPG, Periapical and bitewing radiographs • Clinical techniques for performing periapical and bitewing radiographs	**Prof. Dr. Nasir Saleem**

2	**Sterilization and infection control** • Exposure risks and effects of infections in dentistry • Personal barrier protection • Precautions to avoid injury exposure • Overview of aseptic techniques • Guidelines for sterilization in dental operatory and dental instruments **Prevention of Dental diseases** • Preventive protocol • Different preventive modalities • Diet management of patients with high risk of caries • Indication and contraindications of pits and fissures • Steps of sealing pits and fissure	**Dr. Sobia Masood**
3	**Introduction to silver amalgam** • Manipulation and clinical considerations related to dental amalgam • Class I Cavity preparation for amalgam restoration • Class II Cavity preparation for amalgam restoration	**Prof. Dr. Nasir Saleem**
4	**Composites** • Manipulation and clinical considerations related to composite resin materials • C-factor and polymerization shrinkage • Class III cavity preparation for composite restoration • Class IV cavity preparation for composite restoration • Class V cavity preparation for composite restoration	**Prof. Dr. Nasir Saleem**
5	**Anesthesia** • Factors affecting failure of anesthesia • Factors enhancing the effect of anesthesia • Causes of injection pain • Anesthetic factors associated with inferior alveolar nerve block • Difficulties of anesthesia • Different techniques of LA	**Dr. Um e RubabShirazi**
6	**Traumatic emergencies** • Inter-appointment emergencies • Strategy to guide drug selection based on patient history	**Dr. Um e Rubab Shirazi**

	• Classification of dental injuries • Management of fractured cusps and cracked tooth • Management of complicated and uncomplicated crown fractures • Management of injuries in primary dentition • Diagnosis of periodontal injuries	
7	**Clinical classification of pulpal and periodontal diseases** • Classification of pulpal diseases • Classification of periapical lesions • Pulpal and perapical pathosis • Classification of endo-perio lesions • Effects of pulpal diseases on periodontium • Effects of periodontal diseases on pulp • Diagnosis of endo-perio lesions • Diagnosis of non-odontogenic diseases	**Prof. Dr. Nasir Saleem**
8	**Therapeutics** **Instruments** • identification of instruments for diagnosis, emergency treatment, canal preparation and obturation • basic design of instruments • intracanal irrigants and medicaments **Tooth morphology and access opening** • Different types of canal systems • Principles of endodontic access • Errors in access opening • Steps in access preparation • Determination of working length	**Prof. Dr. Nasir Saleem**
9	**Therapeutics** **Cleaning and shaping** • Endodontic irrigants • Sodium hypochlorite • Different cleaning and shaping techniques • Criteria for evaluating cleaning and shaping • Procedural errors during canal preparation **Obturation** • Different techniques of obturation • Materials for obturation • Sealers • Causes of failure of obturation	**Prof. Dr. Nasir Saleem**
10.	**Failure in endodontics** • Perforation-causes, types, prevention and management • ledge-causes, types, prevention and management • instrument separation-causes, prevention and management	**Dr. Um e Rubab Shirazi**

SMALL GROUP DISCUSSIONS

Pediatric Dentistry

Day: Monday

Time: 1.00 PM to 2:00 PM

Setting: Conference Room (Operative Dentistry)

Sr. #.	Topics of Small Group Discussion (SGD)	Facilitator
1	**Philosophy of planning dental treatment in children** • Treatment planning • Important principles of treatment planning • Factors considered in treatment planning & determination of treatment priorities • Presentation of treatment plan to the parents • Criteria for referral • Medical and dental history • Child's fear associated with infection control gear.	**Prof. Wyne**
2	**Prevention of dental diseases in children** • Need for prevention. • Comprehensive prevention program for dental diseases for various age groups including those with special care needs. • Oral hygiene practices. Feeding/dietary advice. • Fluoride administration: dentifrices, home use fluorides, professionally applied fluoride, fluoride supplements, mechanism of action. • Systemic versus topical fluorides, safety and toxicity.	**Prof. Wyne**

3 **4**	**Anomalies of Developing Dentition** • Anomalies of number, size, size and shape, shape, of structure (enamel, heritable defects, environmentally induced defects), • Enamel, hypocalcification, dentine (dentinogenesis imperfecta, dentine dysplasia, odontodysplasia, other dentine abnormalities), cementum/ • Anomalies of color, eruption and exfoliation. **Dental trauma to primary and young permanent teeth** • Managing traumatic injuries in the primary dentition, etiology and epidemiology of trauma in the primary dentition, classification of injuries to the teeth, history, clinical examination, treatment of traumatic injuries to the primary dentition, trauma to supporting structures. Pathological sequelae of trauma to primary teeth. • Etiology of epidemiology of trauma in the young permanent dentition, classification of injuries to young permanent teeth, history, clinical examination, treatment of traumatic injuries to the permanent dentition, managing sequelae to dental trauma. Treating luxation injuries in permanent dentition	**Prof. Chohan** **Prof. Chohan**
5	**Pulp therapy in primary and young permanent teeth** • Pulp treatment procedures in primary teeth • Case Selection for various procedures. • Various medicaments used. • Pulp treatment procedures in young permanent teeth • Case Selection for various procedures.	**Prof. Chohan**

6	**Space maintenance and space maintainers** • General considerations. • Appliance therapy: Band and loop, lingual arch, Nance appliance, trans-palatal arch, distal shoe, removable appliances. • Additional considerations for space maintenance in mixed dentition	**Prof. Wyne**
7	**Dental Extractions in Children** • Pre-operative medical evaluation, dental pre-operative evaluation • Tooth extractions • Aspiration/swallowing of foreign objects during treatment • Minor soft tissues surgical procedures.	**Prof. Wyne**
8	**Periodontal Diseases in Children** • Etiology, characteristic of healthy periodontium in the primary dentition. • Periodontal conditions in preschooler • Periodontal condition in the school age children, acute gingival disease, chronic non-specific gingivitis, gingival enlargement.	**Prof. Chohan**

9	**Dental emergencies in Children** • Definition of dental emergency. • Dental emergencies of carious origin, periodontal origin, eruption related and other reasons. • Management of dental emergencies. • Behavioral considerations of children and parents. • Legal aspects. • Prevention of dental emergencies	**Prof. Wyne.**
10	**Hospital Dentistry** • Introduction to hospital dentistry • Who are the patients needing hospital dentistry. • Description of procedures for admissions, investigations, clinical notes, medications, and discharge. • General anesthesia team and dental team in operation theater (Protocols). • How to obtain hospital privileges.	**Prof. Chohan**

CLINICAL DEMONSTRATIONS

Operative Dentistry

Days: Monday

Time: 10:30 AM to 11:30 AM

Setting: Phantom Head Lab/ Clinical Hall

Week 1	**Orientation**	
Week 2	**Demonstration**- Endodontics- Access Cavity Endodontics- Canal Preparation	Dr. Um-e-Rubab Shirazi
Week 3	**Demonstration**- Endodontics- Obturation	Dr. Um-e-Rubab Shirazi
Week 4	**Demonstration**- Onlay Preparation	Prof. Dr. Nasir Saleem
Week 5	**Demonstration**- Direct Veneers Indirect Veneers	Prof. Dr. Nasir Saleem
Week 6	**Demonstration**- Splinting	Dr. Sobia Masood Tirmazi
Week 7	**Clinical Test**	

CLINICAL DEMOPNSTRATIONS

Pediatric Dentistry

Day: Friday

Time: 10:00 AM to 11:00 AM

Setting: Phantom Head Lab/ Clinical Hall

Week 1	Friday	**Demonstration-** Cavity preparations in primary molars	**Prof. Wyne/ Dr. Erum**
Week 2	Friday	**Demonstration**-Cavity preparations in primary incisors	**Prof. Wyne/ Dr. Erum**
Week 3	Friday	**Demonstration**-Fissure sealants and Preventive Resin Restorations	**Prof. Chohan/ Dr. Erum**
Week 4	Friday	**Demonstration** – Topical fluoride applications	**Prof. Chohan/ Dr. Erum**
Week 5	Friday	**Demonstration-A**pplication of topical & local anesthesia in children	**Prof. Chohan/ Dr. Erum**
Week 6	Friday	**Demonstration-** Tooth preparation for SSC crowns, crown selection, trimming, contouring, crimping and cementation.	**Prof. Wyne/ Dr. Erum**
Week 7	Friday	**Demonstration-** Anterior tooth preparation for strip crowns, crown form preparations and composite restoration	**Prof. Chohan/ Dr. Erum**
Week 8	Friday	**Demonstration** –Selection of molar bands in primary and permanent teeth.	**Prof. Wyne/ Dr. Erum**

Learning resources

OPERATIVE DENTISTRY		
Sr. #.	**Topics**	**Resources**
1	Amalgam	• Sturdevant's Art and science
2	Composites	• Sturdevant's Art and science
3	Veneers	• Sturdevant's Art and Science • Contemporary Fixed Prosthodontics Rosensteil
4	Pin retained restorations	• Sturdevant's Art and science
5	CAD and CAM	• Contemporary Fixed Prosthodontics Rosensteil
6	Radiology and radiography	• Harty's Endodontics in clinical practice • Endodontics Principles and practice, Mahmoud Torabinejad • Cohen's Pathways of the pulp • Summitt's fundamentals of art and science
7	Management of medically compromised patients	• Sturdevant's Art and science • Summitt's fundamentals of art and science • Cohen's Pathways of the pulp
8	Occlusion	• Contemporary fixed prosthodontics Rosensteil
9	Discoloration of teeth	• Sturdevant's Art and science
10	Bleaching	• Sturdevant's Art and science
11	Diagnosis and treatment planning	• Harty's Endodontics in clinical practice • Endodontics Principles and practice, Mahmoud Torabinejad • Cohen's Pathways of the pulp
12	Clinical classification of pulpal and periodontal diseases	• Harty's Endodontics in clinical practice

		• Endodontics Principles and practice, Mahmoud Torabinejad • Cohen's Pathways of the pulp
13	Non-odontogenic diseasesmimicking pulpal and periodontal diseases	• Harty's Endodontics in clinical practice • Endodontics Principles and practice, Mahmoud Torabinejad • Cohen's Pathways of the pulp
14	Therapeutics	• Harty's Endodontics in clinical practice • Endodontics Principles and practice, Mahmoud Torabinejad • Cohen's Pathways of the pulp
15	Sterilization and asepsis	• Sturdevant's Art and science
16	Traumatic emergencies	• Harty's Endodontics in clinical practice • Endodontics Principles and practice, Mahmoud Torabinejad • Cohen's Pathways of the pulp
PEDIATRIC DENTISTRY		
Sr. #.	**Topics**	**Resources**
17	Philosophy of Dental Treatment Planning inChildren	• Mathewoson RJ, Primosch RE: Fundamentals of Pediatric Dentistry. TreatmentPlanning Chapter. 3rd ed. Quintessence Publishing Co. • AAPD Reference Manual: Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents. Vol 40, No 6. 2018-19.
18	Dental and Oral Radiographsin Children	• Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.
19	Local Anesthesia in Children.	• Paediatric Dentistry. By: Richard Welbury, Monty S.

		Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.
20	Dental Caries in Children	• Pediatric Dentistry: Infancy through Adolescence By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013. • AAPD Reference Manual: Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents. Vol 40, No 6. 2018-19.
21	Prevention of Dental Diseasesin Children	• Pediatric Dentistry: Infancy through Adolescence By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013. • AAPD Reference Manual: Guideline on Caries-risk Assessment and Management for Infants, Children, and Adolescents. Vol 40, No 6. 2018-19.
22	Psychological Management of Children's Behaviorsin Dental Clinic.	• Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.
23	Restorative Dentistry includingFull Coverage of Primary Teeth	• Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.
24	Pulp Therapy in Primary andYoung Permanent Teeth	• Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.
25	Minor Oral Surgery in Children	• Pediatric Dentistry: Infancy through Adolescence. By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013.

26	Space Maintenance and SpaceMaintainers	• Pediatric Dentistry: Infancy through Adolescence. By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013.
27	Anomalies of DevelopingDentition	• Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.
28	Dental Trauma to Primary andYoung Permanent Teeth	• Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018. • Jens O. Andreasen, Leif K. Bakland, Marie Therese Flores, Frances M. Andreasen, Lars Andersson. Traumatic Dental Injuries: A Manual, 3rd Edition. April 2011, ©2011, Wiley-Blackwel.
29	Minimal Sedation in PediatricDental Patients	• AAPD Reference Manual: Guidelines for Monitoring and Management of Pediatric Patients Before, During, and after Sedation for Diagnostic and Therapeutic Procedures. Vol 41, No 4. 2019-20. • Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.
30	Periodontal Diseases inChildren	• Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018
31	Oral Manifestations of Infectious Diseases in Children.	• Pediatric Dentistry: Infancy through Adolescence. By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013.
32	Dental Management of Children With SystemicDiseases	• Pediatric Dentistry: Infancy through Adolescence. By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013.
33	Dental Emergencies in Children	• Pediatric Dentistry: Infancy through Adolescence. By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013. • Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.

34	Hospital Dentistry For PediatricDental Patients	• Pediatric Dentistry: Infancy through Adolescence. By: Paul S. Casamassimo, Henry W. Fields, Dennis J. McTigue, Arthur Nowak. 5th Edition. Saunders. 2013 • AAPD Reference Manual: Management of Dental Patients with Special Health Care Needs. Vol 41, No 4. 2019-20. • Paediatric Dentistry. By: Richard Welbury, Monty S. Duggal, and Marie Thérèse Hosey. 5th Edition. Oxford University Press. 2018.

OTHER LEARNING RESOURCES

Hands- on Activities / Practical	Students will be involved in Practical sessions and hands-on activities that link with the blood module to enhance the learning
Labs	Utilize the lab provides the simulated learning to the specimens and models available.
Skills Lab	A skills lab provides the simulated learning experience to learn the basic skills and procedures. This helps patients
Videos	Video familiarize the student with the procedures and protocols to assist patients
Computer Lab/CSs/DVDs/ Internet Resources:	To increase the knowledge, students should utilize the available internet resources and CDs/ DVDs. This will be an additional advantage to increase learning.
Self-Learning	Self-Learning is scheduled to search for information to solve cases, read through different resources and discuss among the peers and with the faculty to clarify the concepts.

Summative assessment methods and policies

Internal Assessment

a. Weightage of internal assessment shall be 10 %, each for theory and practical, in BDS Professional Examination.
b. The Internal Assessment shall comprise of monthly test / PBL / assignments / Clinical tests / clinical vivas etc
c. The Internal Assessment record shall be kept in the respective department of the College / Institute and after approval of Principal, a summary as per University registration number shall be furnished to the Controller of Examinations, at least two weeks before the commencement of final examination.
d. The result of all the class tests / tools which contribute towards IA will be displayed to the students during an academic year.
e. The same internal assessment shall be counted both for annual and supplementary examinations. The students who are relegated, however, can improve the internal assessment during subsequent year
f. Internal assessment tools of any subject may be changed after the approval of respective FBS

Annual Examination

a. The weightage of Annual Examination shall be 90%, each for theory and practical, in BDS.
b. The examination comprises of a theory paper and practical/clinical examinations as per PM&DC regulations and the Table of Specifications (TOS) of the University.
c. The gap between two consecutive theory papers shall not be more than two days.
d. The Theory Paper shall be of 3-hours duration, held under the arrangements of the university. It shall have two parts; MCQs (30%) and SAQs/SEQs (70 %) for the year 2019. It may be changed after the approval of Academic Council.
e. Allocated time for MCQs for 2019 shall be as under:

25 MCQs	-	30 Minutes
30 MCQs	-	40 Minutes
40 MCQs	-	50 Minutes
45 MCQs	-	60 Minutes

f. Each MCQs shall have four distractors

Internal Examiner

He/she shall be Professor and Head of Department who has been involved in teaching of the class being examined. Second preference shall be Associate/Assistant Professor who is involved in teaching of the class and posted there for one year. Third preference shall be a recognized Professor of thesubject.

External Examiner

He/she shall be a Professor/Associate Professor of a recognized Medical/Dental College or at least an Assistant Professor with three years teaching experience in the relevant subject.

Conflict of Interest

No person shall serve as an examiner whose close relative (wife, husband, son, daughter, adopted son, adopted daughter, grand-son, grand-daughter, brother, sister, niece /nephew, son and daughter- in-law

brother and sister- in-law, parental and maternal uncle and aunt etc.) is appearing in the examination. All examiners likely to serve as an examiner shall render a certificate in compliance to this para.

Paper Setting

a. Each College / Institute shall forward a set of two question papers as per TOS along with the key for each subject to the Controller of Examinations, at least three months in advance of the annual examination. The question paper as a whole / a question without a comprehensive key shall not be considered towards final paper setting.
b. The set of question papers shall be prepared by the respective Head of Department (HoD) and furnished to Controller of Examinations through Head of Institution (HoI)
c. The Controller of Examinations shall approve the faculty for the final paper setting having fair representation of each college / institute.

Paper Assessment

a. The Controller of Examinations shall approve the faculty for the theory paper marking, to be undertaken in the manner as deemed appropriate.
b. The Examination Directorate shall coordinate directly with the faculty, earmarked for the paper marking
c. A student who scores 85% and above marks in any subject shall qualify for distinction in that particular subject.
d. A fraction in aggregate marks of a subject shall be rounded off to whole number. If it is less than 0.5 then it will be rounded off to the previous whole number while 0.5 or more will be rounded off to the next whole number.

Practical / Clinical Examinations

a. The Controller of Examiners shall approve the faculty to serve as the internal & external examiners.
b. The number of external and internal examiners shall be equal.
c. One external & internal examiner each shall be marked for a group of 100 students.
d. Candidates may be divided into groups in the clinical and practical examinations and be standardized by incorporating clinical exam
e. Practical/clinical examination shall be held after the theoryexamination of the subject but in special cases, it may be held before the theory examination with the approval of the Controller of Examinations. For the purpose of practical/clinical examination, the candidates may be divided into sub groups by the examiners.
f. The assessment of the practical / clinical examination duly signed by internal & external examiner shall be furnished to the Controller of Examinations within one week of the conclusion of examination

Pass Marks

a. Pass marks for all subjects less Islamic / Pakistan Studies, shall be 50 % in theory and practical, separately.
b. Pass marks for Islamic / Pakistan Studies shall be 33 % which, however shall not be counted towards final scoring of the professional examination.
c. No grace marks shall be allowed to any student in any examination.

Declaration of Result.

Every effort shall be made to declare the result of each examination within one month of the last practical examination or earlier.

Promotion.

No student shall be promoted to the higher classes unless he/she passes all the subjects of the previous class

Re-Totaling.

Any student may apply to the Controller of Examinations on a prescribed form along with the specified fee.

Supplementary Examination.

The interval between a supplementary examination and the previous professional examination shall not be more than two months. There shall be no special supplementary examination.

Table of Specification for Annual Examination
Theory Examination

MCQs

45 x MCQs (45 Marks)

Time =60 min

SEQs/SAQs

9 x SEQs/SAQs (45 marks)

Time = 2 hours & 10 min

3 x SEQs/SAQs (Recall) = 05 marks each

6 x SEQs/SAQs (Application) = 05 marks each

Sr. No	Topic	No of MCQs (45)	No. of SEQs / SAQs (09)
1	Operative Dentistry	30 (30 marks)	06 (30 marks)
2	Pediatric Dentistry	15 (15 marks)	03 (15 marks)
Total		45 (45marks)	09 (45 marks)
Grand Total		**90 Marks**	

Table of Specifications for Annual Professional Exam:
Practical Examination

VIVA 90 marks		**Practical / Clinical 90 marks**				**Total**
Examiner 1	Examiner 2	History Taking	Operative Procedure	Chair side Viva	OSCE	**180 Marks**
45 Marks	45 Marks	30	40	10	10	

Sr.No	Course Content	NUMBER OF MCQs (45) Recall (18) Application (27) (1 mark each)	NUMBER OF SAQs/SEQs (09) (05 marks each)
1.	Amalgam	2	1
2.	Composites	2	1
3.	Veneers	2	1
4.	Pin Retained restorations	1	
5.	CAD and CAM	1	
6.	Radiology and Radiography	2	
7.	Management of medically compromised patients with special reference to HIV and hepatitis	2	1
8.	Occlusion	2	
9.	Discoloration of teeth	2	
10.	Bleaching	3	
11.	Diagnosis &Treatment planning	2	1
12.	Clinical classification of pulpal and periodontal disease	2	
13.	Non- odontogenic diseases mimicking pulpal and periodontal diseases	1	
14.	Therapeutics	3	1
15.	Sterilization and asepsis	1	
16.	Traumatic emergencies	1	
17.	Child management in Dental Practice	1	1
18.	Clinical diagnosis of Pediatric dental diseases	1	
19.	Prevention of Dental Diseases	1	
20.	Treatment modalities	1	1
21.	Radiology	1	
22.	Injury to primary and permanent teeth	1	

23.	Anesthesia and sedation	1	
Total		**45 (45)**	**09 (45)**

Internal Assessment Calculation (Theory)

A	B	C	D	E	F	G	H
Roll No.	**Name**	**1st Mid term Marks (Theory) 45 Marks**	**1st term Marks (Theory) 90 Marks**	**2nd Midterm Marks (Theory) 45 Marks**	**2nd term Marks (Theory) 90 Marks**	**Pre-Annual Marks (Theory) 90 Marks**	**Total Marks of internal Assessment out of 10**
							H=(C+D+E+F+ G) ÷ 360 x 10

Internal assessment calculation (Practical)

A	B	C	D	F	G
Roll No.	Name	Practical Quota Completion	End of Rotation Batch Test	Pre-annual (Practical)	Total Marks of internal assessment out of 20
					(C+D+E) ÷330 x 20
		100 Marks	**50 Marks**	**180 Marks**	**20 Marks**

Sample MCQs and SEQs

Multiple Choice Question (MCQs)

- A multiple-choice question (MCQ) consist of a stem that states the question or problem followed by a set of possible answers that contain an option that is best answer to the question.
- After reading the questions students should select the appropriate option from the given possible answers.
- The correct answer carries one mark and incorrect carries zero. There is no negative marking.

Sample MCQ

A 30 years old patient presents with a large carious lesion in tooth #15. The tooth is non tender to percussion and palpation. Vitality tests yield a negative response. Radiograph reveals radiolucency around root of #15. There is a draining sinus tract in the attached gingiva close to #15. The sinus tract is traced to apex of #15.

Most probable diagnosis in this case is

a. **A**cute apical abscess
b. Asymptomatic irreversible pulpitis
c. Chronic apical abscess
d. Reversible pulpitis
e. Symptomatic irreversible pulpitis

KEY: C

Short essay question (SEQs)

- Short essay questions require students to present written answers that are used to asses basic knowledge and clinical application of key facts and provide students with an opportunity to demonstrate reasoning and explain their understanding of the subject.

Sample SEQ

A 45 years old patient presents with failed Root Canal Treatment in tooth no 11. The tooth has a recently placed porcelain crown with excellent margins. The patient takes 75mg aspirin daily prophylactically. After initial assessment a decision to perform root end resection is made for this tooth.

a) What additional investigations may be required for this patient?
b) Which type of flap would you prefer for this patient? Give rationale for your selection.
c) How much and at what angle would you perform the root end resection? Give rationale for your selection.

KEY:

a) ***ADDITIONAL INVESTIGATIONS*** needed will be the
   i. INR value
   ii. Complete Blood Count(CBC)

B) ***OCHSENBEIN LEUBKE FLAP***. OR ***SEMILUNAR FLAP***

RATIONALE FOR OCHSENBEIN LEUBKE FLAP.

- **Maintains integrity of gingival attachment**

  This is required in this clinical scenario to maintain the aesthetics of gingiva around the crown with excellent margins.

  It also provides

- Ease in incision & reflection
- Enhanced visibility & access
- Ease in repositioning

RATIONALE FOR SEMILUNAR FLAP

- **Maintains integrity of gingival attachment**

  This is required in this clinical scenario to maintain the aesthetics of gingiva around the crown with excellent margins.

  It also provides

- Small incision and easy reflection
- No intervention at the periodontium
- Easier oral hygiene compared to other types of flaps.

C) ROOT END RESECTION WILL BE DONE PERPENDICULAR TO LONG AXIS OF THE TOOTH.

Rationale

- It will include most of the deltas and ramifications.
- It will help in distributing forces equally.
- Increase of angle leads to an increase in the communication of the dentinal tubules with the apical region, which isn't desirable.
- Extending the root-end cavity preparation beyond the coronal extent of the root surface is simpler if the root-end resection is perpendicular to the long axis of the tooth.