

CURRICULUM

OF

B.D.S



Prepared by:
PAKISTAN MEDICAL & DENTAL COUNCIL
&
HIGHER EDUCATION COMMISSION
ISLAMABAD

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PREFACE

The Pakistan Medical & Dental Council is a statutory body constituted by the Federal Government under the Pakistan Medical & Dental Council Ordinance, 1962. Presently controlled by the Council. One of the main function of the Council is to lay down the minimum standard of basic and higher qualifications in Medicine & Dentistry. The Council has been empowered to:

- To prescribe a uniform minimum standard of courses of training for obtaining graduate and postgraduate dental qualification.
- To prescribe minimum requirements for the content and duration of courses of studies for the degree of BDS.
- To prescribe condition for admission to courses of training for the degree of BDS.
- To prescribe the standards of examinations method of conducting the examination.

For this purpose senior teachers of all specialties were invited & draft curriculum was finalized after due consideration of the comments and suggestions received from the Universities and Colleges where the subject under consideration is taught.

The Curriculum prepared by the Curriculum Revision Committee of Higher Education Commission was duly approved by Council & is being circulated for implementation by the concerned institutions on.

This Curriculum is to be followed by all the Dental Colleges and Universities in Pakistan to get registration of the Council for Dental practitioners.

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ADVISER (Academics/R&D)

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SECRETARY

CURRICULUM OF BDS

(FOUR YEARS)

A meeting of NCRC B.D.S. was held on 19.8.2003 to restructure the B.D.S. curriculum into four years from five years as decided in the Council Session held on 29th & 30th April 2003.

The Committee considered the proposals of subjects specialists in various disciplines of Dentistry and discussed the following:-

1. Nomenclature of various subjects
2. Duration of BDS course
3. Year-wise distribution of subjects
4. Distribution of sub-specialties
5. Examination system restructuring
6. Internal assessment factors
7. Allocation of credit hours
8. First draft curriculum of various subjects taught in BDS.
9. Books recommended

Following recommendations were proposed unanimously:-

1. Nomenclature of Oral Surgery should be changed to Oral and Maxillofacial Surgery.
2. Prosthetics should be called Prosthodontics
3. Conservative Dentistry be called Operative Dentistry
4. Dental Anatomy should be renamed as Oral Biology and Tooth Morphology
5. Dental Chemistry should be called Science of Dental Materials
6. It was also proposed that Periodontology, Gerodontology and Paedodontics are the best descriptive terms.

YEAR WISE DISTRIBUTION OF SUBJECTS:

1 ST YEAR	2 ND YEAR	3 RD YEAR	4 TH YEAR
General Anatomy Histology and Embryology	General Pharmacology	Medicine	Prosthodontics
Physiology	General Pathology	Surgery	Operative Dentistry
Bio-Chemistry	Oral Biology and Tooth Morphology	Oral Pathology	Oral and Maxillofacial Surgery
Science of Dental Materials	Community and Preventive Dentistry	Periodontology and Oral Medicine	Orthodontics
Pak Studies and Islamiat / Ethics			

* It was felt that Oral Medicine and Periodontology should be independent subjects but till the availability of subject specialists they could be taught together. Those institutions where separate subject specialists are available with developed departments may teach and examine these subjects independently.

?? Where the department of Paediatric Dentistry with qualified staff is available there will be a separate examination of the subject in final year BDS.

Examination System

Examination System was restructured as following: -

1. All papers should consist of MCQs and essay type question.
2. Internal evaluation of each subject carries 10% marks of the total to be adjusted in practical marks.
3. The question paper should be according to the table of specification provided in curriculum of that subject.

SCHEME OF STUDIES

YEAR AND SUBJECT WISE DISTRIBUTION OF MARKS

FIRST PROFESSIONAL BDS

SUBJECTS

	Theory	Practical	
General Anatomy	100	100	
General Physiology	100	100	
Biochemistry	50	50	
Science of Dental Materials	100	100	
Total	350	350	= 700

SECOND PROFESSIONAL BDS

SUBJECTS

	Theory	Practical	
Pathology	100	100	
Pharmacology	100	100	
Oral Biology and Tooth morphology	100	100	
Community and Preventive Dentistry	50	50	
Total	350	350	= 700

THIRD PROFESSIONAL BDS

SUBJECTS

	Theory	Practical	
General Surgery	100	100	
General Medicine	100	100	
Oral Pathology	100	100	
Periodontology/Oral Medicine	100	100	
Total	400	400	= 800

Note: Periodontology/Oral Medicine will share equal weightage of marks in theory and practical i.e. 50% each.

FINAL PROFESSIONAL BDS

<u>SUBJECTS</u>	<u>Theory</u>	<u>Practical</u>
Prosthodontics	100	200
Operative Dentistry	100	200
Oral and Maxillofacial Surgery	100	200
Orthodontia	100	200
Total	400	800 = 1200

ALLOCATION OF CREDIT HOURS **FIRST PROFESSIONAL BDS**

	<u>LECTURE HOURS</u>	<u>PRACTICAL HOURS</u>
Anatomy	100	300
Physiology	50	200
Biochemistry	50	120
Science of Dental Materials	75	250
Pakistan Studies/ Islamic Studies	25	-
Information Technology	-	30
Total	300	900 =1200 hrs

SECOND PROFESSIONAL BDS

<u>SUBJECTS</u>	<u>LECTURES HOURS</u>	<u>PRACTICAL HOURS</u>
General Pathology	50	200
General Pharmacology	50	200
Oral Biology and Tooth morphology	60	100
Community and Preventive Dentistry	40	200
Junior Operative/Dental Material Medica	25	110
Junior Prosthodontics	25	110
Information Technology	-	30
Total	250	950 = 1200 hrs

Note: Paedodontics will have 25% weightage of Operative Dentistry where ever fully operational department with qualified staff exists.

THIRD PROFESSIONAL BDS

<u>SUBJECTS</u>	<u>LECTURES AND DEMONSTRATION</u>	<u>PRACTICAL AND CLINICAL HOURS</u>
General Surgery	50	150
General Medicine	50	150
Oral Pathology	50	100
Oral Medicine & Diagnosis	50	75
Periodontology	50	125
Prosthodontics	30	120
Operative Dentistry	20	80
Oral and Maxillofacial Surgery	30	120
Total	330	920 = 1250 hrs

NOTE: - Clinical hour of General Medicine and Surgery may be extended to evening ward duties in addition to allotted hours.

FINAL PROFESSIONAL BDS

<u>SUBJECTS</u>	<u>LECTURES AND DEMONSTRATION</u>	<u>PRACTICAL HOURS</u>
Prosthodontics		
Complete Dentures	40	
Fixed Prosthodontics	20	250
Occlusion	5	
Maxillofacial Prosthodontics	5	
Gerodontology	5	
Operative Dentistry		
Operative	20	
Endodontics	10	
Paedodontics	10	
Crowns	10	250
Radiology	05	
Oral and Maxillofacial Surgery		
Oral Surgery	60	
Anesthesia	10	

Forensic Dentistry	5	250
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Orthodontia

Orthodontics	40	
Radiology(Cephalometry)	05	250

250	1000 = 1250 hrs
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DETAILS OF COURSES

FIRST PROFESSIONAL BDS

A. GENERAL ANATOMY

1. Brief history of Anatomy. Different disciplines of the subject.
2. Anatomical nomenclature-descriptive terms.
3. Skeletal system-bones.
 - ? Axial Skeleton
 - ? Appendicular Skeleton
 - ? Functions of bone
 - ? Classification on the basis of shape, development, region and structure.
 - ? General concepts of development & ossification of bones
 - ? Parts of young bones
 - ? Blood supply of long bones
 - ? Applied Anatomy of bones
4. Joints
 - ? Structural classification
 - ? Regional classification
 - ? Functional classification
 - ? Characteristics and classification of Synovial joints
 - ? Movements of Synovial joints
 - ? Anatomy of joints with reference to dislocation, sprain and inflammation
5. Muscle
 - ?? Parts of a muscle
 - ?? Classification
 - ?? Blood supply and nerve supply of muscle
 - ?? Neuromuscular junction
 - ?? Applied anatomy of muscle with reference to spasm, paralysis, atrophy and regeneration.
6. Cardiovascular system
 - ? Introduction to C.V.S
 - ? Types of circulation
 - ? Anastomosis
7. Introduction to lymphatic system
 - ? Lymph node

- ?? Lymph capillary
 - ?? Functions
8. Nervous system
 - ?? Introduction to CNS
 - ?? Different parts of CNS with their brief functions
 - ?? Peripheral nervous system (cranial and spinal nerves)- introduction
 9. Autonomic nervous system
 - ?? Introduction to parasympathetic and sympathetic nervous system
 10. Skin and Fascia
 - ?? Skin, superficial and deep fascia, introduction
 11. Techniques to study Anatomy
 - ?? Introduction to radiographs
 - ?? Radio opaque media
 - ?? Special X-Ray techniques like Barium Meal, Angiography, Ultrasound, C.T.Scan and MRI.

GENERAL HISTOLOGY

- ?? Histology will be taught concurrently with Anatomy throughout the course.
- ?? Underlying principles of histology techniques and staining specific tissues should be explained.
- ?? Most of the teaching will be done on stained and mounted sections and every type of normal tissue will be covered.

1. Cell
 - ?? Cell as a whole
 - ?? Cell Membrane
 - ?? Interior of cell
 - ?? Nucleus
2. Microscopy
3. Epithelial tissues
4. Connective tissue
5. Cartilage
6. Bone
7. Muscular tissue
8. Nervous tissue & Nervous system
 - The nervous system

- ??Cerebral cortex
- ??Cerebellar cortex
- ??Spinal cord
- 9. Lymphoid organ
- 10. Circulatory system
- 11. Integument

GENERAL EMBRYOLOGY

Embryology should be taught with the object of making students understand and grasp those fundamental principles, which result in better comprehension of the structural organization in the body. Stress should be laid on those developmental processes such as growth and differentiation, which have a direct bearing on clinical subjects. The genesis of congenital malformations should be one of the chief aims. All details should be kept on the essential outline.

1. Male & female reproductive systems.
2. Cell Division and Gametogenesis
3. Fertilization, cleavage, blastocyst formation and implantation
4. Development during second week
5. Development during third week
6. Embryonic period
7. Fetal period
8. Fetal membrane (amniotic cavity, yolk sac, allantois, umbilical cord and placenta)
9. Introduction to Genetics and Teratogenesis
10. Perinatology

GROSS ANATOMY

During study of Gross Anatomy, emphasis should be given on applied points, radiological anatomy, surface anatomy and cross-sectional anatomy.

REGION TO BE COVERED IN EACH PART

PART-I

- ?? GENERAL ANATOMY
- ?? GENERAL HISTOLOGY
- ?? GENERAL EMBRYOLOGY including teratogenesis
- ?? UPPER LIMB} Introduction
- ?? LOWER LIMB}Introduction
- ?? THORAX

PART – II

- ?? SPECIAL HISTOLOGY
- ?? SPECIAL EMBRYOLOGY
- ?? ABDOMEN
- ?? HEAD & NECK
- ?? NEUROANATOMY

BOOKS RECOMMENDED

Latest editions of the books recommended should be consulted.

ANATOMY

1. GRAY'S ANATOMY to be used as a reference book
2. CUNINGHAM'S MANUAL OF PRACTICAL ANATOMY
3. CLINICAL ANATOMY BY SNELL'S
4. CLINICALY ORIENTED ANATOMY BY K.L.MOORE

HISTOLOGY

1. JANCQUERA TEXTBOOK OF HISTOLOGY
2. COLOURD ATLAS OF HISTOLOGY BY DEFIERO

EMBRYOLOGY

1. LANGMAN'S EMBRYOLOGY
2. CLINICALY ORIENTED DEVELOPMENT ANATOMY BY K.L.MOORE

RECOMMENDATIONS

Learning in the anatomy should be through dissection/dissected parts/models.

Evaluation should consist of: -

1. Continuous internal assessment
2. MCQs
3. Short essay questions
4. Viva voce examination

SPECIAL HISTOLOGY

1. The digestive system

- ?? The oral cavity
- ?? Tongue, Teeth, Gums, Pharynx, Hard palate, Soft palate and lips.
- ?? Esophagus
- ?? Salivary glands

2. The respiratory system

- ?? Nasal cavity, paranasal sinuses, larynx and trachea
- ?? Bronchi and lungs

3. The endocrine system

- ?? Pituitary
- ?? Thyroid and parathyroid
- ?? Adrenal
- ?? Pineal body

SPECIAL EMBRYOLOGY

1. Development of Head & Neck

- ?? Tongue
- ?? Thyroid
- ?? Pituitary
- ?? Upper respiratory system
- ?? Development of face and palate

2. The digestive system

3. The respiratory system

4. The cardiovascular system

5. The musculo-skeletal system

- ?? Development of skeleton

- ?? Development of muscles

6. Special Senses

7. Development of nervous system

GROSS ANATOMY

During study of Gross Anatomy, emphasis should be given on applied points, radiological anatomy, surface anatomy and Cross-sectional anatomy.

- HEAD & NECK (In detail)
- Brain, limb, Thorax, Abdomen & Pelvis. (General consideration)

B - PHYSIOLOGY

Basic Concepts

General Physiology / Cell

Functional organization of human Body

Homeostasis

Control systems in the body

Cell membrane and its functions

Transport through cell membrane

Genetics

Blood

Composition and General Functions

Plasma proteins

Red Blood Cell (Erythropoiesis)

Haemoglobin & Blood

Indices, Iron metabolism, Fate of Hb

White Blood Cells

Leucopoiesis, functions

Platelets

Haemostasis

Blood groups

Blood Transfusion & complications

Reticuloendothelial systems, spleen

Nerve and muscle

The neuron-structure & functions

Properties of Nerve Fibers

Physiology of action Potential

Including compound action potentials

Conduction of Nerve Impulse, Nerve

Degeneration and regeneration

Synapses

Structure of the muscle

Skeletal muscle contraction

Isometric and isotonic contraction

Smooth muscle contraction

Neuromuscular Transmission

Excitation-contraction coupling

Motor Unit

Neuromuscular Blockers

Clinical / Applied Concepts

Abnormalities of the cell & its organelles

Anemia

Blood indices in various disorders

Leucopoiesis, Leucocytosis

Thrombocytopenia

Clotting disorders

(Haemophilia etc)

Blood grouping / cross matching & significance immunity

Nerve Injury

Rigor Mortis & Contractures

Myasthenia Gravis

Gastrointestinal Tract
Structure and General Functions
Enteric nervous system (Gut Brain)
Mastication, Swallowing and their Control
Functions and movements of Stomach
Functions and movements of Small intestine
Functions and movements of large Intestine
Hormones of GIT
Vomiting and its pathway
Defecation and its pathway
Functions of Liver

Dysphagia, achlasia of esophagus
Examination of abdomen, Peptic Ulcer, pancreatitis
Gastric function tests

Vomiting and its effects
Diarrhoea
Jaundice, Liver function tests

Cardio Vascular system

Introduction to heart & circulation

Correlation of cardiac cycle with ECG & heart sounds

Physiology of cardiac muscle
Action potential in atrial & ventricular Muscle and pacemaker potential
Regulation of cardiac functions
Cardiac impulse-origin & propagation
Cardiac cycle- various events
ECG-Recording & interpretation

Functional types of blood vessels
Local control of blood flow
Systemic circulation, Characteristics and control
Regulation of peripheral resistance
Arterial pulse
Arterial blood pressure (short/long Term regulation)
Cardiac output (regulation/measurement)
Heart sound/murmurs

Jugular venous pulse

Radial/other pulses
Hypertension, types & effects

Venous return & its regulation
Coronary circulation

Pulmonary circulation
Cerebral circulation

Cardiovascular changes during exercise

Types of shock

RESPIRATORY SYSTEM

Organization / functions of
Respiratory Tract

Functions of Lungs (respiratory & non
Respiratory)
effusion)

Mechanics of Breathing

Protective reflexes

Lung volumes and capacities

Dead space

Diffusion of Gases (composition)

Ventilation / perfusion

Transport of CO₂ in blood

Regulation of respiration
(Nervous / Chemical)

Abnormal breathing

Hypoxia-types and effects

Physiology of Cyanosis

Physiology of high altitude,

Oxygen debt

Exercise

Types of respiration

(intrapleural
pressure, pneumothorax,

Lung function tests spirometry)

Obstructive/Restrictive lung
Disease (FEV₁ / FVC)

Abnormal

Ventilation / perfusion

Respiratory

Asphyxia

Hypoxia, cyanosis,
dyspnoea

Artificial respiration

Oxygen therapy

ANNEXURE FOR PHYSIOLOGY

Recommended books

1. Text book of Medical physiology by Arthur C. Guyton.
2. Review of Medical physiology by Ganong.
3. N.M.S text book of physiology.

RECOMMENDED MODES OF ASSESSMENTS

Continuous Internal Assessment (as recommended by PM&DC).
Theory

- a. Descriptive: consisting of short essay questions and short notes.

- b. Multiple choice questions (MCQ's)

Oral & Practicals

- a. Viva voce: it should be about definitions, normal values, mechanisms, interpretations. Drawing / labelling of graphs / diagrams. Conceptual questions should be asked.
- b. Practical: Two experiments to be performed by the student OSPE (objective structured practical examinations) should be encouraged.

Nervous System

Organization of Nervous system

Classification of nerve fibers
Properties of Synaptic transmission

Types and function of sensory
Receptors
Functions of spinal cord, ascending
Tracts Reflex action/muscle tone
Muscle spindle / muscle tone

Interpretation of Reflexes
UMN/LMN Lesion-features and
Localization

Tactile, temperature and pain
Sensations structure of cerebral
Cortex
Sensory Cortex
Motor Cortex
Motor pathways, pyramidal & extra
Pyramidal)
Basal Ganglia, connections and functions
of Vestibular Apparatus/Regulation of
Posture & Equilibrium Reticular formation

Parkinsonism and
other lesions
Basal ganglia
cerebellar Disorder

Physiology of sleep / EEG
Physiology of speech
Thalamus- Nuclei & functions
Hypothalamus & limbic
System
Cerebrospinal fluid
Regulation of body temperature
Functions of skin
Autonomic Nervous system
Special senses
Physiology of smell

Lesion of
Hypothalamus

Hydrocephalus

Olfaction / taste

Physiology of taste

obnormalistis

Endocrinology

General principles (classification,
Mechanism of action, feed back control)

Acromegaly, Giantism

Biosynthesis, transport, metabolism, actions
and control of secretion of hormones of;

Hormonal assay

Hypothalamus

Anterior Pituitary

Dwarfism

Posterior Pituitary

Panhypopituitarism

Thyroid gland

Parathyroid, calcitomin

Diabetes insipidus

Adrenal Medulla

Syndrome, of
inappropriate
ADH Secretion

Adrenal Cortex

Myxoedema, Creatinism,
Thyrototoxicosis

Pancrease

GIT

Pheochromocytoma

Cushing's syndrome,
Cohn's disease

Addision's disease,

Syndrome

Kidney

Diabetes Mellitus &
Hypoglycemia

Physiology of growth
(Head & Neck)

EXPERIMENTAL PHYSIOLOGY

Haematology

Study of the microscope

Determination of : -

Haemoglobin (Hb%)

Erythrocyte Sedimentation Rate (ESR)

Packed cell volume (PCV) Haematocrit

Bleeding time (BT)

Clotting time (CT)

Blood Groups

Study of Neubauer chamber

RBCs Count

Red cell indices

WBCs Count

Differential leucocyte Count (DLC)

Osmotic fragility of chest

Demonstration of prothrombin time and thrombin time

Respiratory System

Measurement of Pulmonary volumes and capacities (Spirometry)

Stethography

Nervous System

Examination of superficial reflexes

Examination of deep reflexes

Examination of sensory, motor system

Clinical Examination of cranial nerves

Cardiovascular System

Cardiopulmonary resuscitation

Examination of arterial pulse

ECG recording/interpretation

Measurement of arterial blood pressure

Effect of exercise & posture on BP

Examination of Apex Beat

Heart Sounds – auscultation of normal sounds/murmurs

Special Senses

Taste sensation

Recording of body temperature

C : BIOCHEMISTRY

1. Introduction of Biochemistry:

Biochemistry of the Cell

- a) Introduction to cell (Biochemical point of view)
- b) Scientific methods to study the cell Biochemistry
- c) Biochemical composition of the cell

Biochemistry of the Cell and Body Fluids:

- a) Ionization of water & weak acids, Bases
- b) Concept of Ph, and pH scale
- c) Dissociation constant & titration curve of weak acids, the concept of pK values
- d) Buffers, their mechanism of action
- e) Henderson-Hasselbalch Equation (No derivation)
- f) Importance of selectively permeable membranes, Osmosis, Osmotic pressure, surface tension, viscosity & their importance related to body fluids

Carbohydrates:

- a) Definition, biochemical function and classification
- b) Structure and functions of Monosaccharides, and their derivatives
- c) Disaccharides, their important examples
- d) Oligosaccharides, their important combination with other macromolecules
- e) Polysaccharides, their important examples and biochemical role
- f) The biochemical importance of carbohydrates

Proteins:

- a) Definitions, Biomedical importance and classification of proteins
Based on
 - Physiochemical properties
 - Functional
 - Nutritional
 - Structural
- b) Amino acids, their structure, properties and functions
- c) Classification and nutritional significance of amino acids
- d) Structure of proteins and their significance
- e) Separation of proteins e.g. salting out, Electrophoresis, Chromatography, Centrifugation
- f) Immunoglobulins and its biomedical significance
- g) Plasma proteins & their clinical significance

Nucleotide and Nucleic Acid:

- a) Chemistry and structure of nucleotides and their biochemical role
- b) Nucleotides, structure, their derivatives and their biochemical role
- c) Nucleic acids, their types, structure and functions

Lipids:

- a) Definition, biomedical function
- b) Classification of lipids
- c) Phospholipids, Glycolipids, Sphingolipids and their Biochemical signation
- d) Fatty acids, chemistry, classification and biochemical function
- e) Essential fatty acids
- f) Eicosanoids, their classification and functions in health and disease
- g) Steroids, Sterol e.g Cholesterol, their chemistry, functions and clinical Significance
- h) Lipid peroxidation and its Significance

Biological Membrane:

- a) Biochemical composition
- b) Biochemistry of cell membrane, chemical composition, importance of Lipid and proteins in membranes, chemistry of signals and receptors
- c) Biochemistry of membrane transport mechanism, active transport, Passive transport, simple and facilitated diffusion

Enzymes:

- a) Introduction, definition, mechanism of catalysis
- b) Coenzymes, co-factors
- c) Isoenzymes, their clinical importance
- d) Factors affecting enzymes activity, Michaelis-Menten Equation,

(no derivation of equations)
- e) Enzyme inhibitors and their classification and biomedical importance
- f) Application of enzyme in clinical diagnosis and therapeutic use

Porphyryns & Hemoglobin:

- a) Chemistry and biosynthesis of porphyryns and its disorders (porphyrias)
- b) Structure, functions and types of hemoglobin
- c) Oxygen binding capacity of hemoglobin, factors affecting and regulating the oxygen binding capacity of hemoglobin
- d) Degradation of heme, formation of Bile pigments, its types, transport and excretion
- e) Hyperbilirubinemia, their biochemical causes and differentiation, Jaundice and its types
- f) Hemoglobinopathies (HP-S, Thalasemia etc) and their biochemical causes

Vitamins:

- a) Introduction, classification

- b) chemistry, biochemical functions, deficiency manifestations, daily allowances and source of water soluble and fat-soluble vitamins
- c) Hypervitaminosis

Biochemistry of Digestive Tract:

- a) Introduction of digestion and absorption
- b) Introduction, composition, functions, daily secretion, stimulants and depressants of:
 - Saliva
 - Gastric Juice & HCL
 - Pancreatic Juice
 - Bile Juice
 - Succus Entericus
- c) Digestion and absorption of carbohydrates, proteins, nucleic acid and lipids.
- d) Biochemical disorders of GIT, e.g. achlorhydria, peptic ulcers, Lactose intolerance, cholelithiasis and related disorders.(Introductions)

Mineral & Trace Elements:

Classification and Biochemical role of:

- Macro minerals (Na,K,Ca, Cl, PO₄)
- Micro minerals (Fe,Zn,Mg,Se,I,Cu,Cr,Cd.Mn)

Laboratory Practicals

1. Introduction to use laboratory facilities / equipment's
2. Basic techniques and fundamental informations
3. Preparation of solutions-Normal solution and Normal saline
4. Experiments on Carbohydrates qualitative analysis
5. Experiments on proteins- qualitative analysis
6. Experiments on Fats- qualitative analysis
7. Chemical analysis of Urine-Normal and abnormal specimens

D: SCIENCE OF DENTAL MATERIALS

- 1 Introduction to Dental Materials
- 2 Physical properties of materials:-
 - a) Characterisation of solid surfaces
 - b) Adsorption, absorption, and sorption.
 - c) Surface tension, wetting, capillary rise
 - d) Forces involved in denture retention
- 3 Thermal, Electrical and other related properties of dental materials
- 4 Mechanical properties i.e. stress, strain, stress/strain relationship and other related properties.
- 5 Classification of dental materials on their basis of chemistry eg. example Polymers, Ceramics, Metals, Alloy and Composites.
- 6 Impression materials in all respects and duplicating materials.
- 7 Duplicating materials
- 8 Gypsum products and investment materials.
- 9 Investment materials
- 10 Dental Waxes .
- 11 Separating media used in dentistry
- 12 Polymers:-
 - ? Requirements of denture base materials.
 - ? Properties of Acrylic Resin as a denture base materials, their composition, manipulation and processing.
 - ? Alternative denture base materials.
 - ? Artificial teeth.
 - ? Types of Acrylic Resin polymerization i.e. heat cured Acrylic denture plastics, chemically accelerated plastics, fluid resin acrylic denture plastics, light cured denture plastics, repair, relining and rebasing materials
 - ? Tissue conditioning materials and soft liner.

13 Adhesion : Enamel and Dentine bonding agents and bonding system.

14 Dental Cements.

?? Zinc Phosphate Cement.

?? Zinc Oxide/Eugenol, Modified Zinc Oxide/Eugenol, Ethoxy Benzoic Acid Cement, Zinc Polycarboxylate , Zinc Polyacrylate Cement, Silico Phosphate Cement.

?? Glass Ionomer Cement and Hybrid Ionomer Cement

?? Compomers, Cavity Varnish, Cavity Liners, Calcium Hydroxide and Guttapurcha.

Composite Restorative Materials and properties of composites

? Dental amalgam alloys

? Amalgamation process

? Properties and uses of dental amalgam

General Characteristics of Metals

?? Extraction of metals from their ores and their purification.

?? Micro leakage, creep, galvanism, cold working/strain hardning, Annealing

?? Welding and soldering.

?? Tarnish and corrosion and their types.

Alloys and its types.

Dental casting gold alloys its composition, properties uses.

Base metal casting alloys, their composition, properties and comparison with casting gold alloys.

Wrought alloys, i.e. steel and stainless steel.

Porcelain and bonded porcelain as a dental ceramic, classification of dental porcelain, composition, properties, manufacturing and firing and their uses.

Maxillo facial materials used in dentistry.

Abrasion and polishing materials

Practical And Laboratory Techniques

Identification and manipulation of all dental materials.

Laboratory procedures / experience of Acrylic, partial denture and crown and bridge work.

Books Recommended

- a) Restorative Dental Material by Robert G. Craig and John M. Power.
- b) Skinner's "Science of Dental Materials"
- c) Chemistry of Dental Materials by Mc Cabe
- d) Notes on Dental Materials by M. C. Comb
- e) Science of Dental Materials by William and Cunnigham

E - PAKISTAN STUDIES AND ISLAMIAT

The role of sufis and saints in the spread of Islam in the subcontinent. Shah Waliullah and Tehrik – I – Mujahidin. The war of Independence 1857. Sir Syed Ahmed Khan and two nation theory. The Aligarh Movement. The Muslim League. The Nehru report and Quaid-I-Azam 14 points. The Ideology of Pakistan. The initial problems faced by newly independent Pakistan. Pakistan and the Muslim World. The Kashmir problem. The U.N.O.

ISLAMIYAT

The fundamental pillars of Islam. The Holy Qur'an: Sura-e-Furqan. Hadith-e-Nabvi. Uswa-e-Husna. Ashra-e-Mubshra. The Meccan period and life in Medina. Hajja-Tul-Wida. The Rashida Caliphate.

SECOND PROFESSIONAL BDS

A: GENERAL PATHOLOGY

1. Cell Injury:

- a. Terms necrosis, ischemia, hypoxia, infarction and gangrene.
- b. Sequence of the ultrastructural and biochemical changes which occur in the cell in response to the following:
 - ?? Ischemia
 - ?? Immunological injury-eg. Asthma / SLE /Anaphylactic reaction
 - ?? Physical agents: eg. Radiation
 - ?? Genetic defects- eg. Thalassemia / haemophilia
 - ?? Nutritional deficiency
 - ?? Infectious agents
 - ?? Viruses: eg. Hepatitis / Aids / HIV infections
 - ?? Fungi: eg. Candida Albicans/Candidosis
 - ?? Parasites: eg. Malaria
- c. Irreversible and reversible injury.
- d. Apoptosis and its significance.
- e. Necrosis and its types.
- f. Exogenous and endogenous pigment deposition
- g. Dystrophic and metastatic calcification along with clinical significance.
- h. Metabolic disorders
 - ?? Lipid
 - ?? Protein
 - ?? Carbohydrate

2. **INFLAMMATION AND MEDIATORS OF INFLAMMATION**

- a) Describe the role of inflammation in the defense mechanisms of the body.
- b) Describe the vascular changes of acute inflammation and relate these to the morphological and tissue effects.
- c) Describe the process of chemotaxis, opsonization and phagocytosis.
- d) Describe the role of cellular components in inflammatory exudate
- e) Differentiate between exudate and transudate.
- f) List the important chemical mediators of inflammation
- g) Describe the pathway of Arachidonic Acid metabolism.
- h) Discuss the role of products of Arachidonic acid metabolism in inflammation.

- i) Describe the mechanism for development of fever, with reference to exogenous and endogenous pyrogens.
- j) Describe chronic inflammation including granulomas.
- k) Describe granuloma , its type and causes.
- l) Describe the systemic effects of acute and chronic inflammation and their possible outcomes.
- m) Describe the signification of ESR.
- n) Give two example of induced hypothermia in medicine.
- o) Describe the pathogenesis, clinical features and lab. Diagnosis of Gout.
- p) Describe the management of acute and chronic Gout.

3. **WOUND HEALING**

- ?? Describe the differences between repair and regeneration .
- ?? Describe wound healing by first and second intention.
- ?? Discuss the factors that influence the inflammatory reparative response.
- ?? Compare wound contraction with cicatrization.
- ?? Describe the formation of granulation tissue.
- ?? Describe the complications of wound healing.

4. **DISORDERS OF CIRCULATION**

a) THROMBO-EMBOLIC DISORDERS AND THEIR MODALITIES:

- 1. Explain the pathogenesis of thrombosis.
- 2. Describe the possible consequences of thrombosis.

b) DISORDERS OF THE CIRCULATION AND SHOCK

- 1. Define edema, ascites, hydrothorax and anasarca.
- 2. Describe the pathophysiology of edema with special emphasis on CHF.
- 3. Describe the pathogenesis of four major types of shock (Hypovolemic, cardiogenic, vasovagal and septic) and list their causes.
- 4. Describe the compensatory mechanisms involved in shock.

MICROBIOLOGY

1. Describe the defense mechanisms of the body.
2. Describe the microbial mechanisms of invasion and virulence.
3. Differentiate between sterilization and disinfection.
4. Describe methods of disinfection and sterilization.
5. Describe the principles of aseptic techniques.
6. Describe universal precautions for infection control.
7. Describe the general principles of the following serological tests:
 - ?? ELISA – Hepatitis (A,B,C,D,E,G) Rubella, CMV and HIV
 - ?? Haemagglutination – TPHA
 - ?? Western blot – HIV
 - ?? ICT – Malaria
8. Interpret: a) Culture reports, b) Serological reports and c) microscopic reports of gram stain and AFB stain.
9. Describe the principles of proper collection and submission of specimens for laboratory investigations with due precautions.
10. Describe the general characteristics and taxonomy of Bacteria, Viruses and Fungi.
11. Define communicable endemic, epidemic and pandemic diseases, carriers, pathogens, opportunists, commensals and colonizers.
12. List the microorganisms responsible for infection of the body with especial reference to oral cavity.
13. Describe pathogenesis, treatment, epidemiology, prevention and control of the following organisms.
 - ?? Bacteria:
 - ?? Viruses:
 - ?? Fungus:
 - ?? Protozoa:
 - ?? Helminths:
14. DESCRIBE PRINCIPLES OF ANTI MICROBIAL ACTION

GENETICS

1. Agenesis, Dysgenesis, Aplasia, Hypoplasia, Hyperplasia, Metaplasia, Dysplasia, Neoplasia, Anaplasia, Atrophy and Hypertrophy.
2. Cell cycle and list cell types (stable, labile, permanent)
3. Mechanisms controlling cell growth.
4. Classification systems of tumors.
5. Characteristics of benign and malignant tumors.
6. Grading and staging system of tumors.
7. Biology of tumor growth.
8. Process of carcinogenesis.
9. Host defense against tumors.
10. Mechanism of local and distant spread.

11. Local and systemic effects of tumors.
12. Tumor markers used in the diagnosis and management of cancers.
13. Chemical, Physical agents and Viruses related to human cancer.
14. Epidemiology of common cancers in Pakistan.

IMMUNOLOGY

Antigen, antibody, epitope, hapten and adhesion molecules.

Innate and acquired immunity.

Type I, type II, type III, and type IV hypersensitivity reactions.

Classification of the immunodeficiency disorders.

Autoimmunity.

THE ORAL CAVITY:

- ?? Leukoplakia.
- ?? Predisposing factors (pipe smoking, ill fitting denture, alcohol abuse, irritant foods) of leukoplakia.
- ?? Risk factors of oral cancer.
- ?? Clinical and morphological features of oral cancer.
- ?? Benign and malignant tumours of salivary glands.
- ?? Clinical and morphological features of pleomorphic adenoma.

B: GENERAL PHARMACOLOGY

General Pharmacology:

1. Definition of drug and drug nomenclature.
2. Branches / Divisions of Pharmacology
3. Sources of drugs
4. Active principles of drug and Pharmacology
5. Dosage forms and doses of drugs.
6. Drug administration.
7. Absorption of drugs and processes involved in drug absorption
8. Factors modifying absorption of drugs.
9. Transport of drugs across cell-membrane
10. Bioavailability, its clinical significance and factors affecting bioavailability
11. Drugs reservoirs, distribution and redistribution of drugs, plasma protein binding
12. Pro-drug, Biotransformation of drugs, enzyme induction, enzyme inhibition and entero-hepatic circulation

13. Plasma half-life of drugs, steady state concentration, its clinical importance and factors affecting it.
14. Excretion of drugs.
15. Mechanism of drug action.
16. Dose response curves, structure-activity relationship.
17. Factors modifying action and doses of drugs.
18. Pharmacokinetics, pharmacodynamics and Receptors

Locally Acting Drugs

- ?? Demulcents, Emollients, Irritants, Counter irritants, Astringents, anti-seborrheics, locally acting enzymes.
- ?? Antiseptics and Disinfectants
- ?? Ectoparasiticides

Drugs Acting on Gastrointestinal Tract

- ?? Anti Emetics

Cardiovascular Drugs

- ?? Antiarrhythmic Drugs
- ?? Inotropic Drugs
- ?? Antianginal Drugs
- ?? Thrombolytics
- ?? Antihyperlipidemic Drugs

Diuretics

Autocoids

Drugs Acting on Autonomic Nervous system

Cholinergic Drugs

- ?? Choline Esters
- ?? Anticholine-esterases
- ?? Cholinomimetic Alkaloids

Anti- Cholinergic Drugs

- ?? Anti Muscarinic
- ?? Non catecholamine

Sympatholytics / Antiadrenergics

- ?? Alpha Adrenergic Blockers
- ?? Beta Adrenergic receptor Blockers

Adrenergic Neuron Blockers

Autonomic Ganglionic Blockers

Skeletal Muscle Relaxants

- a) Neuromuscular Blocking Agents – D-tubocurarine, Suxamethanin
- b) Central Muscle Relaxants, Meprobromate, Mephenesim , Diazepam etc.

Central Nervous System

- a) Sedative-Hypnotics
- b) Antiepileptics
- c) General Anaesthetics
- d) Local Anesthetics
- e) Drugs for movement Disorder/Muscle Relaxant
- f) Alcohol
- g) Drugs for Migraine
- h) Stimulants of the Central Nervous System:
 - ?? Caffeine, Theophyline, Theobromine
 - ?? Brain stem stimulants: Picrotoxin, Nikethamide, Ethamivan, Doxapram
- i) Psychopharmacology
 - ?? Anti-psychotics
 - ?? Anxiolytics
 - ?? Anti-Depressant / Anti mania

Drugs acting on Endocrine System

- a) Drugs-Hypothalamic Drugs
- b) Adrenocorticoids
- c) Sex Hormones
- d) Thyroid / Parathyroid Drugs
- e) Pancreatic Hormones and Oral hypopolyglcemic Agents

ANTIBIOTICS:

Parameters:

- ?? Provisional Diagnosis, Investigation, Empirical Therapy, prescribing after culture and sensitivity.

VITAMINS:

Parameters:

- ?? Groups of vitamins prescribed
- ?? Vitamins prescribed on basis of therapeutic indication or empirical
- ?? Single / multiple vitamins prescribing
- ?? Rational with use of vitamins.

ANALGESICS:

Parameters:

- ?? Various groups of analgesics prescribed
- ?? Single / multiple adverse drug prescription.
- ?? Non specific indications of analgesic prescribed

ADVERSE DRUG REACTIONS

Anti-microbials, cytotoxic drugs, steroids etc.

C: ORAL BIOLOGY & TOOTH MORPHOLOGY

EMBRYOLOGY

- ?? General human development
- ?? The brachial apparatus
- ?? Development of face/tongue/thyroid gland
- ?? Development of nasomaxillary complex
- ?? Development of palate
- ?? Development of mandible and temporo mandibular joint
- ?? Development of para-nasal sinuses
- ?? Development of salivary glands
- ?? Tooth development and its associated structures
- ?? Development of cartilages and bones of facial skeleton
- ?? Introduction of clinical anomalies related with all the above topics
- ?? Introduction to Post natal facial growth.
- ?? Development of base of skull

Developmental Histology (structure) and Function of: -

- ?? Bone/cartilage (specially jaws)
- ?? Alveolar bone
- ?? Periodontal ligament
- ?? Cementum
- ?? Tooth eruption and shedding
- ?? Oral mucous membrane
- ?? Dentine
- ?? Pulp
- ?? Enamel
- ?? Temporo-mandibular joint clinical consideration
- ?? Endogenous implants/changes during tooth movement/wound healing

ORAL PHYSIOLOGY:

- ?? Immunology
- ?? Calcium metabolism and bone
- ?? The healing of bone fractures
- ?? Repair and regeneration of dental tissues
- ?? Histology and function of
 - a) Saliva and salivary glands
 - b) Taste and taste organs
 - c) Pain and pain pathway

TOOTH MORPHOLOGY AND OCCLUSION

- ?? Introduction and nomenclature
- ?? Anatomic and physiologic consideration of form and function of oro-dento-facial structures
- ?? Brief study of comparative Oral Biology and Tooth Morphology

The Deciduous Dentition:

- ?? Detail description of each primary tooth
- ?? The pulp cavities
- ?? The difference between deciduous and permanent teeth

Occlusion:

- ?? Temporo-mandibular joint
- ?? Muscles of mastication and facial expression
- ?? Mastication and Swallowing
- ?? Occlusion at primary/mixed/adult dentition stages
- ?? Innervation and arterial supply of orofacial structures

PRACTICALS:

Preparation of slides with different staining techniques

HISTOLOGY:

Practical use of microscope, microtome and preparation of ground section of teeth

Books Recommended:

- ?? Orban's Oral Histology and Embryology, S.N.Bhaskar
- ?? Oral Histology (Development, Structure and Function), A.R.Tencate
- ?? Oral Development and Histology, James K. Avery

- ?? Introduction to Oral Biology and Tooth Morphology, Scott & Symons
- ?? Wheeler's Oral Biology and Tooth Morphology and Morphology, Major M. Ash
- ?? Concise Oral Biology and Tooth Morphology and Morphology, James L. Fuller
- ?? Oral Embryology, Sperber
- ?? Oral Physiology, Cristopher Lavelle
- ?? Physiology of Mouth, Jenkins
- ?? An Atlas of Oral Anatomy, Berkowitz, G.R.Holland

D –COMMUNITY AND PREVENTIVE DENTISTRY

Introduction to Community Dentistry and Dental Public Health: Concepts of health; disease and illness and factors affecting these states; activities carried out in the field of community dentistry.

Oral epidemiology: Definition, uses and principles of epidemiology; Research designs; dental surveys; clinical trials; screening; oral health assessment indices; current concepts about etiology, natural history and epidemiology of oral diseases and conditions having public health implications; assessment of disease risk and predictive tests.

Prevention of oral and dental diseases: Levels of prevention; health promotion; specific protection; dental plaque and its role in the etiology of dental diseases; diet; nutrition and dental health; water fluoridation; fluoride supplements; professionally and self-applied topical fluorides; fissure sealing; methods of plaque control; principles and strategies of dental health education and promotion; infection control; protection from radiation and mercury hazards in dental practice.

Dental health care delivery system: The structure and financing of dental care, role of dentists, dental auxiliaries and general health workers in oral health care, dental care of people with special needs including the elderly, the handicapped, HIV / AIDS patients, school children, principles and elements of primary health care, ethical issues in dental care.

Behavioral sciences: Health behavior and its determinates, attitudes, beliefs and values about health and illness, theories of health behavior, dentist – patient communication, management of stress, fear and anxiety in dentistry, child psychology and behavior management and modification techniques, counseling, motivation and compliance.

Introduction to bio – statistics: Types of variables, frequency distribution, measures of central tendency and variability in data, methods of sampling,

sampling error, probability, normal distribution, confidence interval, tests of statistical significance, Kappa test.

1. Community Dentistry practical & field assignments:

A. Clinical Oral Examination

- i Exercise on Models and Extracted teeth
- ii Exercise on patients in out patients department
- iii Examination of institutionalized population like school children

B. Questionnaire / interview study

- i Designing a questionnaire
- ii. Pilot testing the questionnaire
- iii Data coding, processing and analysis

C. Planning and conducting a dental health education (D.H.E.) session:

- i. Designing D.H.E. material
- ii Planning, conducting and evaluating (D.H.E) sessions

2. Chairside preventive dental procedures

- i High fluoride gel application
- ii Fissure sealing
- iii Dietary counseling
- iv Plaque disclosing
- v Instructions about Oral Hygiene measures
 - ?? Tooth Brushing demonstration
 - ?? Inter-dental cleaning
 - ?? Chemical control of dental plaque

PRE CLINICAL DENTISTRY

It is not an examination subject will be examined in the subject of operative dentistry and Prosthodontics in final year.

The preclinical dentistry include the following: -

- A. Junior Operative Techniques/Dental Materia Medica
- B. Junior Prosthodontic Techniques

A-1 Junior Operative Techniques

- Introduction to dental operative Techniques
- Introduction to instrument used in cavity preparation
- Classification of dental caries
- Principles of Cavity preparation
- Cavity preparation on plaster models/phantom head
- Filling Materials
- Dental Materia Medica

B-1 Junior Prosthodontics Techniques:

- i Introduction of impression and denture materials
- ii Laboratory procedures
 - a) Complete Dentures
 - b) Acrylic removeable partial denture
 - c) Cast partial denture
 - d) Anterior crowns
 - e) Posterior crowns
 - f) Bridges
 - g) Relining / Rebasing procedures
 - h) Repairs
 - i) Soldering and welding techniques.

THIRD PROFESSIONAL B.D.S

A: GENERAL MEDICINE

Core Knowledge and Principles of Medicine.

To deal with critical Situations:

Clinical Teaching.

- ?? History taking in general,
- ?? GPE, Pallor, Cyanosis, Jaundice, Clubbing and Koilonychia.
- ?? Thyroid, Lymph nodes, Dehydration, Nutrition, Decubitus, Edema.
- ?? Pulse.
- ?? Examination of Blood Pressure and JVP.
- ?? History taking in GIT – Vomiting, Diarrhea, Pain Abdomen, Constipation.
- ?? Hematemesis, Melena, Dyspepsia, Distension.
- ?? Examination of GIT – Inspection, Palpation.
- ?? Percussion, Auscultation.
- ?? Any deficient program.
- ?? Chest pain, wheezing.
- ?? Inspection, Palpation, Percussion, Auscultation front of chest.
- ?? Inspection, Palpation, Percussion, Auscultation back of chest.
- ?? Any deficient program.
- ?? History taking in CVS.
- ?? GPE in CVS – Clubbing, Koilonychia, Osler’s nodes, Splinter Hemorrhages, Cyanosis.
- ?? Pulse, JVP, Blood pressure.
- ?? Inspection, Palpation of pericardium.
- ?? Percussion, Auscultation of pericardium – Mitral, Tricuspid, Aortic.
- ?? Pulmonary areas.
- ?? Any deficient program.
- ?? History taking in CNS.
- ?? Higher Mental Functions – level of consciousness, Behavior, Speech, Memory.
- ?? Examination of cranial nerves – I, II, III, IV nerves.
- ?? V, VI, VII, VIII nerves.
- ?? IX, X, XI, XII nerves.
- ?? Examination of Motor system.
- ?? Examination of sensory system – Crude touch, pain, Temperature.
- ?? Fine touch, Pressure, Vibration, Joint position,
- ?? Cortical sensations.
- ?? Two point localization, Two point discrimination.

- ?? Reflexes.
- ?? Examination of Cerebellar system.

Knowledge of Systems and the Diseases;

1. Genetic factors in disease.
2. Immunological factors in disease.
3. Climate and environmental factors in disease.
4. Diseases due to infection.
5. Diseases of the cardiovascular system.
6. Diseases of the respiratory system.
7. Diseases of the alimentary tract and pancreas.
8. Diseases of the liver and biliary system.
9. Nutritional factors in disease.
10. Disturbances in water, electrolyte and acid base balances.
11. Diseases of the kidney and genito-urinary system.
12. Endocrine and metabolic Diseases.
13. Diseases of the blood.
14. Oncology.
15. Diseases of connective tissues joint and bones.
16. Diseases of the skin.
17. Psychiatry.
18. Diseases of the nervous system.
19. Principles of geriatric medicine.
20. Acute poisoning.

B: GENERAL SURGERY

Core Knowledge and Principles of Surgery.

1. Physiological response to Surgical Trauma and homeostasis.
2. Wound and its Repair.
3. Pathophysiology and Management of Shock including fluid and electrolyte imbalance.
4. Investigation and treatment of Infections and Parasitic Infestations of surgical Importance.
5. Hemorrhage Blood Transfusion and their implications.
6. Management of Acutely injured & critically ill patients including aspiration pneumonia and embolic phenomenon.
7. Principles in the Management of common Skin and Soft Tissue problems: Ulcers, Abscesses, Sinus & Fistulae, Swellings, Embedded foreign bodies and Minor injuries.
8. Principles of Anaesthesia.
9. Nutrition of surgical patients.

To deal with critical Situations:

1. Cardiac Arrest.
2. Polytrauma with airway difficulty and circulatory instability.
3. Uncontrolled External Hemorrhage.
4. Sudden upper Respiratory Tract Obstruction.
5. Patient in Hypovolumic or Septicemic Shock.
6. Tension Pneumothorax.
7. Cardiac Tamponade.
8. Unconscious patient due to Head Injury.
9. Patient with Gas Gangrene and Tetanus.
10. Burns

Knowledge of Systems and the Diseases:

?? Head, Face and Neck:

1. Development abnormalities of face, palate, lip.
2. Principles of management of Head Injuries and its complications.
3. Oral region including tongue.
4. Diseases of Salivary glands (Inflammation, Calculus, Tumors)
5. Neck lumps including Lymphatics Thyroid, Parathyroid.

?? Chest Wall & Thorax:

1. Blunt & Penetrating Injuries and their Complications.
2. Lung abscess and Empyema Thoracis.
3. Growth of cysts in the lungs.

?? Gastro Intestinal Tract:

1. Diseases causing Oesophageal Obstruction.
2. Peptic Ulcer disease & its complications.
3. Tumors of Stomach.
4. Conditions Causing Acute Abdomen.
5. Conditions causing Chronic Abdomen including malignant lesions of small and large bowel.

?? Abdominal, Pelvic and Genital Traumas and Hernias.

1. Principles in management of abdominal trauma
2. Epigastric Hernia
3. Incisional Hernia

?? Liver:

1. Trauma
2. Obstructive Jaundice
3. Liver Abscess
4. Hydated cyst
5. Malignancy (Hepatoma & Secondaries)

?? Gall Bladder:

1. Acute and chronic Cholecystitis
2. Cholelithiasis and its Complications
3. Malignancies

?? Pancreas:

1. Acute, Relapsing and Chronic pancreatitis
2. Pancreatic masses including (benign, malignant) neoplasia

?? Skin & Soft Tissues:

1. Common benign and malignant skin lesions
2. Wounds / Ulcers / abscesses /Sinuses / Fistulae
3. Soft Tissue Lumps

?? Orthopedics and Trauma:

1. Common Congenital Malformatios of Locomotive System.
2. Bone Fracture & their Comp-lications.
3. Sports injuries and afflictions of Tendons and Bursae.
4. Bone and joint Infections.
5. Arthritis.
6. Bone and Cartilage Tumours.

?? Vascular and ;Nerve Disorders:

1. Vascular afflictions.
2. Varicosities.
3. Deep venous thrombosis.
4. Peripheral nerve Injuries.

?? Essential Skill to be acquired:

1. Provide First Aid: Resuscitation (ABC) of Polytrauma, CPR.
2. Collect samples of blood, urine, sputum, pus swab etc.

3. Understand the principles of pre-operative preparations, Sterilization /Disinfecting techniques.
4. Understand principles of wound care, Skin Suturing and Suture Removal, Incision and Drainage of Superficial Abscesses, Excision of Small Soft Tissue Lumps, Needle Biopsies, Aspiration of localized fluids, etc.
5. Have Observed common surgical procedures, treatment of Fracture / Dislocation and Methods of General / Local Anesthesia.
6. Have observed instillation of Chemotherapy and principles of Radiotherapy.

C. ORAL PATHOLOGY

1. Developmental disturbances of Teeth
2. Pre malignant , Benign and Malignant lesions
3. Salivary gland tumors and diseases
4. Odontogenic & non –Odontogenic tumours
5. Tooth wear
6. Caries
7. Diseases of pulp and periapical tissues
8. Spread of Infections
9. Wound Healing
10. Diseases of bones and joints
11. Cysts of Jaws and Oral Cavity
12. Immunology

Practical in Oral Pathology to include:

1. Study of Histopathological slides
2. Study of Radiographs
3. Histochemical Techniques

Books Recommended:

- ?? Oral Pathology, J.V.Soans, J.C.Southam
- ?? Clinical Guide of Oral Medicine, P.J.Lamy & MAO Lenix
- ?? Essential of Oral Pathology and Oral Medicine, R.A.Cawson, E.W.Odell

D: PERIODONTOLOGY

Introduction to Periodontology

1. Knowledge of healthy periodontium macro and micro anatomy and physiology of periodontium.

- | | | |
|--|--|---|
| <ol style="list-style-type: none"> 1. Gingiva 2. Periodontal Ligament 3. Root cementum 4. Alveolar bone 5. Dentogingival Junction | | <p>Blood supply
Nerve supply
Lymphatic System</p> |
|--|--|---|

2. Epidemiology of Periodontal diseases.

- a) Plaque index
- b) Debris index
- c) PMA index
- d) Gingival index
- e) Sulcus bleeding index
- f) Periodontal index
- g) Periodontal destructive index
- h) Community Periodontal index of treatment need (CPITN)

3. Etiology of periodontal diseases


- A) Dental plaque
- | | |
|--|--|
| <ol style="list-style-type: none"> a) Definition b) Composition c) Maturation d) Structure e) Plaque microbiology | <p>Classification</p> <ol style="list-style-type: none"> a) Supragingival b) Subgingival |
|--|--|
- B) Dental Calculus
- Definition
- a) Origin and composition
 - b) Mode of attachment
 - c) Mineralization
 - d) Clinical significance of calculus

4. Microbiology of Plaque associated Periodontal diseases.
5. Histopathogenesis of Plaque associated Periodontal diseases.
6. Host response in Periodontal Disease
Hypersensitivity reaction cell mediated and Humoral immunity.
7. Classification of Periodontal Diseases
Clinical significance of Dental Plaque in the formation of gingivitis

- A) Acute Gingivitis
- Signs and symptoms of acute gingivitis and different types of gingivitis.
- a) Traumatic gingivitis
 - b) Acute Necrotizing gingivitis

- c) Acute Herpetic - gingivo stomatits
- d) Circum coronitis
- e) Streptococcal gingivitis

(With their etiological factors and treatment)

- B) Chronic Gingivitis
 Specific and Non-specific gingivitis
 Specific Gingivitis
- | | | | |
|----|-------------|---|------------|
| ?? | T.B. |  | gingivitis |
| ?? | Syphilitic | | |
| ?? | Plasma cell | | |
| ?? | Allergic | | |

Emphasis should be given towards.

- a) Gingival Bleeding
- b) Gingival texture
- c) Gingival consistency
- d) Gingival swelling (Hyperplasia)
- e) Gingival Recession
- f) Gingival Pigmentation

8. Desquamative Gingivitis.

- a) Definition, clinical features in the form of
- b) Mild, moderate and severe form of Desquamative Gingivitis.
 - i. Nutritional factors
 - ii. Hormonal factors
 - iii. Dermatological condition
 - iv. Chemotherapeutic agents
 - v. Fungal infection

9. Periodontal Pocket.

- A)
 - a) Definition
 - b) Soft tissue wall of Periodontal pocket
 - c) Hard tissue wall of Periodontal pocket
 - d) Pocket content.
- B) Classification of periodontal pocket
 - a) Suprabony pocket
 - b) Infrabony pocket
- C) Bone loss and pattern of bone loss in periodontal disease.

10. Periodontitis
 - A) Adult onset periodontitis (Slowly Progressional Periodontitis)
 - B) Rapidly Progressive Periodontitis
 - a) Early onset Periodontitis
 - i. Prepubertal Periodontitis
 - ii. Juvenile Periodontitis
 - b) Adult onset rapidly Progressional Periodontitis.
 - C) Necrotizing Periodontitis
 - i. AIDs Related
 - ii. Non AIDs Related
 - D) Refractory Periodontitis
 - E) Trauma from Occlusion
Definition
 - i. Acute & Chronic trauma
 - ii. Primary & Secondary trauma
 - iii. Consequences of trauma
 - iv. Tissue Response of trauma
 - F) Periodontal manifestation of Systemic diseases.

(Different systemic diseases are discussed with respect to periodontal manifestation)
11. Tumour and Tumour like lesions of the Periodontium.
12. Periodontal Abscess and treatment
Acute
Chronic
13. Periodontium and AIDs
14. Furcation involvement in Periodontal disease
Classification
Management
15. Periodontal Consideration with:
 1. Orthodontics
 2. Endodontics
 3. Removable Prosthodontics
 4. Fixed Prosthodontics
 5. Implants

16. GTR (Guided Tissue Regeneration)
Introduction, knowledge and the techniques.

17. Diagnosis of Cause Related Disease.
 - a) History taking
 - b) Examination of the Oral Cavity
 - c) Importance should be given to the periodontitis.
 - d) Differential Diagnosis
 - e) Plaque Recognition
 - i. Visualization with naked eyes.
 - ii. Visualization with disclosing agents.

 - f) Treatment Planning
 - i. Mechanical control of Dental Plaque
 - Motivation, education and instruction.
 - Interdental cleaning (AIDs)
 - Scaling and root palning with advantages and disadvantages.
 - g) Chemical control of dental Plaque
 - i. Chemotherapeutic agents for topical and systemic administration.

18. Re-evaluation of the cause related therapy, surgical control of dental Plaque.
 - A) Aims and objectives of periodontal therapy.
 - i. Local Anaesthesia in Periodontal Surgery
 - ii. Instruments for periodontal surgery procedures
 - iii. Periodontal probing impact and radiographic interpretation.
 - iv. Sterilization, universal precautionary measures

 - B) Indications and contra indications of periodontal surgery.

Surgical Procedures

 - i. Curattage
 - ii. Gingivectomy with different modalities
 - iii. Flap Surgery with different modalities
 - iv. Muco gingival Problem
 - Soft tissue graft
 - Pedical graft or displaced flap
 - Free gingival graft
 - Crown lengthening procedure
 - Vestibular widening procedure
 - Frenectomy

19. Periodontal dressing

20. Periodontal Suturing
21. Periodontal treatment of medically compromised patients
22. Occlusal Analysis
 - i. Diagnosis of Occlusal trauma
 - ii. Occlusal Adjustment
 - iii. Splinting

Clinical & Practical Work

1. Knowledge of the objectives of Periodontal therapy.
 - ?? Elimination of local etiological factor
 - ?? Elimination of periodontal pocket
 - ?? Establishment of normal Physiological architecture of periodontium
 - ?? To be able to interpret Findings of medical and dental history and relate this to periodontal diagnosis and treatment
2. To be able to secure a good dental history pertaining to:
 - a) Past Periodontal treatment.
 - b) Present oral hygiene habits
 - c) Past present oral habits
 - d) Presence of Hypersensitive teeth
 - e) Past extraction (Reason)
 - f) Past Restorative treatment, filling types, fixed/removal restoration.
 - g) Past orthodontic treatment
 - h) Family Dental history
3. Detailed clinical examination and charting of the Periodontium i.e. accurate probing.
 - ?? To be able to recognize problems of an inadequate width and attached gingival .
4. Shallow vestibule
 - ?? High muscle frenum attachment
 - a) Scaling manual
 - b) Root Planning
 - c) Polishing

- d) Curettage
- e) Gingivectomy
- f) Epulis Removal (with incisional and excisional procedure)
- g) Flap Surgery.

Books Recommended

1. Clinical periodontology by Glickman
2. Clinical Periodontology by Manson
3. Colour Atlas of Clinical and Surgical Periodontology by Strahan & Waite
4. A Text book of Clinical Periodontology by Jan Lindhe
5. Fundamentals of Periodontic by Thomas G. Wilson, Kenneths Kornman.
6. Periodontology and Periodontics, Modern Theory and Practice by Sigurd P. Ramford Major M. Ash.

E: ORAL MEDICINE

Introduction: Significance of Oral Medicine:

1. Oral diagnosis: Histology, general health status, oral examination (including lips, oral mucosa, floor of the mouth, teeth, gingival, occlusion, salivary glands, jaw bones), examination of tempromendibular joint. Roentgenological examinations, laboratory aids, analysis Treatment Planning and Patient Management.
2. Immunity and its impact on oral health.
3. Oral Infections:
 - a. Bacterial infections.
 - b. Fungal infections.
 - c. Viral infections.

4. ORAL SOFT TISSUE LESIONS; Classification;

White lesions
 Pigmented lesions
 Ulcerative lesions
 Vesiculo-bullous lesions.

- a. Pre-malignant lesions, Clinical features, Diagnosis and management.
- b. Disorders of the tongue and lips. Clinical features, diagnosis and treatment.

- c. Diseases of salivary glands, xerostomia; Clinical features, Diagnosis and management.
 - d. Diseases of Jaw bones, Clinical features, Diagnosis and Management.
 - e. Disorders of Tempo-mandibuar joint: Clinical features, Diagnosis and treatment.
 - f. Disorders of Teeth, Clinical features. Diagnosis and Treatment.
 - g. Focal infection: Significance diagnosis and management of effect cases.
 - h. Clinical features, Diagnosis and treatment of pain;
 - 1. Dento-alveolar pain
 - 2. Neurological pains.
 - 3. Psycho-somatic pain.
5. Halitosis: Causes, Clinical features, diagnosis and therapy.
 6. Allergy and drug reactions in dental practice: Clinical features, Diagnosis and treatment of anaphylactic shock.
 7. Special consideration to the dental problems of children and senior citizens.
 8. Nutrition and Oral Health.
 9. Professional hazards in dentistry.
10. **ORAL MANIFESTATIONS OF SYSTEMIC DISEASES:**
 - **Auto immune diseases related to oral cavity.**
 11. Oral aspects of systemic diseases and their dental management.
 12. Particularly of cardiovascular diseases.
 13. Disorders of Respiratory System.
 14. Disorders of Gastrointestinal Tract.
 15. **SEXUALLY TRANSMITTED DISEASES:**
 - ☞☞ **AIDS, oral manifestations, diagnosis and management.**
 - ☞☞ **Syphilis, oral manifestations, diagnosis and management.**
 - ☞☞ **Oral aspects of Gonococcal Infections, diagnosis and management.**
 16. Diseases of Liver with special attention to the infectivity of the patients and mode of its further spreads and control specific reference to universal precautions.
 17. Diseases of Kidneys, special attention to patient on dialysis.
 18. Hormonal disturbances.
 - **Oral aspects of puberty, menstruation, pregnancy and menopause.**

19. Oral aspects of skin diseases.
20. Special considerations for patients suffering from systemic disorders, like blood disorders requiring blood examination prior to oral surgery.
 - **Anaemia**
 - **Leukeamia**
 - **Bleeding disorders.**
 - **Patients on anti-coagulant therapy, management.**
21. Oral Malignancies, Diagnosis and management.
 - **Patients on Radio therapy**
 - **Patients on Chemo-therapy**
22. Methods of report writing

BOOKS RECOMMENDED

1. Oral Medicine by W.R. Tyldesley
2. Burket's oral Medicine by Malcolm A. Lynch.
3. Oral Medicine and Pathology by Cawson and Odel

F: PROSTHODONTICS

Partial Dentures

- a) Definitions
- b) Applied Anatomy and Physiology
- c) Oral manifestations of local and systemic disorders
- d) History General and oral examination
- e) Evaluation
- f) Diagnosis and treatment planning, prognosis
- g) Bio-mechanics of oral cavity and contributory factors
- h) Classification
- i) Study cast, master cast, working cast.
- j) Components: Outline of support, retention, bracing and reciprocation, connectors.
- k) Surveying, Design of partial dentures
- l) Mouth rehabilitation/Odontoplasty
- m) Impression techniques and modifications
- n) Construction of wax pattern and casting procedures
- o) Trial of metal frame work

- p) Maxilo mandibular relations: Use of face bow, articulation techniques including split cast techniques
- q) Selection of artificial teeth
- r) Arrangements of teeth
- s) Processing and finishing procedures
- t) Insertion and post insertion counseling and follow up

BOOKS RECOMMENDED

Removable Partial Dentures.

- a. MacCracken's Removable partial dentures
- b. Boucher's treatment of partially edentulous patients by Gavin P Renner.
- c. Miller's Removable partial dentures,
- d. Designing Removable partial dentures by John Osborn.
- e. Atlas of Removable partial dentures by Davenport.

G. ORAL AND MAXILLOFACIAL SURGERY

1. BASIC PRINCIPLES OF SURGERY

- i) Introduction, History and Diagnosis and treatment planning
- ii) Sterilization, instruments and armamentarium
- iii) Incisions, Flap design and tissue handling
- iv) Haemostasis, debridement and suturing.
- v) Post Operative care and nutrition, Prevention of infection, Antibiotics and cross-infection

2. LOCAL ANAESTHESIA

- i) Introduction, types and Pharmacology.
- ii) Indications and contra-indications,
- iii) Surgical Anatomy
- iv) Administration techniques
- v) Complications and management

3. EXODONTIA

- i) Introduction
- ii) Indications and contra-indications
- iii) Principles and application of forceps extraction
- iv) Principles and application of elevators
- v) Surgical removal of erupted/broken down roots teeth
- vi) Complication of Extraction
- vii) Management of complications

4. Prevention And Management of Medical Emergencies

5. **Introduction to Dental Ethics and Law, Forensic Dentistry**
6. **General Anaesthesia and Sedation in Dentistry**
7. **Impacted Wisdom tooth Surgery**
 - a) Introduction and Aetiology
 - b) Indications and contra-indications
 - c) Surgical Techniques
 - d) Complications of impacted wisdom tooth Surgery and its management

H: **OPERATIVE DENTISTRY**

Dental Caries

- Etiology
- Pathogenesis
- Prevention

Examination, Diagnosis, and Treatment Planning

- Examination and Diagnosis
- Caries
- Erosion, Attrition, Abrasion, cracked tooth, others
- Treatment sequencing, placement and repair/replacement
- Selection of restorative materials
- Restorative failure
- Postoperative problems

Principles of cavity design & preparation

- Basic principles, instrumentation and nomenclature
- Introduction to lasers
- Preparations
- Dental amalgam
- Tooth colored restorative materials

Sterilization and cross infection control

Isolation, Operator and the environment

- Instruments and equipment
- Control of the operating field
- Soft tissue management
- Esthetic considerations

FINAL PROFESSIONAL BDS

A: PROSTHODONTICS-

1. Complete Dentures.
 - a) Definitions.
 - b) Applied Anatomy and Physiology
 - c) Peripheral tissue attachment of denture bearing area.
 - d) Tongue form
 - e) Saliva
 - f) Systemic disorders and applied pathology.
 - g) Evaluation of patients.
 - h) Identification of patients
 - i) General conditions.
 - j) Muscle tone and muscular development.
 - k) Osmotic balances
 - l) Oral lesions with skin manifestations
 - m) Psychiatric evaluation of patients
 - n) Oral condition of denture bearing area
 - o) Ridge form and relations.
 - p) Oral mucosa: resistant and non resistant tissues
 - q) Alveolar bone resorption.
 - r) Face forms
 - s) Fundamentals of Denture retention and contributing factors
 - t) Mouth preparation including preprosthetics Surgery

Impression Procedures

- a) Objectives of impression.
- a) Theories and techniques
- b) Impression techniques: minimum pressure, definite pressure, selective pressure impression.
- c) Pascal's law and its corollaries, atmospheric pressure, intermolecular attraction, interfacial, surface tension
- d) Impression Techniques: primary, wash and secondary impressions, impression trays, impression materials.
- e) Factors responsible for physical retention, physiological, mechanical, surgical and psychological factors.
- f) Stability
- g) Maxillo-mandibular relations.
- h) Occlusal and Rest vertical relations.
- i) Horizontal relations.
- j) Centric and Eccentric relations.
- k) Articulators.
- l) Theories of articulation.
- m) Protrusive records condylar path.
- n) Lateral records.

- o) Hanau's formula.
- p) Facebow, arbitrary and kinematics.
- q) Hinge axis.
- r) Semi adjustable and acron type articulators.
- s) Selection of teeth, arrangement of teeth Factors responsible for size, shape, colour, shade, position and relationship of teeth.
 - ?? Curve of Spee.
 - ?? Curve of Wilson.
 - ?? Monson curve.
- t) Occlusion and articulation,
- u) Phonetics
- v) Trial
- w) Insertion
- x) Post-insertion follow up.

Immediate Dentures and Replacement Dentures

- a) Classification and types (partial, complete).
- b) Indications and contra indications
- c) Objectives
- d) Clinical and laboratory procedures
- e) Multi disciplinary approach including care during surgery
- f) Insertion, follow up and maintenance.

Implantology

- a) Types of implants
 - a) Endosseous
 - b) Sub periosteal
 - c) Endodontic implants.
- b) Osseo integration and Bio compatibility.
- c) Limitation of implants.
- d) Prosthodontic Options.
- e) Clinical and laboratory procedures

Maxillo Facial Prosthodontics.

- f) Classification of congenital and acquired defects.
- g) Principles governing treatment and management of patients presenting with various defects
- h) Obturators
- i) Cleft palate prosthesis
- j) Speech aid prostheses
- k) Facial prostheses
- l) TMD splints
- m) Bite Raising appliances

- n) Occlusal splints
- o) Arthralgia and Myalgia splints
- p) Splints and Stents.

Occlusion including TMD/MPD

- a) Theories and Principles of Occlusion.
- b) Occlusal Trauma
- c) Concept, Aetiology, Treatment planning and options

Gerodontology

- a) Principles and procedures relating to the management of medically compromised patients and the elderly
- b) Effects of medication
- c) Medical conditions having oral manifestation
- d) Xerostomia
- e) Root caries
- f) Geriatric Nutrition
- g) Principles of prosthodontic procedures in geriatric patients

1. Fixed Prosthodontics

A) Principles of Fixed prosthodontics

- a) Definitions:
- b) Applied Anatomy and Physiology
- c) Oral manifestations of local and systemic disorders
- d) History: General and oral examination
- e) Evaluation
- f) Diagnosis and treatment planning, prognosis
- g) Bio-mechanics of oral cavity and contributory factors

B) Bridges

- a) Indications and contraindications
- b) Classification and types
- c) Components of a bridge
- d) Design of various component parts
- e) Abutment and retainer selection
- f) Margin placement and pontic designs.
- g) Steps of Procedures
 - i. Tooth preparation
 - ii. Impression procedures
 - iii. Lab procedures
 - iv. Localization and trial of bridge frame work

- v. Final cementation
- vi. Post insertion follow up, complication and management
- h) Material considerations and cementation
- i) Resin – Bonded Bridge

2. Over Dentures

- a) Definitions
- b) Applied Anatomy and Physiology
- c) Oral manifestations of local and systemic disorders
- d) History General and oral examination
- e) Evaluation
- f) Diagnosis and treatment planning, prognosis
- g) Bio-mechanics of oral cavity and contributory factors
- h) Classifications and types
 - i. Partial and complete
 - ii. Removable and Fixed
 - iii. Transitional or Diagnostics and permanent definitive.
 - iv. Tooth supported, root supported, implant supported
- i) Indications contra indications, advantages and disadvantages
- j) Steps of procedures and follow up.

3. Precision Retained Dentures

Intra Coronal, Extra Coronal and Intra radicular attachments.

4. Relining, Rebasing and Repairs

- i) General indications and principles
- ii) Procedures.

Geriodontology

1. Management strategies for the dental care of the elderly.
2. Dental and oral diseases and disorder in the elderly.
3. Range of psychological and social factors involved with geriatric patients.
4. Distinguish between normal and abnormal consequences of aging.
5. Excessive tooth wear.
6. Root dental caries.
7. Recession of the gingival tissues and the special difficulties of providing removable prostheses.

Books Recommended

- A) Fixed Prosthodontics
 - a. Planning and making crowns and bridges by B. G. Smith.
 - b. Contemporary fixed prosthodontics by Rossential and Fujimoto.
 - c. Fundamentals of crown and bridge by Shillenberg.
 - d. Tillman's Principles of crown and bridge.
 - e. Atlas of Tooth preparation for crown and bridge by Shillenberg.

- B) Complete Denture Prosthodontics
 - a. Boucher,s Prosthodontic treatment for edentulous Patients by Dicky and Zarb, .
 - b. Atlas of complete dentures by John Hobkirk
 - c. Syllabus of complete dentures by Heartwell and Rahn.
 - d. Immediate and Replacement dentures by Anderson and Storer.
 - e. Fenn's Clinical dental Prosthodontics by MacCraken.
 - f. Complete Dentures Prosthodontics by Basker and Devenpot.

- C) Miscellaneous
 - a. Atlas of implantology by Norman Kranin.
 - b. Dental laboratory techniques by Morrow, Rudd and Eissman.
 - c. Occlusion by Ramfjord and Ash.
 - d. Management of Temporomandibular Disorders by Okeson.

B: OPERATIVE DENTISTRY

1. Radiology & Radiography

- Periapical
- Bitewing
- Occlusal
- OPG

2. Restorative materials

Amalgam

- Applied Chemistry
- Mercury hazards & hygiene

Composite resins

- Applied Chemistry,
- Acid etching,
- Enamel & Dentine bonding,
- Restoration of Class III & IV
- Posterior Composite
- Composite Veneers

Cements

- Ca(OH)₂
- Glass Ionomers
- Zinc Phosphates
- Zinc Oxide Eugenol and others

3. Discoloration of teeth

4. Inlays and Onlays

5. Restoration of Pulpless teeth (Post and Core)

Pin Retained restorations

Bleaching

- Internal
- External

Veneers

- Porcelain.
- Composite
- Metal

Restorative / Gingival Interface

Management of medically compromised patients with special reference to
HIV and Hepatitis

Implant supported restorations

Occlusion

Paedodontics

1. Child management in dental practice
2. Prevention of Dental Disease
 - a) Prenatal Counseling
 - b) Oral prophylaxis
 - c) Fluoride administration
 - d) Dietary management
 - e) Diet counseling
 - f) Home care
3. The Acid etch Technique in caries prevention
4. Pit & Fissure Sealants & Preventive resin restorations
4. Radiology
5. Problem of Pain & Sedation
6. Periodontal disease in children
7. Injury to the primary & permanent teeth
8. Pulp therapy for the primary & young permanent teeth
 - Apexification
 - Apexogenesis
9. Restorative dentistry for the primary dentition
10. Anesthesia
11. Oral habits
12. Space maintenance in the primary dentition
13. Treatment planning & interceptive orthodontics
 - a) Rampant caries
 - b) Fluorides
 - c) Treatment of handicapped children

Endodontics

1. Diagnostic Procedures.
 - History
 - Clinical examination
 - Therapeutics
2. Clinical Classification of pulpal & periapical disease
 - Reversible pulpitis.
 - Irreversible pulpitis.
 - Acute apical periodontitis.
 - Acute apical abscess
 - Chronic apical periodontitis

3. Local Anesthesia
4. Instruments
5. Internal Morphology & Access opening
6. Pulpectomy – diagnostic & working length, cleaning filing, shaping
7. Bio-mechanical canal preparation etc.
8. Irrigants & intra canal medicaments .
9. Root canal sealers & obturation.
10. Failures in endodontics
11. Surgical Endodontics & Re-treatment
12. Endo – perio lesions
13. Internal, external resorption
14. Radiographic Analysis.
15. Dental emergency
16. Sterilization and asepsis
17. Traumatic injuries
 - Crown fracture
 - Root fracture
 - Displacement
 - Avulsion

Crowns

1. Terminology, Indications & Contra indications
2. Diagnosis & Treatment Planning
3. Basic Principles of preparation
4. Procelain Jacket Crowns ✎ Indications & Contraindications, Clinical assessment, and steps of preparation.
5. Procelain Fused to metal crowns
 - Indications, Contraindications
 - Clinical assessment
 - Steps of preparation
6. Full Crowns
 - Indications, Contraindications
 - Clinical assessment
 - Steps of preparation
7. Fluid control & soft tissue management
8. Electrosurgery Indications, Contra indication & Technique
9. Post & Core crowns
10. Impressions & Impression materials
11. Clinical Procedures
12. Laboratory Technique for
13. Porcelain veneers
14. Inlays Onlays.
15. CAD-CAM
16. Occlusion

List of Operative Dentistry Books

1. The Art & Science of Operative Dentistry by Sturduvant.
Pickardards Manual of Operative Dentistry by EAM Kidd.
Fundamentals of Operative Dentistry by Schwartz
Harty's Endodontic in Clinical Practice by T.R. Pittford.
Pathway of the Pulp by Cohen.
Paediatric Dentistry Infancy through Adolescence by Pinkham.
Essentials of Dental Radiography & Radiology by Frickwhaites.
Planning & making crowns and bridges by B.G.Smith.
Tillman's principles of crowns and bridges.
Atlas of tooth preparation for crowns and bridges by Shillen berg.

C: ORAL AND MAXILLOFACIAL SURGERY

1. **Dento-alveolar Surgery**

- i) Sterilization
- ii) Local Anaesthesia
- iii) Exodontia
- iv) Impactation
- v) Elevators.
- vi) Pre-prosthetic Surgery
- vii) Surgical Aid to Orthodontics

2. **Maxillary Antrum**

- i) Diseases, Oro-antral fistula, foreign body.

3. **Oro-facial Infections**

- i) Specific and non-specific, spread, principles of management

4. **Cyst**

- i) Cyst of Soft and hard tissues of Oro-facial region and their management

5. **Oncology**

- i) Benign and malignant tumors of oral cavity, jaws and associated tissue: odontogenic tumors, squamous cell carcinomas, Lymphoma etc.
- ii) Protocol of investigation including biopsy, X.Ray's, CT Scan, MRI, Bone Scan.
- iii) Principles of different treatment modalities including: Surgery, Radiotherapy, Chemotherapy Cryotherapy, lasers.

6. **Salivary Glands**
 - i) Diseases of salivary glands including tumors, sialadenitis, sialithiases, means of investigation, management.
7. **Temporo-mandibular joint**
 - i) Surgical anatomy, diseases and disorders including ankylosis.
8. **Fibro-osseous Lesion**
 - i) Classification and management
9. **Giant Cell Lesions**
 - i) Types and management
10. **Developmental anomalies**
 - i) Introduction and management of cleft lip and palate.
11. **Maxillofacial injuries**
 - i) Surgical anatomy, first aid, treatment, soft tissue injuries of head and neck, dento-alveolar injuries, fractures of mandible, fractures of mid-face, fractures of zygomatic complex, Naso-ethmoid fractures, orbital involvement, head injuries, blood and fluid replacement.
12. **Orthognathic Surgery**
 - i) Introduction, evaluation and principles of treatment of facial disharmony including excess and deficiency of mandible and maxilla and craniofacial anomalies
13. **Management of medically compromised patients.**
 - i) Outpatient and in-patient management. Especially emphasis on cardio-vascular, respiratory disorders, immuno-compromised, blood dyscrasias etc.
14. **Implantology**
 - i) Introduction, indications, contra-indications, types, surgical techniques, after care.

Books Recommended:

1. Minor Oral Surgery by Geoffrey L. Howe.
2. An outline of Oral Surgery Part-I and II by Killey, Seward and Kay.
3. Killey's Fractures of Middle third of the facial skeleton
4. Killey's Fracture of the Mandible
5. Medical problems in Dentistry by Scully & Cawson
6. Contemporary Oral & Maxillofacial Surgery by Patterson, Ellis & Tucker.

7. Oral and Maxillofacial Surgery by LASKIN
8. Oral and Maxillofacial Surgery by Kruger.
9. Local Anaesthesia in Dentistry G.L. Howe, Whitehead
10. Law and Ethics in Dentistry J. Sear
11. General Anaesthesia & Sedation in Dentistry by Hill, Morris
12. Oral Medicine by W.R. Tyldesley
13. Burket's oral Medicine by Malcolm A. Lynch.
14. Oral Medicine and Pathology by Cawson and Odel
15. Oral & Maxillo Surgery by John Peddler
16. Oral & Maxillo Surgery by Archer.

D: ORTHODONTICS

1. Introduction

- a. Definitions and Terminologies
- b. Types
 - ii) Preventive
 - iii) Interceptive
 - iv) Corrective
- a. Aims and needs for Orthodontic Treatment

2. Growth and Development

- a. Basic concepts and definitions
- b. Variables affecting growth
- c. Prenatal and postnatal craniofacial growth
- b. Methods of studying growth
- c. Theories of growth
- d. Clinical application of growth and development in orthodontics
- e. TMJ Development

3. Occlusion

- a. Normal Occlusion
- b. Andrews Six Keys of Occlusion

4. Diagnostic Aids in Orthodontics

- a. History
- b. Clinical Evaluation
 - ii) Extraoral examination
 - iii) Intraoral examination'

- c. Radiographs
 - iv) Periapical Xrays
 - v) Orthopantomogram
 - vi) Occlusal Xrays
 - vii) Cephalometric Xray
 - (1) Identifying relevant anatomical structures and landmarks
 - (2) Tracing
 - (3) Analyses
- d. Tooth mass and size analyses
 - viii) Cast analysis
 - ix) Bolton Analysis
 - x) Mixed Dentition analysis
- f. Formulation of problem list

5. Dental Radiology

- a. Roentgen Anatomy of teeth, jaws and T.M.Joints
- b. Variations within normal limits, and abnormalities
- c. Different types of X-Rays machines
- d. Varieties of X-Ray Films: Extra Oral, Intra oral, Bite wing and Occlusal films
- e. Film taking and exposure procedures
- f. Film development techniques
- g. Indications and uses of dental radiology
- h. Interpretation of films
- i. Radiation Hazards

6. Development of dentition and occlusion

- a. Prenatal development of dentition
- c. Features of Primary dentition
- d. Mixed dentition period
- e. Permanent dentition period
 - a. Dimensional changes in dental arch
 - b. Variations in development including size, form, number and position of teeth
 - c. Factors affecting development.

7. Malocclusion

- a. Definitions
- b. Classification

8. Etiology of Malocclusion

- a. Local factors
- b. Heredity
- c. Environmental Factors

- 9. Preventive and Interceptive Orthodontics**
 - a. Diagnosis and Management of Habits
 - b. Space supervision
 - c. Space maintainers
 - d. Space regainers
 - e. Serial Extractions

- 10. Bone metabolism**
 - a. Normal Structure of Periodontal Ligament and Bone
 - b. The role of bone in eruption and stabilization
 - c. Effects of Orthodontic force
 - d. Factors affecting tooth movement

- 11. Biomechanics**
 - a. Concepts, Types and Control of Anchorage
 - b. Types of Wires and Alloys used in orthodontics
 - c. Ideal properties of Orthodontic wires and comparison of different alloys

- 12. Retention and relapse**
 - a. Concepts of retention and relapse
 - b. Occlusal Stability and factors related to retention
 - c. Strategies of management.

- 13. Removable appliances**
 - a. Functional appliances
 - i) Types
 - ii) Indications
 - iii) Construction
 - b. Introduction to various extraoral appliances for tooth movement
 - c. Expansion appliances

- 14. Fixed appliances**
 - a. Introduction and background of different systems
 - b. Indications and drawbacks
 - c. Components and its accessories
 - d. Edgewise and Straight Wire systems
 - e. Bonding and Banding materials

- 15. Treatment Planning**
 - a. Non-skeletal problems including Class I malocclusion, crowding, spacing, crossbite, open bite, deepbite
 - b. Skeletal problems
 - c. Class II
 - i) Division 1

- ii) Division 2
 - d. Class III
 - e. Extractions in Orthodontics
 - f. Adjunctive treatment goals and principles
- 16. Surgical Orthodontics**
- a. Indications
- 17. Cleft Lip and Palate**
- a. Etiology & Clinical Features
- 18. Practical and Clinical Orthodontics**
1. Wire bending exercises including
 - a. Adams clasp
 - b. Labial Bow
 - c. Canine retractor
 - d. Cantilever and Z spring
 - e. Arch wire fabrication+
 2. Making of removable appliances
 3. A comprehensive orthodontic case presentation of a non-skeletal malocclusion.
 4. History
 5. Examination
 6. Cast analysis
 7. Ceph Analysis
 - a) Diagnosis
 - b) Suggested Treatment Plan
 - c) Mixed dentition analysis
 8. Fixed Appliance

Books Recommended

- ?? *Contemporary Orthodontics*, Proffit
- ?? *Introduction to Orthodontics*, Luar Mittehels
- ?? *Hand Book of Orthodontics*, Robert-E-Moyers