

**Pravara Institute of Medical Sciences (Deemed University)**  
**All India Ph. D Entrance Test**  
**PIMS- AIPET**  
**Syllabus for Periodontology – Paper – II**

1. **APPLIED ANATOMY:** Development of the Periodontium, Micro and Macro structural anatomy and biology of the periodontal tissues, Age changes in the periodontal tissues, Anatomy of the Periodontium: Macroscopic and microscopic anatomy, Blood supply of the Periodontium, Lymphatic system of the Periodontium, Nerves of the Periodontium
  - Temporomandibular joint, maxilla and mandible
  - Nerves of Periodontium.
  - Tongue, oropharynx
  - Muscles of mastication
  
2. **PHYSIOLOGY :** Blood, respiratory system --enumerate of the respiratory diseases which are a cause of periodontal diseases (periodontal medicine), Cardiovascular system: Blood pressure, normal ECG, shock
  - Endocrinology—hormonal influences on periodontium
  - Gastrointestinal system: Salivary secretion—composition, function & regulation
  - Reproductive physiology
  - Hormones –Actions and regulations, role in periodontal disease
  - Nervous system: Pain pathways, Taste- buds, primary taste sensation & pathways for sensation
  
3. **BIOCHEMISTRY:** Basics of carbohydrates, lipids, proteins, vitamins, enzymes and minerals, Diet and nutrition and Periodontium, Biochemical tests and their significance, Calcium and phosphorus
  
4. **PATHOLOGY:** Cell structure and metabolism, Inflammation and repair, necrosis and degeneration, Immunity and hypersensitivity, Circulatory disturbances – edema, hemorrhage, shock, thrombosis, embolism, infarction and hypertension, Disturbances of nutrition, Diabetes mellitus, Cellular growth and differentiation, Blood Lab investigations.
  
5. **MICROBIOLOGY :** General bacteriology: Identification of bacteria, Culture media and methods, Sterilization and disinfection
  - Immunology and Infection
  - Systemic bacteriology with special emphasis on oral microbiology – staphylococci, genus actinomyces and other filamentous bacteria and actinobacillus, actinomycetumcomitans
  - Virology: General properties of viruses, Herpes, Hepatitis, HIV virus
  - Mycology: Candidiasis
  - Applied microbiology
  - Diagnostic microbiology and immunology, hospital infections and management

## 6. PHARMACOLOGY

- General Pharmacology: Definitions – Pharmacokinetics with clinical application, routes of administration including local drug delivery in Periodontics, Adverse drug reactions and drug interactions.
- Detailed pharmacology of : Analgesics – opioid and nonopioid, Local anesthetics, Haematinics and coagulants, Anticoagulants, Vit D and Calcium preparations, Antidiabetic drugs, Steroids, Antibiotics, Antihypertensive, Immunosuppressive drugs and their effects on oral tissues, Antiepileptic drugs.
- Brief pharmacology, dental use and adverse effects of : General anesthetics, Antipsychotics, Antidepressants, Anxiolytic drugs, Sedatives, Antiepileptics, Antihypertensives, Antianginal drugs, Diuretics, Hormones, Pre- anesthetic medications, Drugs used in Bronchial asthma cough, Drug therapy of: Emergencies, Seizures, Anaphylaxis, Bleeding, Shock, Diabetic ketoacidosis, Acute Addisonian crisis
- Dental Pharmacology: Antiseptics, Astringents, Sialogogues, Disclosing agents, Antiplaque agents
- Fluoride pharmacology

## 7. BIostatISTICS

- Introduction, definition and branches of biostatistics
- Collection of data, sampling, types, bias and errors
- Compiling data- graphs and charts
- Measures of central tendency (mean, median and mode ), standard deviation and variability
- Tests of significance (chi square test and Z-test)
- Null hypothesis

## 8. ETIOPATHOGENESIS

- Classification of periodontal diseases and conditions
- Epidemiology of gingival and periodontal diseases
- Defense mechanisms of gingiva
- Periodontal microbiology
- Basic concepts of inflammation and immunity
- Microbial interactions with the host in periodontal diseases
- Pathogenesis of plaque associated periodontal diseases
- Dental calculus
- Role of iatrogenic and other local factors
- Genetic factors associated with periodontal diseases
- Influence of systemic diseases and disorders of the periodontium
- Role of environmental factors in the etiology of periodontal disease
- Stress and periodontal diseases
- Occlusion and periodontal diseases
- Smoking and tobacco in the etiology of periodontal diseases
- AIDS and periodontium
- Periodontal medicine

- Dentinal hypersensitivity

#### Clinical and Therapeutic Periodontology and Oral Implantology

Clinical periodontology includes gingival diseases, periodontal diseases, periodontal instrumentation, diagnosis, prognosis and treatment of periodontal diseases.

- GINGIVAL DISEASES: Gingival inflammation, Clinical features of gingivitis, Gingival enlargement, Acute gingival infections, Desquamative gingivitis and oral mucous membrane diseases, Gingival diseases in the childhood
- PERIODONTAL DISEASES: Periodontal pocket, Bone loss and patterns of bone destruction, Periodontal response to external forces, Masticatory system disorders, Chronic periodontitis, Aggressive periodontitis, Necrotising ulcerative periodontitis, Interdisciplinary approaches: Orthodontic, Endodontic, Periodontic considerations in periodontal therapy

### 9. TREATMENT OF PERIODONTAL DISEASES

- History, examination, diagnosis, prognosis and treatment planning: Clinical diagnosis, Radiographic and other aids in the diagnosis of periodontal diseases, Advanced diagnostic techniques, Risk assessment, Determination of prognosis, Treatment plan, Rationale for periodontal treatment, General principles of anti-infective therapy with special emphasis on infection control in periodontal practice, Halitosis and its treatment, Bruxism and its treatment
- Periodontal instrumentation: Principles of periodontal instrumentation, Instruments used in different parts of the mouth
- Periodontal therapy: Preparation of tooth surface, Plaque control, Anti microbial and other drugs used in periodontal therapy and wasting diseases of teeth, Periodontal management of HIV infected patients, Occlusal evaluation and therapy in the management of periodontal diseases, Role of orthodontics as an adjunct to periodontal therapy, Special emphasis on precautions and treatment for medically compromised patients, Periodontal splints, Management of dentinal hypersensitivity
- Periodontal surgical phase – special emphasis on drug prescription: General principles of periodontal surgery, Surgical anatomy of periodontium and related structures, Gingival curettage, Gingivectomy technique, Treatment of gingival enlargements, Periodontal flap, Osseous surgery (resective and regenerative), Furcation: Problem and its management, periodontic – endodontic continuum, Periodontic plastic and esthetic surgery, Recent advances in surgical techniques
- Future directions and controversial questions in periodontal therapy: infection control, Research directions in regenerative therapy, in anti-inflammatory therapy in measurement of periodontal diseases,
- Periodontal maintenance phase: Supportive periodontal treatment, Results of periodontal treatment
- ORAL IMPLANTOLOGY: Introduction and historical review, Biological, clinical and surgical aspects of dental implants, Diagnosis and treatment planning, Implant surgery, Prosthetic aspects of dental implants, Diagnosis and treatment of Peri implant complications, Special emphasis on plaque control measures in implant patients, Maintenance phase
- Management Of Medical Emergencies In Periodontal Practice

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**Syllabus for Oral and Maxillofacial Surgery – Paper – II**

1. **ANATOMY** : Development of face, paranasal sinuses and associated structures and their anomalies: surgical anatomy of scalp temple and face, anatomy and its applied aspects of triangles of neck, deep structures of neck, cranial and facial bones and its surrounding soft tissues, cranial nerves tongue, temporal and infratemoporal region, orbits and its contents, muscles of face and neck, paranasal sinuses, eyelids and nasal septum, teeth, gums and palate, salivary glands, pharynx, thyroid and parathyroid glands, larynx, trachea and esophagus, congenital abnormality of orofacial regions, General consideration of the structure and function of brain and applied anatomy of intracranial venous sinuses; cavernous sinus and superior sagittal, Brief consideration of autonomous nervous system of head and neck, Functional anatomy of masticative tissue bone, cartilage cellular elements of blood, vessels, lymphatic, nerves, muscle tongue, tooth and its surrounding structures.
2. **PHYSIOLOGY** : Nervous system-physiology of nerve conduction, pain pathway, sympathetic and parasympathetic nervous system, hypothalamus and mechanism of controlling body temperature, Blood- its composition hemostasis, blood dyscrasias and its management, hemorrhage and its control, blood grouping, cross matching, blood component therapy, complications of blood transfusing, blood substitutes, whole transfusion, cell savers, Digestive system composition and functions of saliva mastication deglutition digestion, assimilation, urine formation, normal and abnormal constituents; Respiration control of ventilation anoxia, asphyxia, artificial respiration, hypoxia -types and management; CVS – cardiac cycle, shock, heart sounds, blood pressure, hypertension; Endocrinology-metabolism of calcium, endocrinal activity and disorder relating to thyroid gland, parathyroid gland, adrenal gland, pituitary gland, pancreas and gonads; Nutrition-general principles balanced diet. Effect of dietary deficiency, protein energy malnutrition, kwashiorkor, Marasmus, Nutritional assessment, metabolic responses to stress, need for nutritional support, enteral nutrition, routes of access to GI tract, parenteral nutrition, Access to central veins, Nutritional support; Fluid and Electrolytic balance / Acid Base metabolism-body fluid compartment, metabolism of water and electrolytes, factors maintaining hemostasis, causes & treatment of acidosis and alkalosis.
3. **BIOCHEMISTRY** : General principles governing the various biological principles of the body, such as osmotic pressure, electrolytes, dissociation, oxidation, reduction etc; general composition of body, intermediary metabolism, carbohydrate, proteins, lipids, enzymes, vitamins, minerals and antimetabolites.
4. **GENERAL PATHOLOGY** : Inflammation -Acute and chronic inflammation, repair and regeneration, necrosis and gangrene, role of component system in acute inflammation, role of arachidonic acid and its metabolites in acute inflammation, growth factors in acute inflammation role of NSAIDs in inflammation, cellular changes in radiation injury and its manifestation; Wound management -Wound healing factors influencing healing; properties

of suture materials, appropriate uses of sutures ; hemostasis -role of endothelium in thrombogenesis, arterial and venous thrombi, disseminated intravascular coagulation; Hypersensitivity; Shock and pulmonary failure; types of shock, diagnosis, resuscitation, pharmacological support, ARDS and its causes and prevention, ventilation and support, Neoplasm-classification of tumors, Carcinogens and Carcinogenesis ,grading and staging of tumors, various laboratory investigation.

5. GENERAL MICROBIOLOGY: Immunity, Hepatitis B and its prophylaxis, knowledge of organisms, commonly associated with diseases of oral cavity, culture and sensitivity tests, various staining techniques-Smears and cultures, urine analysis and culture.
6. ORAL PATHOLOGY AND MICROBIOLOGY : Developmental disturbances of oral and para oral structures, regressive changes of teeth, bacterial, viral, mycotic infection of oral cavity, Dental caries, diseases of pulp and Periapical tissues ,physical and chemical injuries of oral cavity, wide range of pathological lesions of hard and soft tissues of the orofacial regions like cysts, odontogenic infection, benign & malignant neoplasms, salivary gland diseases, maxillary sinus diseases, mucosal diseases, oral aspects of various systemic diseases & role of laboratory investigation in oral surgery.
7. PHARMACOLOGY AND THERAPEUTICS : Definition of terminology used. pharmacokinetics and pharmacodynamic dosage and mode of administration of drugs, action and fate in the body ,drug addiction, tolerance and hypersensitivity reactions, drugs acting on CNS ,general and local anesthetics, antibiotics and analgesics, antiseptics, antitubercular, sialogogues, hematinics, anti diabetic, Vitamins A, B -complex, C, D, E, K
8. COMPUTER SCIENCE: Use of computers in surgery, components of computer and its use in practice, principles of word processing , spreadsheet function database and presentations, the internet and its use .The value of computer based systems in biomedical equipment.
9. ORAL AND MAXILLOFACIAL SURGERY:
  - Evolution of Maxillofacial surgery.
  - Diagnosis, history taking , clinical examination, investigations. Informed consent/ medico -legal issues.
  - Concept of essential drugs and rational use of drugs.
  - Communication skills with patients- understanding, clarity in communication, compassionate explanations and giving emotional support at the time of suffering and bereavement.
  - Principles of surgical audit- understanding the audit of process and outcome. Methods adopted for the same .Basic statistics.
  - Principles of evidence based surgery -understanding journal based literature study, the value of textbook, reference book articles, value of review articles, original articles and their critical assessment ,understanding the value of retrospective, prospective, randomized control and blinded studies , understanding the principles and the meaning of various Bio- statistical tests applied in these studies.
  - Principles of surgery-developing a surgical diagnosis, basic necessities for surgery, aseptic technique, incisions, flap designs, tissue handling ,hemostasis, dead space

management, decontamination and debridement, suturing, edema control, patient general health and nutrition.

- Medical emergencies -Prevention and management of altered consciousness, hypersensitivity reaction, chest discomfort, respiratory difficulty.
- Pre operative workup -Concept of fitness for surgery, basic medical work up; work up in special situation like diabetes, renal failure, cardiac and respiratory illness ; risk stratification.
- Surgical sutures, drains
- Post operative care- concept of recovery room care, Airway management, Assessment of wakefulness, management of cardio vascular instability in this period, Criteria for shifting to the ward, pain management.
- Wound management – Wound healing, factors influencing healing, basic surgical techniques, properties of suture materials, appropriate use of sutures.
- Surgical infections – Aspsis and antisepsis, Microbiological principles, Rational use of antibiotics, special infections like Sunergistic Gangrene and Diabetic foot infection, Hepatitis and HIV infection and cross infection.
- Airway obstruction / management- Anatomy of the airway, principles of keeping the airway patent, mouth to mouth resuscitation, Oropharyngeal airway, endotracheal intubation, Cricothyroidectomy, Tracheostomy.
- Anesthesia – stages of Anesthesia, Pharmacology of inhalation, intravenous and regional anesthetics, muscle relaxants.
- Facial pain ; Facial palsy and nerve injuries. pain control-acute and chronic pain, cancer and non-cancer pain, patient controlled analgesia.
- General patient management – competence in physical assessment of patients of surgery, competence in evaluation of patients presenting with acute injury, particularly to maxillofacial region. Competence in the evaluation of management of patients for Anesthesia.
- Clinical oral surgery – all aspects of dento alveolar surgery.
- Pre- prosthetic surgery- A wide range of surgical reconstructive procedures involving their hard and soft tissues of the edentulous jaws.
- Temporomandibular joint disorders -TMJ disorders and their sequelae need expert evaluation. assessment and management. It is preferable to be familiar with diagnostic and therapeutic arthroscopic surgery procedures.
- Tissue grafting -Understanding of the biological mechanisms involved in autogenous and heterogenous tissue grafting.
- Reconstructive oral and maxillofacial surgery – hard tissue and soft tissue reconstruction.
- Cyst and tumors of head and neck region and their management – including principles of tumor surgery, giant cell lesion of jaw bones, fibro osseous lesions of jaw.
- Neurological disorders of maxillofacial region- diagnosis and management of Trigeminal Neuralgia, MPDS, Bells palsy, Frey's Syndrome, Nerve injuries
- Max illofacial trauma -basic principles of treatment, primary care, diagnosis and management of hard and soft tissue injuries, comprehensive management including polytrauma patients.

- Assessment of trauma-multiple injuries patient ,closed abdominal and chest injuries,penetrating injuries ,pelvic fractures ,urological injuries ,vascular injuries,
- Orthognathic surgery-The tranee must be familiar with the assessment and correcting of jaw deformities.
- Laser surgery – The application of lase technology in the surgical treatment of lesions amenable to such therapy.
- Distraction osteogenesis in maxillofacial region.
- Cryosurgeries – Principles, the application of cryosurgery in the surgical management of lesions amenable to such surgeries.
- Cleft lip and palate surgery – detailed knowledge of the development of the face, head and neck, diagnosis and treatment planning ,Current concepts in the management of cleft lip and palate deformity,knowledge of nasal endoacopy and other diagnostic techniques in the evaluation of speech and hearing,concept of multi disciplinary team management .
- Aesthetic facial surgery-detailed knowledge of structures of face & neck including skin and underlying soft tissues, diagnosis and treatment planning of deformities and conditions affecting facial kin, underlying facial muscles, bone,eyelids,extranal ear etc. surgical management of post acne scaring, facr lift,blepharoplasty, otoplasty, facial bone recountouring etc.
- Craniofacial surgery- basic knowledge of developmental anomalies of face, head and neck,basics concept in the diagnosis and planning of various head and neck anomalies including facial cleft, craniosynostosis, syndromes ,etc, current concepts in the management of craniofacial anomalies.
- Head and neck oncology- understanding of ht eprinciples of management of head and neck oncology including various pre cancerous lesions, Experience in the surgical techniques of reconstruction following ablative surgery.
- Micro vascular surgery.
- Implantology -principles, surgical procedures for insertion of various types of implants.
- Maxillofacial radiology / radio diagnosis
- other diagnostic methods and imaging techniques

#### 10. ALLIED SPECIALTIES :

- General medicine :General assement of the patient including children with special emphasis on cardiovascular diseases, endocrinal, metaabolic respiratory and renal diseases, Blood dyscrasias.
- General surgery : Principles of general surgery,exposure to common general surgical procedures .
- Neuro – surgery,Evaluation of a patient with head injury ,knowledge & exposure of various Neuro – surgical procedures.
- ENT /Ophthalmolgy : Examination of ear ,nose,throat,exposure to ENT surgical procedures , ophthalmic examination and evaluation, exposurte to ophthalmic surgical procedures.
- Orthopedic , basic principles of orthopedic surgery ,bone diseases and trauma as relevant to Maxillofacial surgery , interpretation of radiographs,CT,MRI and ultrasound
- Anesthesia: Evaluation of patients for GA technique and management of emergencies, various IV sedation techniques.

## 11. MAXILLOFACIAL SURGERY

- Salivary gland
- Sialography
- Salivary fistula and management
- Diseases of salivary gland – development disturbances, cysts, inflammation and sialolithiasis
- Mucocele and Ranula
- Tumors of salivary gland and their management
- Staging of salivary gland tumors
- Parotidectomy

## 12. Temporomandibular Joint

- Etiology, history signs, symptoms, examination and diagnosis of temporomandibular joint disorders
- Ankylosis and management
- Condylectomy – different procedures
- Various approaches to TMJ
- Recurrent dislocations – Etiology and management

## 13. Oncology

- Biopsy
- Management of pre-malignant tumors of head and neck region
- Benign and Malignant tumors of Head and Neck region
- Staging of oral cancer and tumor markers
- Radical Neck dissection
- Modes of spread of tumors
- Diagnosis and management of tumors of nasal, paranasal neck, tongue, cheek, maxilla and mandible
- Radiation therapy in maxillofacial regions
- Lateral neck swellings

## 14. Orthognathic surgery

- Diagnosis and treatment planning
- Cephalometric analysis
- Model surgery
- Maxillary and mandibular repositioning procedures
- Segmental osteotomies
- Management of apertognathia
- Genioplasty
- Distraction osteogenesis

## 15. Cysts and tumor of oro facial region

- Odontogenic and non-Odontogenic tumors and their management



- Giant Cell lesions of jawbone
- Fibro osseous lesions of jawbone
- Cysts of jaw

16. Laser surgery

- The application of laser technology in surgical treatment of lesions

17. Cryosurgery

- Principles, applications of cryosurgery in surgical management

18. Cleft lip and palate surgery

- Detailed knowledge of the development of the face, head and neck
- Diagnosis and treatment planning
- Current concepts in the management of cleft lip and palate deformity
- Knowledge of Naso endoscopy and other diagnostic techniques in the evaluation of speech and hearing]
- Concept of multidisciplinary team management

19. Aesthetic facial surgery

- Detailed knowledge of the structures of the face and neck including skin and underlying soft tissue
- Diagnosis and treatment planning of deformities and conditions affecting facial skin
- Underlying facial muscles, bone Eyelids, external ear
- Surgical management of post acne scarring, facelift, blepharoplasty, otoplasty, facial bone recontouring etc

20. Craniofacial surgery

- Basic knowledge of development anomalies of the face, head and neck
- Basic concepts in the diagnosis and planning of various head and neck anomalies including facial clefts, craniosynostosis, syndromes, etc.
- Current concept in the management of Craniofacial anomalies

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**Syllabus for Conservative Dentistry and Endodontic – Paper – II**

**1. APPLIED ANATOMY OF HEAD AND NECK:**

- Development of face, paranasal sinuses and the associated structures and their anomalies, cranial and facial bones, TMJ anatomy and function, arterial and venous drainage of head and neck, muscles of face and neck including muscles of mastication and deglutition, brief consideration of structures and function of brain, Brief consideration of all cranial nerves and autonomic nervous system of head and neck. Salivary glands, Functional anatomy of mastication, deglutition and speech. Detailed anatomy of deciduous and permanent teeth, general consideration in physiology of permanent dentition, form, function, alignment, contact occlusion.
- Internal anatomy of permanent teeth and its significance
- Applied histology – histology of skin, oral mucosa, connective tissue, bone cartilage, blood vessels lymphatics, nerves, muscles, tongue.

**2. DEVELOPMENT OF TEETH:**

- Enamel – development and composition, physical characteristics, chemical properties, structure
- Age changes – clinical structure
- Dentin – development, physical and chemical properties, structure type of dentin, innervations, age and functional changes.
- Pulp – development, histological structures, innervations, functions, regressive changes, clinical considerations.
- Cementum – composition, cementogenesis, structure function, clinical consideration.
- Periodontal ligament – development, structure, function and clinical consideration.
- Salivary glands – structure, function, clinical considerations. Eruption of teeth.

**3. APPLIED PHYSIOLOGY:**

- Mastication, deglutition digestion and assimilation, fluid and electrolyte balance.
- Blood composition, volume, function, blood groups, haemostasis, coagulation, blood transfusion, circulation, heart, pulse, blood pressure, shock, respiration, control anoxia, hypoxia, asphyxia, artificial respiration and endocrinology – general principles of endocrine activity and disorders relating to pituitary, thyroid, parathyroid, adrenals including pregnancy and lactation.
- Physiology of saliva – composition, function, clinical significance. Clinical significance of vitamins, diet and nutrition – balance diet
- Physiology of pain, sympathetic and Para sympathetic nervous system, pain pathways, physiology of pulpal pain Odontogenic and non Odontogenic pain, pain disorders – typical and atypical, biochemistry such as osmotic pressure, electrolytic dissociation, oxidation, reduction etc. Carbohydrates, proteins, lipids and their metabolism, nucleoproteins, nucleic acid and their metabolism. Enzymes, vitamins and minerals, metabolism of inorganic elements, detoxification in the body, anti metabolites, chemistry of blood lymph and urine.

#### **4. PATHOLOGY:**

- Inflammation, repair, degeneration, necrosis and gangrene.
- Circulatory disturbances – ischemia hyperemia, edema, thrombosis, embolism, infarction, allergy and hypersensitivity reaction.
- Neoplasms – classifications of tumors, characteristics of benign and malignant tumors, spread tumors.
- Blood dyscrasias
- Developmental disturbances of oral and Para oral structures, dental caries. Regressive changes of teeth. Pulp, periapical pathology, pulp reaction to dental caries and dental procedures.
- Bacterial, viral, mycotic infections of the oral cavity.

#### **5. MICROBIOLOGY:**

- Pathways of pulpal infection, oral flora and micro organisms associated with endodontic diseases, pathogenesis, host defense, bacterial virulence factors, healing, theory of focal infections, microbes of relevance to dentistry – strepto, staphylococci, lactobacilli, corynebacterium, actinomycetes, clostridium, neisseria, vibrio, bacterioids, fusobacteria, spirochetes, mycobacterium, virus and fungi.
- Cross infection, infection control, infection control procedure, sterilization and disinfection.
- Immunology – antigen antibody reaction, allergy, hypersensitivity and anaphylaxis, auto immunity, grafts, viral hepatitis, HIV infections and aids. Identification and isolation of microorganisms from infected root canals. Culture medium and culturing technique (Aerobic and anaerobic interpretation and antibiotic sensitivity test).

#### **6. PHARMACOLOGY :**

- Dosage and route of administration of drugs, actions and fate of drug in body, drug addiction, tolerance of hypersensitivity reactions.
- Local anesthesia – agents and chemistry, pharmacological actions, fate and metabolism of anaesthetic, ideal properties, techniques and complications.
- General anesthesia – pre medications, neuro muscular blocking agents, induction agents, inhalation anesthesia and agents used, assessment of anesthetic problems in medically compromised patients.
- Anaesthetic emergencies
- Antihistamines, corticosteroids, chemotherapeutic and antibiotics, drug resistance, haemostasis, and haemostatic agents, anticoagulants, sympathomimetic drugs, vitamins and minerals (A,B,C,D, E, K, IRON), anti sialogogue immunosuppressants, drug interactions, antiseptics, disinfectants, anti viral agents, drugs acting on CNS.

#### **7. BIOSTATISTICS :**

- Introduction, Basic concepts, Sampling, Health information systems – collection, compilation, presentation of data. Elementary statistical methods – presentation of statistical data, Statistical averages – measures of central tendency, measures of dispersion, Normal distribution. Tests of significance – parametric and non – parametric tests (Fisher exact test, Sign test, Median test, Mann whitney test, Krusical Wallis one way analysis, Friedmann two way analysis, Regression analysis), Correlation and regression, Use of computers.

#### **8. RESEARCH METHODOLOGY :**

- Essential features of a protocol for research in humans
- Experimental and non-experimental study designs

- Ethical considerations of research

## 9. APPLIED DENTAL MATERIALS :

- Physical and mechanical properties of dental materials, biocompatibility.
- Impression materials, detailed study of various restorative materials, restorative resin and recent advances in composite resins, bonding-recent developments – tarnish and corrosion, dental amalgam, direct filling gold, casting alloys, inlay was, die materials, investments, casting procedures, defects, dental cements for restoration and pulp protection (luting, liners, bases) cavity varnishes.
- Dental ceramics-recent advances, finishing and polishing materials.
- Dental burs – design and mechanics of cutting – other modalities of tooth preparation.
- Methods of testing biocompatibility of materials used.

## 10. CONSERVATIVE DENTISTRY

- Examination, diagnosis and treatment plan
- Occlusion as related to conservative dentistry, contact, contour, its significance, Separation of teeth, matrices, used in conservative dentistry
- Dental caries – epidemiology, recent concept of etiological factors, pathophysiology, Histopathology, diagnosis, caries activity tests, prevention of dental caries and management recent methods.
- Hand and rotary cutting instruments, development of rotary equipment, speed ranges, hazards.
- Dental burs and other modalities of tooth reparation – recent development (air abrasions, lasers etc)
- Infection control procedures in conservative dentistry, isolation equipments etc.
- Direct concepts in tooth preparation for amalgam, composite, GIC and restorative techniques, failures and management.
- Direct and indirect composite restorations.
- Indirect tooth colored restorations – ceramic, inlays and onlays, veneers, crowns, recent advances in fabrication and materials.
- Tissue management
- Impression procedures used for indirect restorations.
- Cast metal restorations, indications, contraindications, tooth preparation for class 2 inlay, Onlay full crown restorations.
- Restorative techniques, direct and indirect methods of fabrication including materials used for fabrication like inlay wax, investment materials and Direct gold restorations.
- Recent advances in restorative materials and procedures. Management of non-carious lesion.
- Advance knowledge of minimal intervention dentistry.
- Recent advances in restoration of endodontically treated teeth and grossly mutilated teeth
- Hypersensitivity, theories, causes and management Lasers in Conservative Dentistry
- CAD-CAM & CAD-CIM in restorative dentistry
- Dental imaging and its applications in restorative dentistry (clinical photography)
- Principles of esthetics Color
- Facial analysis Smile design
- Principles of esthetic integration
- Treatment planning in esthetic dentistry

## 11. ENDODONTICS

- Rationale of endodontics
- Knowledge of internal anatomy of permanent teeth, anatomy of root apex and its implications in endodontic treatment.
- Dentin and pulp complex
- Pulp and periapical pathology Pathobiology of periapex
- Diagnostic procedure – recent advances and various aids used for diagnosis Orofacial dental pain emergencies: endodontic diagnosis and management Case selection and treatment planning
- Infection control procedures used in Endodontics (aseptic techniques such as rubber dam, sterilization of instruments etc.)
- Access cavity preparation – objectives and principles
- Endodontic instruments and instrumentation – recent developments detailed description of hand, rotary, sonic ultra sonic etc.
- Working length determination / cleaning and shaping of root canal system and recent development in techniques of canal preparation.
- Root canal irrigants and intra canal medicaments used including non – surgical Endodontics by calcium hydroxide.
- Endodontic microbiology
- Obturating materials, various obturating techniques and recent advances in obturation of root canal.
- Traumatic injuries and management – endodontic treatment for young permanent teeth. Pediatric Endodontics – treatment of immature apex.
- Endodontic surgeries, recent developments in technique and devices, endosseous endodontic implants – biology of bone and wound healing.
- Endoperio interrelationship, endo + Perio lesion and management Drugs and chemicals used in Endodontics
- Endo emergencies and management.
- Restoration of endodontically treated teeth, recent advances. Geriatric Endodontics
- Endo emergencies and management.
- Biologic response of pulp to various restorative materials and operative procedures.
- Lasers in Endodontics
- Multidisciplinary approach to endodontics situations.
- Endodontics radiology – digital technology in endodontics practice. Local anesthesia in endodontics.
- Procedural errors in endodontics and their management. Endodontics failures and retreatment.
- Resorptions and its management. Microscopes in endodontics.
- Single visit endodontics, current concepts and controversies.

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**Syllabus for Orthodontics & Dentofacial Orthopedics – Paper – II**

1. **APPLIED ANATOMY:** Prenatal growth of head: Stages of embryonic development, origin of head, origin of face, origin of teeth, Postnatal growth of head: Bones of skull, the oral cavity, development of chin, the hyoid bone, general growth of head, face growth, Bone growth: Origin of bone, composition of bone, units of bone structure, schedule of Ossification, mechanical properties of bone, roentgen graphic appearance of bone, Assessment of growth and development: Growth prediction, growth spurts, the concept of normality and growth increments of growth, differential growth, gradient of growth, methods of gathering growth data, Theories of growth and recent advances, factors affecting physical growth, Muscles of mastication: Development of muscles, muscle change during growth, muscle function and facial development, muscle function and malocclusion, Development of dentition and occlusion: Dental development periods, order of tooth eruption, chronology of permanent tooth formation, periods of occlusal development, pattern of occlusion, Assessment of skeletal age, The carpal bones, carpal x-rays, cervical vertebrae.
2. **PHYSIOLOGY :** Endocrinology and its disorders: (Growth hormone, thyroid hormone, parathyroid hormone, ACTH) pituitary gland hormones, thyroid gland hormones, parathyroid gland hormones, Calcium and its metabolism: Nutrition metabolism and their disorders: proteins, carbohydrates, fats, vitamins and minerals, Muscle physiology, Craniofacial Biology: cell adhesion molecules and mechanism of adhesion, Bleeding disorders in orthodontics : Hemophilia.
3. **DENTAL MATERIALS:** Gypsum products: dental plaster, dental stone and their properties, setting reaction etc, Impression materials: impression materials in general and particularly of alginate impression material, Acrylics: chemistry, composition physical properties, Composites: composition types, properties setting reaction, Banding and bonding cements: Zn (PO<sub>4</sub>)<sub>2</sub>, zinc silicophosphate, Zinc polycarboxylate, resin cements and glass Inomer cements, Wrought metal alloys: deformation, strain hardening, annealing, recovery, recrystallization, grain growth, properties of metal alloys, Orthodontic arch wires : stainless steel gold, wrought cobalt chromium nickel alloys, alpha & beta titanium alloys, Elastics : Latex and non – latex elastics, Applied physics, Bioengineering and metallurgy, Specification and tests methods used for materials used in Orthodontics, Survey of all contemporary literature and Recent advances in above – mentioned materials.
4. **GENETICS :** Cell structure, DNA, RNA, protein synthesis, cell division, Chromosomal abnormalities, Principles of orofacial genetics, Genetics in malocclusion, 5 Molecular basis of genetics, Studies related to malocclusion, Recent advances in genetics related to malocclusion, Genetic counseling, Bioethics and relationship to Orthodontic management of patients.
5. **PHYSICAL ANTHROPOLOGY:** Evolutionary development of dentition, Evolutionary development of jaws.
6. **PATHOLOGY :** Inflammation, Necrosis

7. **BIOSTATISTICS:** Statistical principles: Data collection, Method of presentation, Method of Summarizing, Methods of analysis – different tests / errors, Sampling and Sampling technique, Experimental models, design and interpretation, Development of skills for preparing clear concise and cogent scientific abstracts and publication.
8. **APPLIED RESEARCH METHODOLOGY IN ORTHODONTICS :** Experimental design, Animal experimental protocol, Principles in the development, execution and interpretation of methodologies in Orthodontics, Critical Scientific appraisal of literature.
9. **APPLIED PHARMACOLOGY.**
10. **ORTHODONTIC HISTORY:** Historical perspective, Evolution of orthodontic appliances, Pencil sketch history of Orthodontic peers, History of Orthodontics in India.
11. **CONCEPTS OF OCCLUSION AND ESTHETICS:** Structure and function of all anatomic components of occlusion, Mechanics of articulation, Recording of masticatory function, Diagnosis of Occlusal dysfunction, Relationship of TMJ anatomy and pathology and related neuromuscular physiology.
12. **ETIOLOGY AND CLASSIFICATION OF MALOCCLUSION:** A comprehensive review of the local and systemic factors in the causation of malocclusion, Various classifications of malocclusion.
13. **DENTOFACIAL ANOMALIES:** Anatomical, physiological and pathological characteristics of major groups of developmental defects of the orofacial structures.
14. **CHILD AND ADULT PSYCHOLOGY:** Stages of child development, Theories of psychological development, Management of child in orthodontic treatment, Management of handicapped child, Motivation and psychological problems related to malocclusion / orthodontics, Adolescent psychology Behavioral psychology and communication.
15. **DIAGNOSTIC PROCEDURES AND TREATMENT PLANNING IN ORTHODONTICS :** Emphasis on the process of data gathering, synthesis and translating it into a treatment plan, Problem cases – analysis of cases and its management, Adult cases, handicapped and mentally retarded cases and their special problems , Critique of treated cases, Cephalometrics, Instrumentation, Image processing, Tracing and analysis of errors and applications, Radiation hygiene, Advanced Cephalometrics techniques, Comprehensive review of literature, Video imaging principles and application.
16. **PRACTICE MANAGEMENT IN ORTHODONTICS:** Economics and dynamics of solo and group practices, Personal management, Materials management, Public relations, Professional relationship, Dental ethics and jurisprudence, Office sterilization procedures, Community based Orthodontics.
17. **CLINICAL ORTHODONTICS:**
  - a. Myofunctional Appliances and dentofacial orthodontics : Basic principles, Contemporary appliances – their design and manipulation, Case selection and evaluation of the treatment results, Review of the current literature,

- b. Dentofacial Orthopedics, Principles, Biomechanics, Appliance design and manipulation, Review of contemporary literature,
- c. Cleft lip and palate rehabilitation: Diagnosis and treatment planning, Mechanotherapy, Special growth problems of cleft cases, Speech physiology, pathology and elements of therapy as applied to orthodontics, Team rehabilitative procedures,
- d. Biology of tooth movement: Principles of tooth movement –review, Review of contemporary literature, Applied histophysiology of bone, periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
- e. Orthodontics / Orthognathic surgery: Orthodontist’ role in conjoint diagnosis and treatment planning, Pre and post-surgical Orthodontics, Participation in actual clinical cases, progress evaluation and post retention study, Review of current literature,
- f. Ortho / Perio / Prostho inter relationship, Principles of interdisciplinary patient treatment, Common problems and their management, Basic principles of Mechanotherapy Includes Removable appliances and fixed appliances, Design, Construction, Fabrication, Management, Review of current literature on treatment methods and results,
- g. Applied preventive aspects in Orthodontics, Caries and periodontal disease prevention, Oral hygiene measures, Clinical procedures, Interceptive Orthodontics, Principles, Growth guidance, Diagnosis and treatment planning, Therapy emphasis on: Dento-facial / problems, Tooth material discrepancies, Minor surgery for Orthodontics, Retention and relapse, Mechanotherapy – special reference to stability of results with various procedures, Post retention analysis, Review of contemporary literature

18. RECENT ADVANCES LIKE: Use of implants, Lasers, Application of F.E.M. Distraction Osteogenesis

- Use of recent advances in clinical and academic research methodology like use of CBCT in orthodontics, use of implants, lasers, FEM studies, distraction osteogenic, etc. the problem based learning and evidence based approach to the clinical situation.
- An understanding of research methodology and randomized clinical trials with systematic reviews and meta analysis as learned from the Cochrane collaborations world’s first & foremost leader in evidence based practices related to Medical/Dental/Paramedical fraternity



**Pravara Institute of Medical Sciences (Deemed University)**  
**All India Ph. D Entrance Test**  
**PIMS -AIPET**  
**Syllabus for Oral Pathology & Microbiology – Paper – II**

1. **BIostatistics AND RESEARCH METHODOLOGY:** Basic principles of biostatistics and study as applied to dentistry and research Collection / organization of data / measurement scales presentation of data and analysis, Measures of central tendency, Measures of variability, Sampling and planning of health survey, Probability, normal distribution and indicative statistics, Estimating population values, Tests of significance (parametric/non-parametric qualitative methods.), Analysis of variance, Association, correlation and regression.
2. **APPLIED GROSS ANATOMY OF HEAD AND NECK INCLUDING HISTOLOGY :** Temporomandibular joint, Trigeminal nerve and facial nerve, Muscles of mastication, Tongue, Salivary glands, Nerve supply; blood supply, lymphatic drainage and venous drainage of Oral dental tissues, Embryology: Development of face, palate, mandible, maxilla, tongue and applied aspects of the same, Development of teeth and dental tissues and developmental defects of oral and maxillofacial region and abnormalities of teeth, Maxillary sinus, Jaw muscles and facial muscles.  
Genetics : Introduction modes of inheritance, chromosomal anomalies of oral tissues and single gene disorders.
3. **PHYSIOLOGY (GENERAL AND ORAL) :** Saliva, Pain, Mastication, Taste, speech Deglutition, Wound healing, Vitamins (Influence on growth, development and structure of oral soft and hard tissues and paraoral tissues.), Calcium metabolism, Theories of mineralization, Tooth eruption and shedding, Hormones. (Influence on growth, development and structure of oral soft and hard tissues and para oral tissues.) Blood and its constituents.
4. **CELL BIOLOGY :** Cell-structure and function (ultrastructural and molecular aspects), intercellular junctions, cell cycle and division, cell cycle regulators, cell-cell and cell - extra cellular matrix interactions, Detailed molecular aspects of DNA, RNA, and intracellular organelles, transcription and translation and molecular biology techniques.
5. **GENERAL HISTOLOGY :** Light and electron microscopy considerations of Epithelial tissues and glands, bone, hematopoietic system, lymphatic system, muscle, neural tissue, endocrinal system (thyroid, pituitary, parathyroid)
6. **BIOCHEMISTRY :** Chemistry of carbohydrates, lipids and proteins, Methods of identification and purification, Metabolism of carbohydrates, lipids and proteins, Biological oxidation, Various techniques – cell fractionation and ultra filtration, centrifugation, Electrophoresis, Spectrophotometry, and radioactive techniques.
7. **GENERAL PATHOLOGY :** Inflammation and chemical mediators, thrombosis, necrosis, repair, degeneration, shock, hemorrhage pathogenic mechanisms at molecular level and blood dyscrasias, Carcinogenesis and Neoplasia.

8. GENERAL MICROBIOLOGY : Definitions of various types of infections, Routes of infection and spread, Sterilization, disinfection and antiseptics, Bacterial genetics.
9. BASIC IMMUNOLOGY : Basic principles of immunity , antigen and antibody reactions, Cell mediated immunity and Humoral immunity, Immunology of hypersensitivity, Immunological basis of the autoimmune phenomena, Immunodeficiency with relevance to opportunistic infections, Basic principles of transplantation and tumor immunity.
10. SYSTEMIC MICROBIOLOGY /APPLIED MICROBIOLOGY:
  - Morphology,classification pathogenicity, mode of transmission,methods of prevention ,collection and transport of specimen, for laboratory reports and antibiotic sensitivity tests, Staphylococci, Streptococci, Corynebacterium diphtheria, Mycobacteria, Clostridia,bacteroides and fusobacteria, Actinomycetales, Spirochetes.
  - Virology:General properties: structure, broad classification of viruses, pathogenesis,pathology of viral infections, Herpes virus : List of viruses, pathogenesis and mode of infection, list of diagnostic tests,and their interpretations, methods of prevention and control, Human Immunodeficiency virus : structure with relevance to laboratory diagnosis, type of infection,laboratory tests and their interpretation,universal precautions,specific precautions and recent trends in diagnosis and prophylaxis.
  - Mycology : General properties of fungi,classification bases on disease, superficial, subcutaneous,deep opportunistic infections, General principles of fungal infections, diagnosis rapid diagnosis method of collection of sample and examination for fungi.
11. ORAL BIOLOGY (ORAL AND DENTAL HISTOLOGY) : Structure and function of oral,dental and paraoral tissues including their ultra structure, molecular and biochemical aspects, Study of morphology of permanent and deciduous teeth.
12. BASIC MOLECULAR BIOLOGY AND TECHNIQUES : Experimental aspects-DNA extraction,PCR,western blotting.
13. BASIC HISTO TECHNIQUES AND MICROSCOPY : Routine hematological tests and elinical significance of the same, Biopsy procedures for oral lesions.  
Processing of tissues for paraffin lesions, Microtome and principles of microtomy, Routine stains,principles and theories of staining techniques, Microscope,principles and theorries of microscopy, Light microscopy and various other types including electron microscopy, Methods of tissue preparation for ground sections,decalcified sections.
14. ORAL PATHOLOGY : Developmental defects of oral and maxillofacial region and abnormalities of teeth, Dental caries ((Introduction Epidemiology, Microbiology ,cariogenic bacterial including properties,acid production in plaque,development of lesion,response of dentine -pulplunit,histopathology, root caries,sequelae and immunology), Pulpal and Periapical diseases, Infections of oral and Para oral regions (bacterial,viral and fungal infections), Non-neoplastic disorders of salivary glands, Bone pathology, Hematological disorders, Physical and chemical injuries,allergic and Immunological diseases, Cysts of odontogenic origin ,Dermatologic diseases, Oral manifestations of of systemic diseases, Facial pain and neuromuscular disorders including TMJ disorders, Regressive alterations of teeth.

15. CLINICAL PATHOLOGY : laboratory investigations – Hematology, Microbiology and Urine analysis.
16. SPECIALIZED HISTOTECHNIQUES AND SPECIAL STAINS : Special staining techniques for different tissues, Immunohistochemistry, Preparation of frozen sections and cytological smears
17. DERMATOLOGY: Study of selected mucocutaneous lesions- etiopathogenesis, pathology, clinical presentation and diagnosis.
18. ORAL ONCOLOGY : Detailed study including pathogenesis, molecular and biochemical changes of various tumors, tumor like lesions and Premalignant lesions affecting the hard and soft tissues of oral and paraoral tissues, Tumour markers.
19. ORAL MICROBIOLOGY AND IMMUNOLOGY: Normal Oral microbial flora, Defense mechanism of the oral cavity, Microbiology and immunology of Dental caries and periodontal diseases, Dental caries, Tumor immunology, Infections of pulp and periapical and periodontal tissues, Oral sepsis and Bacteremia, Microbial genetics, Infections of oral and Para oral regions (bacterial, viral and fungal infections).
20. FORENSIC ODONTOLOGY : Legal procedures like inquest, medico-legal evidences post mortem examination of violence around mouth and neck, identification of deceased individual- dental importance, Bite marks rugae patterns and lip prints.
21. LABORATORY TECHNIQUES AND DIAGNOSIS : Routine hematological tests and clinical significance of the same, Biopsy procedures for oral lesions, Processing of tissues for Paraffin sections, Microtome and principles of microtomy, Routine stains, principles and theories of staining techniques, Microscope, principles and theories of microscopy, Light microscopy and various other types including electron microscopy, Methods of tissue preparation for ground sections, decalcified sections, Special stains and staining techniques for different tissues, Immunohistochemistry, Preparation of frozen sections and cytological smears.
22. OTHER TOPICS IN ORAL PATHOLOGY : Detailed description of diseases affecting oral mucosa, teeth, supporting tissues & jaws, Systemic diseases affecting oral cavity. Non-neoplastic disorders of salivary glands, Bone pathology, Physical and chemical injuries, allergic and Immunological diseases, Cyst of odontogenic origin, Oral manifestations of systemic diseases.

**Pravara Institute of Medical Sciences (Deemed University)**  
**All India Ph. D Entrance Test**  
**PIMS -AIPET**  
**Syllabus for Pedodontics & Preventive Dentistry – Paper – II**

COURSE CONTENTS

1. Applied Anatomy & genetics.
2. Applied Physiology
3. Applied Pathology
4. Nutrition and Dietetics
5. Growth & Development: Prenatal and Postnatal development of cranium, face, jaws, teeth and Supporting structures. Chronology of dental development and development of occlusion. Dimensional changes in dental arches. Cephalometric evaluation of growth.
6. Child Psychology : Development & Classification of behavior, personality, intelligence in children, theories of child psychology, stages of psychological child development, fear anxiety, apprehension & its management.
7. Behavior Management :Non- pharmacological & Pharmacological methods.
8. Child Abuse & Dental Neglect
9. Conscious Sedation, Deep Sedation & General Anesthesia in Pediatric Dentistry :(Including other Drugs, Synergic & Antagonistic Actions of Various Drugs Used in Children
10. Preventive Pedodontics : Concepts,chair side preventive measures for dental diseases, high-risk caries Including rampant & extensive caries – Recognition, Features & Preventive Management, Pit and Fissures Sealants, Oral Hygiene measures, Correlation of brushing with dental caries and periodontal diseases. Diet & Nutrition as related to dental caries. Diet Counseling.
11. Dental Plaque : Definition, Initiation, Pathogenesis, Biochemistry, and Morphology & Metabolism.
12. Microbiology & Immunology as related to Oral Diseases in Children : Basic concepts, immune system in human body, Auto Immune diseases, Histopathology, Pathogenesis, Immunology of dental caries, Periodontal Diseases. Tumors, Oral Mucosal lesions etc.
13. Gingival & Periodontal diseases in Children :
  - Normal Gingival & Periodontium in children.
  - Gingival & periodontal disease – Etiology, Pathogenesis, Prevention & Management
14. Pediatric Operative Dentistry

- Principle of Operative Dentistry along with modifications, of materials / past, current & latest including tooth colored materials.
- Modifications required for cavity preparation in primary and young permanent teeth,
- Various isolation Techniques
- Restorations of decayed primary, young permanent and permanent teeth in children using various restorative material like Glass Ionomer, Composites, Silver, Amalgam & latest material (galium)
- Stainless steel, Polycarbonate & Resin Crowns / Veneers & fiber post systems.

#### 15. Pediatric Endodontics :

- Primary Dentition:- Diagnosis of pulpal diseases and their management-Pulp capping, Pulpotomy, Pulpectomy ( Materials & Methods), Controversies, & recent concepts.
- Young permanent teeth and permanent teeth, Pulp capping, Pulpotomy, Apexogenesis, Apexification, Concepts, Techniques and Materials used for different procedures.
- Recent advances in Pediatric diagnosis and Endodontics.

#### 16. Prosthetic consideration in Paediatric Dentistry.

#### 17. Traumatic Injuries in Children:

- Classifications & Importance.
- Sequelae & reaction of teeth to trauma.
- Management of Traumatized teeth with latest concepts.
- Management of jaw fracture in children.

#### 18. Interceptive Orthodontics:

- Concepts of occlusion and esthetics : Structure and function of all anatomic components of occlusion, mechanics of articulations, recording of masticatory function, diagnosis of Occlusal dysfunction, relationship of TMJ anatomy and pathology and related neuromuscular physiology.
- A comprehensive review of the local and systemic factors in the causation of malocclusion.
- Recognition and management of normal and abnormal developmental occlusions in primary, mixed and permanent dentitions in children (Occlusal Guidance).
- Biology of tooth movement : A comprehensive review of the principles of teeth movement. Review of contemporary literature, Histopathology of bone and Periodontal ligament, Molecular and ultra cellular consideration in tooth movement.
- Myofunctional appliances: Basic principles, contemporary appliances: Design & Fabrication
- Removable appliances : Basic principles, contemporary appliances: Design & Fabrication
- Case selection & diagnosis in interceptive Orthodontics (Cephalometrics, Image processing, Tracing, Radiation hygiene, Video imaging & advance Cephalometric techniques).

- Space Management : Etiology, Diagnosis of space problems, analysis, Biomechanics, Planned extraction in interception orthodontics.

19. Oral Habits in Children:

- Definition, Etiology & Classification
- Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits.
- Management of oral habits in children

20. Dental care of Children with special needs:

- Definition Etiology, Classification, Behavioral, Clinical features & Management of children with:
- Physically handicapping conditions
- Mentally Mentally compromising conditions
- Medically compromising conditions
- Genetic disorders.

21. Oral manifestations of Systemic Conditions in Children & their Management

22. Management of Minor Oral Surgical Procedures in Children

23. Dental Radiology as related to Pediatric Dentistry

24. Cariology

- Historical background
- Definition, Aetiology & Pathogenesis
- Caries pattern in primary, young permanent and permanent teeth in children.
- Rampant caries, early childhood caries and extensive caries. Definition, aetiology, Pathogenesis, Clinical features, Complications & Management.
- Role of diet and nutrition in Dental Caries
- Dietary modifications & Diet counseling.
- Subjective & objective methods of Caries detection with emphasis on Caries Activity tests, Caries prediction, Caries susceptibility & their clinical Applications

25. Pediatric Oral Medicine & Clinical Pathology: Recognition & Management of developmental dental anomalies, teething disorders, stomatological conditions, mucosal lesions, viral infections etc.

26. Congenital Abnormalities in Children: Definition, Classification, Clinical features

& Management.

27. Dental Emergencies in children and their Management.

28. Dental Materials used in Pediatric Dentistry.

29. Preventive Dentistry:

- Definition
- Principles & Scope

- Types of prevention
- Different preventive measures used in Pediatric Dentistry including fissure sealants and caries vaccine.

30. Dental Health Education & School Dental Health Programmes.

31. Dental Health concepts, Effects of civilization and environment, Dental Health delivery system, Public Health measures related to children along with principles of Pediatric Preventive Dentistry.

32. Fluorides:

- Historical background
- Systemic & Topical fluorides
- Mechanism of action
- Toxicity & Management.
- Defluoridation techniques.

33. Medicological aspects in Paediatric Dentistry with emphasis on informed concept.

34. Counseling in Paediatric Dentistry

35. Case History Recording Outline of principles of examination, diagnosis & treatment planning.

36. Epidemiology: Concepts, Methods of recording & evaluation of various oral diseases. Various national & global trends of epidemiology of oral diseases.

37. Comprehensive Infant Oral Health Care.

38. Principles of Bio-Statistics & Research Methodology & Understanding of Computers and Photography

39. Comprehensive cleft care management with emphasis on counseling, feeding, nasoalveolar bone remodeling, speech rehabilitation.

40. Setting up of Pedodontics & Preventive Dentistry Clinic.

41. Emerging concept in Paediatric Dentistry of scope of laser/minimum invasive procedures : Paediatric Dentistry.

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**PIMS-AIPET**  
**Syllabus for Prosthodontics & Crown Bridge.– Paper – II**

**1. APPLIED BASIC SCIENCES:**

- A thorough knowledge on the applied aspects of Anatomy, Embryology, Histology particularly to head and neck, Physiology, Biochemistry, Pathology, Microbiology, Virology.
- Pharmacology, Health and systematic diseases principles in surgery medicine and Anesthesia, Nutrition, Behavioral sciences, age changes, genetics, Dental Material Science, congenital defects and Syndromes and Anthropology, Biomaterial Sciences, Bio-engineering and Bio-medical and Research Methodology as related to Masters degree prosthodontics including crown & bridge and implantology It is desirable to have adequate knowledge in Bio-statistics, Research Methodology and use of computers. To develop necessary teaching skills in Prosthodontics including crown and bridge and Implantology.

**2. APPLIED ANATOMY OF HEAD AND NECK:**

- General Human Anatomy – Gross Anatomy, anatomy of Head and Neck in detail. Cranial and facial bones, TMJ and function, muscles of mastication and facial expression, muscles of neck and back including muscles of deglutition and tongue, arterial supply and venous drainage of the head and neck, anatomy of the Para nasal sinuses with relation to the V<sup>th</sup> cranial nerve. General consideration of the structure and function of the brain. Brief considerations of V, VII, XI, XII, cranial nerves and autonomic nervous system of the head and neck.
- The salivary glands, Pharynx, Larynx Trachea, Esophagus, Functional Anatomy of mastication, Deglutition, speech, respiration, and circulation, teeth eruption, morphology, occlusion and function. Anatomy of TMJ, its movements and myofascial pain dysfunction syndrome
- Embryology – Development of the face, tongue, jaws, TMJ, Paranasal sinuses, pharynx, larynx, trachea, esophagus, Salivary glands, Development of oral and Para oral tissue including detailed aspects of tooth and dental hard tissue formation
- Growth & Development – Facial form and Facial growth and development overview of Dentofacial growth process and physiology from fetal period to maturity and old age, comprehensive study of craniofacial biology. General physical growth, functional and anatomical aspects of the head, changes in craniofacial skeletal, relationship between development of the dentition and facial growth.
- Dental Anatomy – Anatomy of primary and secondary dentition, concept of occlusion, mechanism of articulation, and masticatory function. Detailed structural and functional study of the oral dental and Para oral tissues. Normal occlusion, development of occlusion in deciduous mixed and permanent dentitions, root length, root configuration, tooth-numbering system.
- Histology – histology of enamel, dentin, Cementum, periodontal ligament and alveolar bone, pulpal anatomy, histology and biological consideration. Salivary glands and Histology of epithelial tissues including glands. Histology of general and specific connective tissue including bone, hematopoietic system, lymphoid etc.
- Muscle and neural tissues, Endocrinal system including thyroid, Salivary glands, Histology of skin, oral mucosa, respiratory mucosa, connective tissue, bone, cartilage, cellular elements of blood vessels, blood, lymphatic, nerves, muscles, tongue, tooth and its surrounding structures.



- Anthropology & Evolution – Comparative study of tooth, joints, jaws, muscles of mastication and facial expression, tongue, palate, facial profile and facial skeletal system. Comparative anatomy of skull, bone, brain, musculo – skeletal system, neuromuscular coordination, posture and gait – plantigrade and orthograde posture.
- Applied Genetics and Heredity – Principles of orofacial genetics, molecular basis of genetics, genetic risks, counseling, bioethics and relationship to Orthodontic management. Dentofacial anomalies, Anatomical, psychological and pathological characteristics of major groups of developmental defects of the orofacial structures
- Cell biology – Detailed study of the structure and function of the mammalian cell with special emphasis on ultra structural features and molecular aspects. Detailed consideration of Inter cellular junctions. Cell cycle and division, cell-to-cell and cell- extra cellular matrix interactions.

### **3. APPLIED PHYSIOLOGY AND NUTRITION :**

- Introduction, Mastication, deglutition, digestion and assimilation, Homeostasis, fluid and electrolyte balance. Blood composition, volume, function, blood groups and hemorrhage, Blood transfusion, circulation, Heart, Pulse, Blood pressure, capillary and lymphatic circulation, shock, respiration, control, anoxia, hypoxia, asphyxia, artificial respiration. Endocrine glands in particular reference to pituitary, parathyroid and thyroid glands and sex hormones. Role of calcium and Vit D in growth and development of teeth, bone and jaws. Role of Vit. A, C and B complex in oral mucosal and periodontal health. Physiology and function of the masticatory system. Speech mechanism, mastication, swallowing and deglutition mechanism, salivary glands and Saliva

### **4. ENDOCRINES:**

- General principles of endocrine activity and disorders relating to pituitary, thyroid, pancreas, parathyroid, adrenals, gonads, including pregnancy and lactation. Physiology of saliva, urine formation, normal and abnormal constituents, Physiology of pain, Sympathetic and parasympathetic nervous system. Neuromuscular co-ordination of the stomatognathic system.

### **5. APPLIED NUTRITION:**

- General principles, balanced diet, effect of dietary deficiencies and starvation, Diet, digestion, absorption, transportation and utilization, diet for elderly patients.

### **6. APPLIED BIOCHEMISTRY:**

- General principles governing the various biological activities of the body, such as osmotic pressure, electrolytic dissociation, oxidation-reduction, etc. general composition of the body, intermediary metabolism, Carbohydrates, proteins, lipids and their metabolism, Enzymes, Vitamins, and minerals, Hormones, Blood and other body fluids, Metabolism of inorganic elements, Detoxication in the body, Anti metabolites

### **7. APPLIED PHARMACOLOGY AND THERAPEUTICS:**

- Definition of terminologies used – Dosage and mode of administration of drugs. Action and fate of drugs in the body, Drug addiction, tolerance and hypersensitive reactions, Drugs acting on the central nervous system, general anesthetics hypnotics. Analeptics and tranquilizers, Local anesthetics, Chemotherapeutics and antibiotics, Antitubercular and anti syphilitic drugs, Analgesics and antipyretics, Antiseptics, styptics, Sialogogues and antisialogogues, Haematinics, Cortisone, ACTH, insulin and other antidiabetics vitamins: A, D, B – complex group C and K etc. Chemotherapy and Radiotherapy

## **8. APPLIED PATHOLOGY:**

- Inflammation, repair and degeneration, Necrosis and gangrene, Circulatory disturbances, Ischemia, hyperemia, chronic venous congestion, edema, thrombosis, embolism and infarction. Infection and infective granulomas, Allergy and hypersensitive reaction, Neoplasm; Classification of tumors, Carcinogenesis, characteristics of benign and malignant tumors, spread of tumors. Applied histo pathology and clinical pathology.

## **9. APPLIED MICROBIOLOGY:**

- Immunity, knowledge of organisms commonly associated with diseases of the oral cavity (morphologycultural characteristics etc) of strepto, staphylo, pneumo, gono and meningococci, Clostridia group of organisms, Spirochetes, organisms of tuberculosis, leprosy, diphtheria, actinomycosis and moniliasis etc. Virology, Cross infection control, sterilization and hospital waste management
- i. **Applied Oral Pathology:** Developmental disturbances of oral and Para oral structures, Regressive changes of teeth, Bacterial, viral and mycotic infections of oral cavity, Dental caries, diseases of pulp and periapical tissues, Physical and chemical injuries of the oral cavity, oral manifestations of metabolic and endocrine disturbances, Diseases of the blood and blood forming organism in relation to the oral cavity, Periodontal diseases, Diseases of the skin, nerves and muscles in relation to the Oral cavity.
- ii. **Laboratory determinations:** Blood groups, blood matching, R.B.C. and W.B.C. count, Bleeding and clotting time, Smears and cultures – urine analysis and culture

## **10. BIOSTATISTICS:**

- Study of Biostatistics as applied to dentistry and research. Definition, aim characteristics and limitations of statistics, planning of statistical experiments, sampling, collection, classification and presentation of data (Tables, graphs, pictograms etc) Analysis of data

## **11. INTRODUCTION TO BIOSTATISTICS:**

- Scope and need for statistical application to biological data. Definition of selected terms – scale of measurements related to statistics, Methods of collecting data, presentation of the statistical diagrams and graphs. Frequency curves, mean, mode of median, Standard deviation and co-efficient of variation, Correlation – Co-efficient and its significance, Binominal distributions normal distribution and Poisson distribution, Tests of significance

## **12. RESEARCH METHODOLOGY:**

- Understanding and evaluating dental research, scientific method and the behavior of scientists, understanding to logic – inductive logic – analogy, models, authority, hypothesis and causation, Quacks, Cranks, Abuses of Logic, Measurement and Errors of measurement, presentation of results, Reliability, Sensitivity and specificity diagnosis test and measurement, Research Strategies, Observation, Correlation, Experimentation and Experimental design. Logic of statistical interference balance judgements, judgement under uncertainty, clinical vs., scientific judgement, problem with clinical judgement, forming scientific judgements, the problem of contradictory evidence, citation analysis as a Means of literature evaluation, influencing judgement : Lower forms of Rhetorical life, Denigration, Terminal, Inexactitude.

### **13. APPLIED RADIOLOGY:**

- Introduction, radiation, background of radiation, sources, radiation biology, somatic damage, genetic damage, protection from primary and secondary radiation, Principles of X-ray production, applied principles of radio therapy and after care.

### **14. ROENTGENOGRAPHIC TECHNIQUES:**

- Intra oral: Extra oral roentgenography, Methods of localization digital radiology and ultra sound, Normal anatomical landmarks of teeth and jaws in radiograms, temporomandibular joint radiograms, neck radiograms.

### **15. APPLIED MEDICINE:**

- Systemic diseases and its influence on general health and oral and dental health. Medical emergencies in the dental offices – Prevention, preparation, medico legal consideration, unconsciousness, respiratory distress, altered consciousness, seizures, drug related emergencies, chest pain, cardiac arrest, premedication, and management of ambulatory patients, resuscitation, applied psychiatry, child, adult and senior citizens. Assessment of case, premedication, inhibition, monitoring, extubation, complication assist in O.T. for anesthesia.

### **16. APPLIED SURGERY & ANESTHESIA:**

- General principles of surgery, wound healing, incision wound care, hospital care, control of hemorrhage, electrolyte balance. Common bandages, sutures, splints, shifting of critically ill patients, prophylactic therapy, bone surgeries, grafts, etc, surgical techniques, nursing assistance, anesthetic assistance. Principles in speech therapy, surgical and radiological craniofacial oncology, applied surgical ENT and ophthalmology.

### **17. PLASTIC SURGERY:**

- Applied understanding and assistance in programmes of plastic surgery for prosthodontics therapy.

### **18. APPLIED DENTAL MATERIAL:**

- All materials used for treatment of craniofacial disorders – Clinical, treatment, and laboratory materials, Associated materials, Technical consideration, shelf life, storage, manipulations, sterilization, and waste management.
- Students shall be trained and practiced for all clinical procedures with an advanced knowledge of theory of principles, concepts and techniques of various honorably accepted methods and materials for Prosthodontics, treatment modalities includes honorable accepted methods of diagnosis, treatment plan, records maintenance, and treatment and laboratory procedures and after care and preventive.
- Understanding all applied aspects for achieving physical, psychological well being of the patients for control of diseases and / or treatment related syndromes with the patient satisfaction and restoring function of Cranio mandibular system for a quality life of a patient
- The theoretical knowledge and clinical practice shall include principles involved for support, retention, stability, esthetics, phonation, mastication, occlusion, behavioral, psychological, preventive and social aspects of science of Prosthodontics including Crown & Bridge and Implantology
- Theoretical knowledge and clinical practice shall include knowledge for laboratory practice and material science. Students shall acquire knowledge and practice of history taking,

systemic and oro and Craniofacial region and diagnosis and treatment plan and prognosis record maintaining.

- A comprehensive rehabilitation concept with pre prosthetic treatment plan including surgical Reevaluation and prosthodontic treatment plan, impressions, jaw relations, utility of face bow and articulators, selection and positioning of teeth for retention, stability, esthetics, phonation and psychological comfort. Fit and insertion and instruction for patients after care and preventive Prosthodontics . Management of failed restorations.
- TMJ syndromes, occlusion rehabilitation and craniofacial esthetics. State of the art clinical methods and materials for implants supported extra oral and intra oral prosthesis.
- Student shall acquire knowledge of testing biological, mechanical and other physical property of all material used for the clinical and laboratory procedures in prosthodontic therapy.
- Students shall acquire full knowledge and practice Equipments, instruments, materials, and laboratory procedures at a higher competence with accepted methods.
- All clinical practice shall involve personal and social obligation of cross infection control, sterilization and waste management.

## **19. REMOVABLE PROSTHODONTICS AND IMPLANTS**

- Prosthodontic treatment for completely edentulous patients – Complete denture, immediate complete denture, single complete denture, tooth supported complete denture, Implant supported Prosthesis for completely edentulous
  - Prosthodontic treatment for partially edentulous patients: - Clasp-retained partial dentures, intra coronal and extra coronal precision attachments retained partial dentures, maxillofacial prosthesis. Prosthodontic treatment for edentulous patients: - Complete Dentures and Implant supported Prosthesis.
  - Complete Denture Prosthesis – Definitions, terminology, G.P.T., Boucher’s clinical dental terminology
  - Scope of Prosthodontic – the Cranio Mandibular system and its functions, the reasons for loss of teeth and methods of restorations, Infection control, cross infection barrier – clinical and laboratory and hospital and lab waste management
- a) Edentulous Predicament, Biomechanics of the edentulous state, Support mechanism for the natural dentition and complete dentures, Biological considerations, Functional and Para functional considerations, Esthetic, behavioral and adaptive responses, Temporomandibular joints changes.
  - b) Effects of aging of edentulous patients – aging population, distribution and edentulism in old age, impact of age on edentulous mouth – Mucosa, Bone, saliva, jaw movements in old age, taste and smell, nutrition, aging, skin and teeth, concern for personal appearance in old age
  - c) Sequelae caused by wearing complete denture – the denture in the oral environment –Mucosal reactions, altered taste perception, burning mouth syndrome, gagging, residual ridge reduction, denture stomatitis, flabby ridge, denture irritation hyperplasia, traumatic Ulcers, Oral cancer in denture wearers, nutritional deficiencies, masticatory ability and performance, nutritional status and masticatory functions.
  - d) Temporomandibular disorders in edentulous patients – Epidemiology, etiology and management, Pharmacotherapy, Physical modalities, and Bio-behavioral modalities
  - e) Nutrition Care for the denture wearing patient – Impact of dental status on food intake, Gastrointestinal functions, nutritional needs and status of older adults, Calcium and bone health, vitamin and herbal supplementation, dietary counseling and risk factor for malnutrition in patients with dentures and when teeth are extracted.

- f) Preparing patient for complete denture patients – Diagnosis and treatment planning for edentulous and partially edentulous patients – familiarity with patients, principles of perception, health questionnaires and identification data, problem identification, prognosis and treatment identification data, problem identification, prognosis and treatment planning – contributing history – patient’s history, social information, medical status – systemic status with special reference to debilitating diseases, diseases of the joint, cardiovascular, disease of the skin, neurological disorders, oral malignancies, climacteric, use of drugs, mental health – mental attitude, psychological changes, adaptability, geriatric changes – physiologic, pathological, pathological and intra oral changes. Intra oral health – mucosa membrane, alveolar ridges, palate and vestibular sulcus and dental health. Data collection and recording, visual observation, radiography, palpation, measurement – sulci or fossae, extra oral measurement, the vertical dimension of occlusion, diagnostic casts. Specific observations – existing dentures, soft tissue health, hard tissue health – teeth, bone Biomechanical considerations – jaw relations, border tissues, saliva, muscular development – muscle tone, neuromuscular co-ordination, tongue, cheek and lips. Interpreting diagnostic findings and treatment planning
- g) Pre prosthetic surgery – Improving the patients denture bearing areas and ridge relations: - non surgical methods – rest for the denture supporting tissues, occlusal correction of the old prosthesis, good nutrition, conditioning of the patients musculature, surgical methods – Correction of conditions, that preclude optimal prosthetic function – hyperplastic ridge – epulis fissuratum and papillomatosis, frenular attachments and pendulous maxillary tuberosities, ridge augmentation, maxillary and Mandibular oral implants, corrections of congenital deformities, discrepancies in jaw size, relief of pressure on the mental foramen, enlargement of denture bearing areas, vestibuloplasty, ridge augmentation, replacement of tooth roots with Osseo integrated denture implants.
- h) Immediate Denture – Advantages, disadvantages, contra indication, diagnosis treatment plan and prognosis, Explanation to the patient, Oral examinations, examination of existing prosthesis, tooth modification, prognosis, referrals/adjunctive care, oral prophylaxis and other treatment needs. First extraction/surgical visit, preliminary impressions and diagnostic casts, management of loose teeth, custom trays, final impressions and final casts two tray or sectional custom impression tray, location of posterior limit and jaw relation records, setting the denture teeth / verifying jaw relations and the patient try in, laboratory phase, setting of anterior teeth, Wax contouring, flasking and boil out, processing and finishing, surgical templates, surgery and immediate denture insertion, post operative care and patient instructions, subsequent service for the patient on the immediate denture, over denture tooth attachments, implants or implant attachments.
- i) Over dentures (tooth supported complete dentures) – indications and treatment planning, advantages and disadvantages, selection of abutment teeth, lose of abutment teeth, tooth supported complete dentures. Non-coping abutments, abutment with copings, abutments with attachments, submerged vital roots, preparations of the retained teeth.
- j) Single Dentures: Single Mandibular denture to oppose natural maxillary teeth, singlecomplete maxillary denture to oppose natural Mandibular teeth to oppose a partially edentulous Mandibular arch with fixed prosthesis, partially edentulous Mandibular arch with removable partial dentures. Opposing existing complete dentures, preservation of the residual alveolar ridge, necessity for retaining maxillary teeth and mental trauma.
- k) Art of communication in the management of the edentulous predicament –Communication – scope, a model of communication, why communication important, what are the elements of effective communications, special significance of doctor / patient communication, doctor behavior, The iatrosedative (doctor & act of making calm)recognizing and acknowledging the

problem, exploring and identifying the problem, interpreting and explaining the problem, offering a solution to the problem for mobilize their resources to operate most efficient way, recognizing and acknowledging the problem, interpreting and explaining the problem, offering a solution to the problem.

- l) Materials prescribed in the management of edentulous patients - Denture base materials, General requirements of biomaterials for edentulous patients, requirement of an ideal denture base, chemical composition of denture base resins, materials used in the fabrication of prosthetic denture teeth, requirement of prosthetic denture teeth, denture lining materials and tissue conditioners, cast metal alloys as denture, bases – base metal alloys.
- m) Articulators – Classification, selection, limitations, precision, accuracy and sensitivity, and Functional activities of the lower member of the articulator and uses, n) Fabrications of complete dentures – complete denture impressions – muscles of facial expressions and anatomical landmarks, support, retention, stability, aims and objectives – preservation, support, stability, aesthetics, and retention. Impression materials and techniques – need of 2 impressions the preliminary impression and final impression Developing an analogue / substitute for the maxillary denture bearing area – anatomy of supporting structures – mucous membrane, hard palate, residual ridge, shape of the supporting structure and factors that influence the form and size of the supporting bones, incisive foramen, maxillary tuberosity, sharp spiny process, torus palatinus, Anatomy of peripheral or limiting structures, labial vestibule, Buccal vestibule, vibrating line, preliminary and final impressions, impression making, custom tray and refining the custom tray, preparing the tray to secure the final impression, making the final impression, boxing impression and making the casts Developing an analogue / substitute for the Mandibular denture bearing areaMandible – anatomy of supporting structure, crest of the residual ridge, the Buccal shelf, shape of supporting structure, mylohyoid ridge, mental foramen, genial tubercles, torus mandibularis, Anatomy of peripheral or limiting structure – labial vestibule, Buccal vestibule, lingual border, mylohyoid muscle, retromylohyoid fossa, sublingual gland region, alveolingual sulcus, Mandibular impressions – preliminary impressions, custom tray, refining, preparing the tray\, final impressions.
- o) Mandibular movements, Maxillo mandibular relation and concepts of occlusion – Gnathology, identification of shape and location of arch form – Mandibular and maxillary, occlusion rim, level of occlusal plane and recording of trail denture base, tests to determine vertical dimension of occlusion, interocclusal, centric relation records, Biological and clinical considerations in making jaw relation records and transferring records from the patients to the articulator, Recording of Mandibular movements – influence of opposing tooth contacts, Temporomandibular joint, muscular involvements, neuromuscular regulation of Mandibular motion, the envelope of motion, rest position,
- p) Maxillo – Mandibular relations – the centric, eccentric, physiologic rest position, vertical dimension, occlusion, recording methods – mechanical, physiological, Determining the horizontal jaw relation – Functional graphics, tactile or interocclusal check record method, Orientation / sagittal relation records, Arbitrary / Hinge axis and face bow record, significance and requirement, principles and biological considerations and securing on articulators.
- q) Selecting and arranging artificial teeth and occlusion for the edentulous patient – anterior tooth selection, posterior tooth selection, and principles in arrangement of teeth, and factors governing position of teeth – horizontal, vertical. The inclinations and arrangement of teeth for aesthetics, phonetics and mechanics – to concept of occlusion.
- q) The Try in – verifying vertical dimension, centric relation, establishment of posterior palatal seal, creating a facial and functional harmony with anterior teeth, harmony of spaces of

individual teeth position, harmony with sex, personality and age of the patient, co-relating aesthetics and incisal guidance.

- r) Speech considerations with complete dentures – speech production – structural and functional demands, neuropsychological background, speech production and the roll of teeth and other oral structures – bilabial sounds, labiodentals sounds, linguodental sounds, linguoalveolar sound, articulatoric characteristics, acoustic characteristics, auditory characteristics, linguopalatal and linguoalveolar sounds, speech analysis and prosthetic considerations.
- s) Waxing contouring and processing the dentures their fit and insertion and after care – laboratory procedure – wax contouring, flasking and processing, laboratory remount procedures and selective, finishing and polishing. Critiquing the finished prosthesis – doctors evaluation, patients evaluation, friends evaluation, elimination of basal surface errors, errors in occlusion, interocclusal records for remounting procedures – verifying centric relation, eliminating occlusal errors, special instructions to the patient – appearance with new denture, mastication with new dentures, speaking with new dentures, speaking with new dentures, oral hygiene with dentures, preserving of residual ridges and educational material for patients, maintaining the comfort and health of the oral cavity in the rehabilitated edentulous patients. Twenty-four hours oral examination and treatment and preventive Prosthodontic – periodontic recall for oral examination 3 to 4 months intervals and yearly intervals.
- t) Implant supported Prosthesis for partially edentulous patients – Science of Osseo integration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients: current and future directions.
- u) Implant supported prosthesis for partially edentulous patients – Clinical and laboratory protocol: Implant supported prosthesis, managing problems and complications
  - Introduction and Historical Review
  - Biological, clinical and surgical aspects of oral implants
  - Diagnosis and treatment planning
  - Radiological interpretation for selection of fixtures
  - Radiological interpretation for selection of fixtures
  - Splints for guidance fort surgical placement of fixtures
  - Intra oral plastic surgery
  - Guided bone and Tissue generation consideration for implants fixture.
  - Implants supported prosthesis for complete edentulism and partial edentulism
  - Occlusion for implants support prosthesis.
  - Peri-implant tissue and Management
  - Peri – implant and management
  - Maintenance and after care
  - Management of failed restoration.
  - Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.
- v) Prosthodontic treatment for partially edentulous patients – Removable partial Prosthodontics
  - i. Scope, definition and terminology, Classification of partially edentulous arches – requirements of an acceptable methods of classification, Kennedy’s classification, Applegate’s rules for applying the Kennedy classification
  - ii. Components of RPD – major connector – mandibular and maxillary, minor connectors, design, functions, form and location of major and minor connectors, tissue stops, finishing lines, reaction of tissue to metallic coverage Rest and rest seats – from of the Occlusal rest and rest seat, interproximal occlusal rest seats, internal occlusal rests,

possible movements of partial dentures, support for rests, lingual rests on canines and incisor teeth, incisal rest and rest seat.

- Direct retainer- Internal attachment, extracoronal direct retainer, relative uniformity of retention, flexibility of clasp arms, stabilizing – reciprocal clasp are, criteria for selecting a given clasp design, the basic principles of clasp design, circumferential clasp, bar clasp, combination clasp and other type of retainers.
- Indirect Retainer – denture rotation about an axis, factors influencing effectiveness of indirect retainers, forms of indirect retainers, auxiliary Occlusal rest, canine extensions from Occlusal rests, canine rests, continuous bar retainers and linguoplates, modification areas, rugae support, direct – indirect retention.
- Principles of removable partial Denture design – bio mechanic considerations, and the factors influence after mouth preparations – Occlusal relationship of remaining teeth, orientation of Occlusal plane, available space for restoration, arch integrity, tooth morphology, response of oral structure to previous stress, periodontal conditions, abutment support, tooth supported and tooth and tissue supported, need for indirect retention, clasp design, need for rebasing, secondary impression, need for abutment tooth modification, type of major connector, type of teeth selection, patients past experience, method of replacing single teeth or missing anterior teeth. Difference between tooth supported and tissue supported partial dentures, essential of partial denture design, components of partial denture design, tooth support, ridge support, stabilizing components, guiding planes, use of splint bar for denture support, internal clip attachments, overlay abutment as support for a denture base, use of a component partial to gain support.

- iii. Education of patient
- iv. Diagnosis and treatment planning
- v. Design, treatment sequencing and mouth preparation
- vi. Surveying – Description of dental surveyor, purposes of surveying, Aims and objectives in surveying of diagnostic cast and master cast, Final path of placement, factors that determine path of placement and removal, Recording relation of cast to surveyor, measuring retention, Blocking of master cast – paralleled blockout, shaped blockout, arbitrary blockout and relief.
- vii. Diagnosis and treatment planning – Infection control and cross infection barriers – clinical and laboratory and hospital waste management, Objectives of prosthodontic treatment, Records, systemic evaluation, Oral examination, preparation of diagnostic cast, interpretation of examination data, radiographic interpretation, periodontal considerations, caries activity, prospective surgical preparation, endodontic treatment, analysis of occlusal factors, fixed restorations, orthodontic treatment, need for determining the design of components, impression procedures and occlusion, need for reshaping remaining teeth, reduction of unfavorable tooth contours, differential diagnosis : fixed or removable partial dentures, choice between complete denture and removable partial dentures, choice of materials
- viii. Preparation of Mouth for removable partial dentures – Oral surgical preparation, conditioning of abused and irritated tissues, periodontal preparation – objectives of periodontal therapy, periodontal diagnosis, control therapy, periodontal surgery.
- ix. Preparation of Abutment teeth – Classification of abutment teeth, sequence of abutment preparations on sound enamel or existing restorations, conservative restoration< using crowns, splinting abutment teeth, utilization, temporary crowns to be used as abutment.



- x. Impression Materials and Procedures for Removable Partial Dentures – Rigid materials, thermoplastic materials, Elastic materials, Impressions of the partially edentulous arch, Tooth supported, tooth tissue supported, Individual impression trays.
- xi. Support for the Distal Extension Denture Base – Distal extension removable partial denture, Factors influencing the support of distal extension base, Methods for obtaining functional support for the distal extension base.
- xii. Laboratory Procedures – Duplicating a stone cast, Waxing the partial denture framework, Anatomic replica patterns, Spruing, investing, burnout, casting and finishing of the partial denture framework, making record bases, occlusion rims, making a stone occlusal template from a functional occlusal record, arranging posterior teeth to an opposing cast or template, types of anterior teeth, waxing and investing the partial denture before processing acrylic resin bases, processing the denture, remounting and occlusal correction to an occlusal template, polishing the denture.
- xiii. Initial placement, adjustment and servicing of the removable partial denture – adjustments to bearing surfaces of denture framework, adjustment of occlusion in harmony with natural and artificial dentition, instructions to the patient, follow – up services
- xiv. Relining and Rebased the removable partial denture – Relining tooth supported dentures bases, relining distal extension denture bases, methods of reestablishing occlusion on a relined partial denture.
- xv. Repairs and additions to removable partial dentures – Broken clasp arms, fractured occlusal rests, distortion or breakage of other components – major and minor connectors, loss of a tooth or teeth not involved in the support or retention of the restoration, loss of an abutment tooth necessitating its replacement and making a new direct retainer, Other types of repairs, Repair by soldering.
- xvi. Removable partial denture considerations in maxillofacial prosthetics – Maxillofacial prosthetics, intra oral prosthesis, design considerations, maxillary prosthesis, Obturators, speech aids, palatal lifts, palatal augmentations, mandibular prosthesis, treatment planning, framework design, class I resection, Class II resection, mandibular flange prosthesis, jaw relation record
- xvii. Management of failed restorations and work authorization.

## **20. MAXILLOFACIAL REHABILITATION:**

- Scope, terminology, definitions, cross infection control and hospital waste management, work authorization. Behavioral and psychological issues in Head and neck cancer, Psychodynamic interactions – clinician and patient – Cancer Chemotherapy: Oral Manifestations, Complications, and management.
- Radiation therapy of head and neck tumors: Oral effects, Dental manifestations and dental treatment:
- Etiology, treatment and rehabilitation (restoration) – Acquired defects of the mandible, acquired defects of hard palate, soft palate, clinical management of edentulous and partially edentulous maxillectomy patients, Facial defects, Restoration of speech, Velopharyngeal function, cleft lip and palate, cranial implants, maxillofacial trauma, Lip and cheek support prosthesis, Laryngectomy aids
- Obstructive sleep apnoea, Tongue prosthesis, Esophageal prosthesis, Vaginal radiation carrier, Burn stents, Nasal stents, Auditory inserts, trismus appliances, mouth controlled devices for assisting the handicapped, custom prosthesis for lagophthalmos of the eye. Osseo integrated supported facial and maxillofacial prosthesis. Resin bonding for maxillofacial prosthesis, Implant rehabilitation of the mandible compromise by radiotherapy, Craniofacial Osseo

integration, Prosthodontic treatment, Material and laboratory procedures for maxillofacial prosthesis.

## **21. OCCLUSION**

### **22. EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS:**

- Scope, definition, terminology, optimum oral health, anatomic harmony, functional harmony, occlusal stability, causes of deterioration of dental and oral health, Anatomical, physiological, neuro – muscular, psychological, considerations of teeth, muscles of mastication, temporomandibular joint, intra oral and extra oral and facial musculatures, the functions of Cranio mandibular system.
- Occlusal therapy, the stomatognathic system, centric relation, vertical dimension, the neutral zone, the occlusal plane, differential diagnosis of temporomandibular disorders, understanding and diagnosing intra articular problems, relating treatment to diagnosis of internal derangements of TMJ, Occlusal splints, Selecting instruments for occlusal diagnosis and treatment, mounting casts, Pankeymann- schuyler philosophy of complete occlusal rehabilitation, long centric, anterior guidance, restoring lower anterior teeth, restoring upper anterior teeth, determining the type of posterior occlusal contours, methods for determining the plane of occlusion, restoring lower posterior teeth, restoring upper posterior teeth, functionally generated path techniques for recording border movements intra orally, occlusal equilibration, Bruxism, Procedural steps in restoring occlusions, requirements for occlusal stability, solving occlusal problems through programmed treatment planning, splinting, solving – occlusal wear problems, deep overbite problems, anterior overjet problems, anterior open bite problems. Treating – end to end occlusion, splayed anterior teeth, cross bite patient, Crowded, irregular, or interlocking anterior bite, using Cephalometric for occlusal analysis, solving severe arch malrelationship problems, transcranial radiography, postoperative care of occlusal therapy.

### **23. FIXED PROSTHODONTICS**

- Scope, definitions and terminology, classification and principles, design, mechanical and biological considerations of components – Retainers, connectors, pontics, work authorization.
- Diagnosis and treatment planning – patients history and interview, patients desires and expectations and needs, systemic and emotional health, clinical examinations – head and neck, oral – teeth, occlusal and periodontal, Preparation of diagnostic cast, radiographic interpretation, Aesthetics, endodontics considerations, abutment selection – bone support, root proximities and inclinations, selection of abutments, for cantilever, pier abutments, splinting, available tooth structures and crown morphology, TMJ and muscles mastication and comprehensive planning and prognosis.
- Management of Carious teeth – caries in aged, caries control, removal carious, protection of pulp, reconstruction measure for compromising teeth – retentive pins, horizontal slots, retention grooves, prevention of caries, diet, prevention of root caries and vaccine for caries.
- Periodontal considerations – attachment units, ligaments, gingivitis, periodontitis. Microbiological aspect of periodontal diseases, marginal lesion, occlusal trauma, periodontal pockets attached gingiva, interdental papilla, gingival embrasures, gingival/periodontal prosthesis, radiographic interpretations of Periodontia, intraoral, periodontal splinting – Fixed prosthodontics with periodontially compromised dentitions, placement of margin restorations.

- Biomechanical principle of tooth preparations – individual tooth preparations - Complete metal Crowns – P.F.C., All porcelain – Cerestore crowns, dicor crowns, inceram etc. porcelain jacket crowns partial 3/4, frontional half, radicular 7/8, telescopic, pin–ledge, laminates, inlays, onlays and preparations for restoration of teeth–amalgam, glass Ionomer and composite resins, Resin Bond retainers, Gingival marginal preparations – Design, material selection, and biological and mechanical considerations – intracoronal retainer and precision attachments – custom made and ready made
- Isolation and fluid control – Rubber dam applications, tissue dilation – soft tissue management for cast restoration, impression materials and techniques, provisional restoration, interocclusal records, laboratory support for fixed Prosthodontics, Occlusion, Occlusal equilibration, articulators, recording and transferring of occlusal relations, cementing of restorations.
- Resins, Gold and gold alloys, glass Ionomer, restorations.
- Restorations of endodontically treated teeth, Stomatognathic Dysfunction and management
- Management of failed restorations
- Osseo integrated supported fixed Prosthodontics – Osseo integrated supported and tooth supported fixed Prosthodontics

#### **24. TMJ**

- Temporomandibular joint dysfunction – Scope, definitions, and terminology Temporomandibular joint and its function, Orofacial pain, and pain from the temporomandibular joint region, temporomandibular joint dysfunction, temporomandibular joint sounds, and temporomandibular joint disorders Anatomy related, trauma, disc displacement, Osteoarthritis/Osteoarthritis, Hyper mobility and dislocation, infectious arthritis, inflammatory diseases, Eagle’s syndrome (Styloid – stylohyoid syndrome), Synovial chondromatosis, Osteochondrrosis disease, Osteonecrosis, Nerve entrapment process, Growth changes, Tumors, Radiographic imaging
- Etiology, diagnosis and cranio mandibular pain, differential diagnosis and management of orofacial pain – pain from teeth, pulp, dentin, muscle pain, TMJ pain – psycho logic, physiologic– endogenous control, acupuncture analgesia, Placebo effects on analgesia, Trigeminal neuralgia, Temporal arteritis
- Occlusal splint therapy – construction and fitting of occlusal splints, management of occlusal splints, therapeutic effects of occlusal splints, occlusal splints and general muscles performance, TMJ joint uploading and anterior repositioning appliances, use and care of occlusal splints.
- Occlusal adjustment procedures – Reversible – occlusal stabilization splints and physical therapies, jaw exercises, jaw manipulation and other physiotherapy or irreversible therapy – occlusal repositioning appliances, orthodontic treatment, Orthognathic surgery, fixed and removable prosthodontic treatment and occlusal adjustment, removable prosthodontic treatment and occlusal adjustment, Indication for occlusal adjustment, special nature of orofacial pain, Indication for occlusal adjustment, special nature of orofacial pain, Psychopathological considerations, occlusal adjustment philosophies, mandibular position, excursive guidance,, occlusal contact scheme, goals of occlusal adjustment, significance of a slide in centric, Preclinical procedures, clinical procedures for occlusal adjustment.

#### **25. AESTHETIC**

#### **26. SCOPE, DEFINITIONS :**

- Morpho psychology and esthetics, structural esthetic rules – facial components, dental components, gingival components and physical components. Esthetics and its relationship to function – Crown morphology, physiology of occlusion, mastication, occlusal loading and clinical aspect in bio esthetic aspects, Physical and physiologic characteristic and muscular activities of facial muscle, perioral anatomy and muscle retaining exercises Smile – classification and smile components, smile design, esthetic restoration of smile, Esthetic management of the dentogingival unit, intraoral materials for management of gingival contours, and ridge contours, Periodontal esthetics, Restorations – Tooth colored restorative materials, the clinical and laboratory aspects, marginal fit, anatomy, inclinations, form, size, shape, color, embrasures, contact point.

**Pravara Institute of Medical Sciences (Deemed to be University)**  
**All India Ph. D. Entrance Test**  
**PIMS -AIPET**  
**Syllabus for: Oral Medicine and Radiology- Paper II**

**1. GENERAL HUMAN ANATOMY**

**i. Anatomy of Face**

- Skin and subcutaneous tissue of oral cavity, face, scalp and neck. Osteology of skull, zygomatic bone, maxilla, mandible, frontal, temporal, occipital in detail including ossification. Muscles of Facial Expression, muscles of mastication.
- Vascular supply of face, neck and oral cavity. Nerve supply of face, neck and oral cavity.
- Lymphatic drainage of face, neck and oral cavity. Salivary glands and its relations.
- Cranial nerves – III, IV, V, VI, VII, IX, XI & XII and applied aspects.
- Facial spaces and their relations.
- TMJ & movements of mandible and applied aspects.
- Anatomy of paranasal sinuses and applied aspects.

**ii. Anatomy of Neck Region**

- Triangles of the neck with a special reference to carotid, digastric triangles and facial spaces.
- Vascular supply, nerve supply & lymphatic drainage of neck.
- Exocrine glands of head and neck.
- Anatomy of oral cavity, palate and applied aspects.
- Anatomy of tongue, pharynx & teeth and applied aspects.
- Anatomy of nose & nasal cavity and applied aspects.

**iii. Embryology**

- Growth & development of face and applied aspects.
  - Growth & development of zygomatic, frontal, temporal, occipital bones, maxilla, mandible, palate and applied aspects.
- Growth & development of tooth, hard tissues of teeth and applied aspects.
- Growth & development of tongue and applied aspects.
- Growth & development of pharynx and applied aspects.
  - Growth & development of endocrine glands, salivary glands & other exocrine glands and applied aspects.
- Growth & development of para nasal sinuses and applied aspects.
- Congenital anomalies of face, jaws, teeth and other parts of above mentioned.

**iv. Histology**

- Structure of cell.
  - Study of epithelium (skin and oral mucous membrane) connective tissue including cartilage, bone, muscle, nerves and nerve ganglion.
- Tongue, salivary glands, tonsil, thymus and lymph nodes.
  - Tooth and stages of development of tooth, hard tissues, soft tissues and supporting structures of tooth.
- Mitosis, meiosis, chromosomes, gene structure, mendelism and modes of inheritance.

**2. GENERAL HUMAN PHYSIOLOGY**

- Structure of cell and cellular transport across cell membrane.

- Structure of Muscle and properties of muscle fibers.
- Structure of nerve, neuron and properties of nerve fibers.
- Neuromuscular transmission and muscle contraction.
- Blood composition, functions, plasma proteins, coagulation of blood, cells of blood and blood groups.
- Body fluid, lymph, lymph gland, spleen and reticulo - endothelial system.

**i. Cardiovascular system:**

- Functional anatomy and innervation of heart, ECG, cardiac cycle, heart rate, heart sounds, cardiac out put and blood pressure.
- Circulatory shock, hypertension, cardiac failure.

**ii. Respiratory system:**

- Physiology of respiration, functional anatomy of respiratory passage & lungs, mechanism of respiration with pressure and volume changes.
- Pulmonary ventilation, composition of air and exchange of gases.
- Oxygen and carbon dioxide transport, regulation of respiration.
- Hypoxia, cyanosis, dyspnoea and periodic breathing. Artificial respiration and pulmonary function tests.

**iii. Digestive system:**

- General structure of GI tract and innervations. Structure of salivary glands, saliva composition, regulation of secretion of saliva, functions of saliva, mastication, deglutition. Stomach, gastric juice, mechanism and regulation of gastric secretion.
- Pancreas, structure, pancreatic juice and regulation. Structure of intestine, liver, gall bladder, composition of intestinal juice, bile and regulation.

**iv. Endocrine system:**

- Endocrine glands and classification.
- Hormones and mechanism of action, regulation and disorders of secretion.
- Pituitary gland, thyroid, adrenal gland, parathyroid gland & other hormones.
- Calcium Homeostasis.

**v. Central nervous system**

- Organization of CNS, synapse receptors, reflexes, sensations and tracts.
- Physiology of pain and pain pathways.
- Autonomic nervous system (Sympathetic and Parasympathetic).
- Neuronal organization at spinal cord level.

**vi. Excretory system**

- Structure, function of kidney and regulation of micturition.
- Role of kidney in formation and control of urine.

**vii. Reproductive system**

- Physiological anatomy of male and female sex organs.
- Sex differentiation, and sex hormones.

**viii. Metabolism**

- Carbohydrate, protein, fat and mineral metabolism.

**ix. Vitamins**

- Fat soluble vitamins, water soluble vitamins and normal diet.

**x. Special senses**

- Fundamental knowledge of vision, hearing, touch, taste and smell.

**3. ORAL PHYSIOLOGY**

- Saliva, mastication, deglutition.

- Calcium, Phosphorous and Fluoride metabolism.
- Theories of mineralization.
- Effects of hormones on oral structures.
- Effects of vitamins and minerals on oral structures.
- Physiology of taste
- Physiology of speech.

#### 4. **BIOCHEMISTRY**

- Carbohydrates and metabolism.
- Blood sugar and glycogen regulation.
- Proteins.
- Metabolism of proteins .
- Amino acids and inborn errors of amino acids.
- Urea cycle.
- Nucleic acids.
- Structure of DNA/RNA.
- Steps of protein synthesis and regulation of gene function.
- Fats.
- Metabolism of fat.
- Synthesis and products formed from cholesterol.
- Minerals .
- Ca / P metabolism and regulation of calcium levels.
- Iron metabolism, iodine metabolism and trace elements in nutrition.
- Energy metabolism.
- BMR.
- Enzymes and metabolic regulation.
- Vitamins.

#### 5. **PHARMACOLOGY**

##### **i. General Pharmacology**

- Introduction, routes of drug administration.
- Pharmacokinetics.
- Pharmacodynamics.
- Aspects of pharmacology: clinical pharmacology and drug development.
- Adverse drug effects.

##### **ii. Drugs acting on Autonomic Nervous System**

- Cholinergic system and drugs.
- Anticholinergic drugs and drugs acting on autonomic ganglia.
- Adrenergic system and drugs.

##### **iii. Autocoids and Related Drugs**

- Histamine and antihistaminics.
- 5-Hydroxytryptine, its antagonists and drug therapy of migraine.
- Prostaglandins, leukotrienes and platelet activating factor.
- Nonsteroidal anti-inflammatory drugs and antipyretic-analgesics.

##### **iv. Hormones and Related Drugs**

- Insulin, oral hypoglycemic drugs and glucagon.
- Corticosteroids.
- Drugs affecting calcium balance.

##### **v. Drugs Acting on Peripheral Nervous System**

- Skeletal muscle relaxants.
- Local anesthetics.
- vi. Drugs acting on Central Nervous System**
  - General anesthesia.
  - Sedative-Hypnoytics.
  - Antiepileptic drugs.
  - Antidepressent and antianxiety drugs.
  - Opiod analgesics and antagonists.
- vii. CardioVascular Drugs**
  - Drugs affecting Renin-Angiotensin system and plasma kinins.
  - Cardiac glycosides and drugs for heart failure.
  - Antiarrhythmic drugs.
  - Antianginal and other anti-ischaemic drugs.
  - Antihypertensive drugs.
- viii. Drugs Acting On Kidney**
  - Diuretics.
  - Antidiuretics.
- ix. Gastrointestinal Drugs**
  - Drugs for peptic ulcer.
  - Drugs for emesis, reflux and digestive disorders.
  - Drugs for constipation and diarrhoea.
- x. Antimicrobial drugs**
  - Sulfonamides,Cotrimoxazole and Quinolones.
  - Beta-Lactam antibiotics.
  - Tetracyclines and Chloramphenicol.
  - Aminoglycosides.
  - Macrolide,Lincosamide,Glycopeptide and antibiotics.
  - Antitubercular drugs.
  - Antileprotic drugs.
  - Antifungal drugs.
  - Antiviral drugs.
  - Antiamoebic and antihelmenthic drugs.
  - Anti cancer drugs.
  - Immunosuppressant gene therapy.
  - Antiseptics and disinfectants
  - Vitamins.
  - Emergencies in dental Office and emergency drugs in clinical dentistry,
- xi. Drugs Acting On Blood**
  - Coagulants.
  - Anticoagulants.
  - Haematinics.
  - Drug Interactions.
- xii. Dental pharmacology**
  - Antiseptics, Astringents, Obtundents.
  - Mummifying agents, Bleaching agents, Styptics,.
  - Disclosing agents, Dentifrices, Mouth washes, Fluorides.
  - Pharmacotherapy of common oral conditions in dentistry.



## 6. GENERAL PATHOLOGY

- Introduction to Pathology: etiology and pathogenesis of disease.
- The molecular and cellular basis of disease.
- Inflammation; acute and chronic.
- Role of complement system in acute inflammation.
- Chronic inflammation and granulomatous diseases.
- Cell in health, cell injury, degeneration and cell death.
- Healing; repair, regeneration.
- Role of NSAIDs in inflammation.
- Oedema, hyperemia and shock.
- Adaptive disorders of growth.
- Atrophy, hypertrophy, hyperplasia, metaplasia and dysplasia.
- Thrombosis, embolism, ischaemia and infarction.
- Necrosis and gangrene.
- Hypersensitivity.
- Anaphylaxis, Type II, Type III and cell mediated hypersensitivity.
- Infectious Diseases: Bacterial, Viral and Fungal.
- AIDS and Hepatitis.
- Diseases of the cardiovascular system.
- Diseases of haemopoietic system.
- Diseases of lymphoid system.
- Diseases of the respiratory system.
- Diseases of the kidney and urinary system.
- Diseases of GIT, liver and biliary system.
- Diseases of nervous system.
- Metabolic disorders.
- Diseases of nutrition.
- Endocrinal diseases.
- Principles of critical care medicine.

### Neoplasia

- Classification of tumors.
- Benign and malignant tumors.
- Carcinogenesis, carcinogens and metastasis.
- Grading and staging of cancer.
- Precancerous lesions and conditions

## 7. MICROBIOLOGY

- History and Introduction.
- Morphology and physiology of bacteria.
- Sterilization and disinfection.
- Culture media and culture methods.
- Identification of bacteria.
- Bacterial genetics and drug resistance.
- Infection, immunity, structure and function of immune system .
- Antigens, Antibodies and Antigen-antibody Reaction.
- Complement system, immune response and immunodeficiency diseases
- Hypersensitivity.
- Autoimmunity.
- Immunohaematology.

- Staphylococcus, Streptococcus, Pneumococcus, Gonococcus, Meningococcus.
- Corynebacterium diphtheriae.
- Clostridium.
- Mycobacterium – Tuberculosis and Leprosy.
- Spirochetes – Treponema pallidum, Borrelia vincenti.
- Actinomycetes.
- General properties of viruses, virus host interactions, virus infections
- Viral infections affecting oral cavity.
- Laboratory diagnosis, chemotherapy and immune prophylaxis in general.
- Fungal infections affecting oral cavity.
- Protozoa and helminthes.
- Normal microbial flora of human body and oral cavity.

## **8. APPLIED ORAL PATHOLOGY & ORAL MICROBIOLOGY**

- Developmental disturbances of teeth jaws & soft tissues of oral & paraoral structures.
- Dental caries.
- Diseases of pulp and sequel of pulpitis.
- Regressive alterations of teeth.
- Diseases of periodontium.
- Spread of oral infection.
- Microbial infections of oral cavity.
- Bacterial, viral and mycotic.
- Healing of oral wounds.
- Cysts and tumors of odontogenic origin.
- Benign and malignant tumors of the oral cavity.
- Tumors of salivary glands
- Physical and chemical injuries of oral cavity.
- Traumatic reactive lesions of oral cavity.
- Pigmentation of oral and paraoral region.
- Oral cancer and pre-cancer of oral cavity.
- Oral aspects of metabolic diseases.
- Diseases of bones and joints.
- Diseases of the blood and blood forming organs.
- Diseases of skin.
- Diseases of the nerves and muscles.
- Miscellaneous diseases effecting oal cavity.
- Forensic Odontology.

## **9. ORAL AND MAXILLOFACIAL RADIOLOGY**

History of Radiology.

### **i. Radiation Physics**

- Nature of radiation, composition of matter.
- X-ray tube, production of X-ray, properties of X-rays, X – ray machine.
- Factors controlling X - ray beam, interaction x – rays with matter.
- Dosimetry.
- Biological effects of radiation.
- Radiation safety and protection.
- ICRP guidelines.
- X – ray films and properties, intensifying screens and grids.

- Projection geometry.
  - Processing of image in radiology.
  - Design of X-ray department , dark room and automatic processing units.
  - Radiographic quality assurance and infection control.
  - Intra-oral radiographic techniques.
  - Extra-oral imaging techniques.
  - Specialized extra oral techniques.
  - OPG and other radiological techniques.
  - Normal radiographic anatomy.
  - Faulty radiographs and concept of ideal radiograph.
  - Localization of object by radiographic techniques.
  - Advanced imaging technique like CT scan, MRI, ultrasound & thermographic.
  - Digital radiography and its various advantages.
  - Radio nucleotide imaging.
  - Contrast radiography in salivary gland, TMJ and other radiolucent pathologies.
  - Guidelines for prescribing dental radiographs.
  - Principles of radiographic interpretation.
- ii. Radiographic interpretation
- Dental Caries, periodontal diseases, regressive changes of teeth.
  - Differential diagnosis of periapical, pericoronal and interradiolar radiolucencies .
  - Differential diagnosis of solitary and multilocular radiolucencies.
  - Differential diagnosis of generalized rarefactions of the bones.
  - Differential diagnosis of mixed radiolucent and radiopaque lesions of the jaws.
  - Differential diagnosis of periapical and solitary radiopacities.
  - Differential diagnosis of multiple separate and generalized radiopacities.
  - Diseases on Paranasal sinuses and TMJ.
  - Art of radiographic report, writing and descriptors preferred in reports.