Faculty of Dentistry

PART A – RESEARCH METHODOLOGY (Q.1–35)(COMMON - DENTISTRY)

1. Basics of Research

- Hypothesis, theory, constructs, variables
- Study designs – cross-sectional, cohort, case-control, RCTs
- Sampling techniques – random, stratified, cluster, convenience
- Sample size determination and statistical power

2. Biostatistics & Data Analysis

- Descriptive statistics – mean, median, mode, range, SD, IQR
- Normal distribution, skewness, kurtosis
- Inferential statistics – t-test, chi-square, ANOVA, correlation
- Type I & II errors, p-value, confidence intervals
- Poisson distribution, sensitivity & specificity, predictive values

3. Epidemiology & Public Health Concepts

- Prevalence vs incidence
- Epidemiological measures – odds ratio, relative risk
- Bradford Hill criteria for causality
- Herd immunity and chain of infection
- Health indices – HDI, PQLI, MPI, GII

4. Ethics, Referencing &Documentation

- Referencing styles – Harvard, APA, Vancouver, Chicago
- Research ethics and informed consent
- Bias in research – sampling, measurement, observer
- Double-blind studies and gold-standard tests

5. Research Tools &Instruments

- Likert scale and attitude measurement
- Graphical representation – histograms, scatter plots, bar charts, box plots
- Reliability and validity concepts

6. Health-related Applications

- Vaccine storage and cold chain (2–8°C)
- COVID-19 causative agent (SARS-CoV-2)
- ASHA workers and community health outreach

Conservative Dentistry & Endodontics

PART B –(Q.36–70)

1. Cavity Preparation & Restorative Dentistry

- Principles of cavity design (Black's principles)
- Restorative techniques – amalgam, composite, glass ionomer
- Recent advances in restorative materials
- Esthetic dentistry and adhesive systems

2. Endodontic Therapy

- Pulpal and periapical diseases – diagnosis & management
- Root canal treatment – access preparation, biomechanical preparation, irrigation, obturation
- Endodontic microbiology and pathology
- Retreatment procedures and endodontic surgery

3. Dental Materials in Endodontics

- Root canal sealers and obturating materials
- Gutta-percha and alternatives
- Mineral trioxide aggregate (MTA) and bioceramics
- Properties of restorative and endodontic biomaterials

4. Advances in Conservative Dentistry

- Rotary endodontics and apex locators
- Use of lasers in restorative dentistry
- Regenerative endodontics
- Post & core techniques and fiber-reinforced restorations

5. Pain & Infection Control

- Local anesthesia in conservative dentistry
- Pharmacological and non-pharmacological pain management techniques
- Antimicrobial strategies for pulp and periapical infections
- Use of intracanal medicaments

Oral Medicine & Radiology

PART B – (Q.36–70)

1. Oral Diagnostics Sciences

- Case history taking and clinical examination
- Oral mucosal lesions and diagnostic approach
- Premalignant and malignant conditions
- Oral manifestations of systemic diseases

2. Oral Radiology

- Intraoral radiography – IOPA, bitewing, occlusal
- Extraoral radiography – OPG, lateral cephalogram
- Advanced imaging – CBCT, MRI, CT
- Digital radiography – principles and applications

3. Oral Medicine

- Oral potentially malignant disorders
- Salivary gland disorders and diagnostic methods
- Temporomandibular joint (TMJ) disorders
- Cysts and tumors of the jaws
- Management of medically compromised dental patients

4. Biopsy & Laboratory Investigations

- Indications and techniques of biopsy
- Cytological smears and exfoliative cytology
- Histopathological correlation in oral lesions
- Laboratory investigations relevant to oral diseases

5. Advances in Oral Medicine & Radiology

- Cone Beam CT applications in dentistry
- MRI applications in soft tissue pathology
- Forensic odontology applications
- Radiation hazards and protection

Oral Pathology & Microbiology

PART B – (Q.36–70)

1. Fundamentals of Oral Pathology

- Developmental disturbances of teeth and jaws
- Pathogenesis of dental caries and periodontal diseases
- Pulp and periapical pathology
- Oral precancerous lesions and conditions

2. Tumor Pathology

- Benign and malignant tumors of oral cavity
- Odontogenic tumors – ameloblastoma, odontoma
- Grading and staging of oral cancers
- Metastasis and tumor markers

3. Oral Microbiology

- Normal oral microflora
- Microbiology of dental caries and periodontal infections
- Opportunistic infections – Candida, viral infections
- Antibiotic resistance in oral pathogens

4. Diagnostic Methods

- Histopathology of oral tissues
- Special stains and immunohistochemistry
- Cytological and molecular diagnostic techniques
- Biopsy procedures and processing

5. Advances & Forensic Applications

- Molecular biology in oral pathology
- Genetics of oral diseases
- Forensic odontology and age estimation
- Recent advances in diagnostic microbiology

Orthodontics & Dentofacial Orthopedics

PART B – (Q.36–70)

1. Growth & Development

- Craniofacial growth and development stages
- Theories of growth – genetic, environmental, functional matrix
- Cephalometric analysis for growth assessment
- Developmental anomalies influencing occlusion

2. Diagnosis in Orthodontics

- Case history and clinical examination
- Study models, photographs, cephalograms
- Analysis of malocclusion – Angle's classification, skeletal discrepancies
- Diagnostic aids in orthodontics

3. Biomechanics of Tooth Movement

- Principles of orthodontic tooth movement
- Tissue response to orthodontic forces
- Anchorage types and management
- Orthodontic force systems

4. Orthodontic Appliances

- Removable appliances – components, indications, limitations
- Fixed appliances – edgewise, pre-adjusted edgewise
- Functional appliances – activator, bionator, twin block
- Orthopedic appliances for growth modification

5. Cleft Lip & Palate Management

- Etiology and classification of cleft lip & palate
- Interdisciplinary approach to management
- Presurgical orthopedics and surgical correction
- Orthodontic considerations in cleft patients

6. Craniofacial Orthodontics & Syndromes

- Craniofacial anomalies and orthodontic implications
- Genetic syndromes affecting craniofacial growth
- Role of orthodontics in comprehensive care
- Recent advances in craniofacial orthodontics

Oral & Maxillofacial Surgery

PART B – (Q.36–70)

1. Surgical Anatomy & Pathology

- Anatomy of maxillofacial region relevant to surgery
- Pathophysiology of oral and maxillofacial infections
- Cysts and tumors of the jaws
- Pathology of maxillofacial trauma

2. Principles of Oral Surgery

- Diagnosis and treatment planning
- Surgical instruments and aseptic techniques
- Wound healing and management
- Anesthesia in oral surgery – local and general

3. Maxillofacial Trauma

- Fractures of mandible, maxilla, zygoma, and orbit
- Soft tissue injuries of the face
- Emergency management of maxillofacial trauma
- Surgical approaches to facial bones

4. Oral & Maxillofacial Procedures

- Impacted tooth surgery – indications and techniques
- Surgical management of cysts and tumors
- TMJ surgery – ankylosis, dislocation, joint reconstruction
- Orthognathic surgery for dentofacial deformities

5. Reconstructive Surgery

- Bone grafts and soft tissue grafts
- Flap design and microsurgery
- Cleft lip and palate surgical management
- Implants in oral & maxillofacial rehabilitation

6. Advances in Oral & Maxillofacial Surgery

- Laser surgery applications
- Distraction osteogenesis
- Virtual surgical planning and 3D printing
- Recent advances in anesthesia and pain management

Periodontology

PART B – (Q.36–70)

1. Surgical Anatomy & Pathology

- Gingiva, periodontal ligament, cementum, alveolar bone
- Blood supply and innervation of periodontium
- Histology and ultrastructure of periodontal tissues

2. Etiology& Pathogenesis

- Dental plaque and calculus
- Microbiology of periodontal diseases
- Host immune and inflammatory response
- Genetic and systemic factors in periodontitis

3. Clinical Diagnosis & Epidemiology

- Periodontal indices and diagnostic methods
- Classification of periodontal diseases
- Epidemiology of gingival and periodontal conditions
- Radiographic interpretation in periodontics

4. Periodontal Therapy – Non-Surgical

- Scaling and root planing
- Chemotherapeutic agents in periodontics
- Local and systemic antimicrobial therapy
- Host modulation therapy

5. Periodontal Therapy – Surgical

- Flap surgeries – indications, techniques, healing
- Resective and regenerative procedures
- Gingival grafts and periodontal plastic surgery
- Bone grafts and guided tissue regeneration

6. Recent Advances in Periodontology

- Lasers in periodontal therapy
- Dental implants and peri-implant diseases
- Biomaterials in periodontal regeneration
- Stem cell and gene therapy in periodontics

Prosthodontics

PART B – (Q.36–70)

1. Introduction to Prosthodontics and Principles of Rehabilitation

- Definition and scope of Prosthodontics
- Historical evolution and current advancements
- Prosthodontic treatment planning and interdisciplinary collaboration
- Esthetics, function, and phonetics in rehabilitation

2. Removable and Complete Dentures

- Indications and fabrication principles for complete dentures
- Jaw relations: Centric relation, vertical dimension, and facebow transfer
- Materials for denture bases and teeth
- Troubleshooting common problems in removable dentures

3. Fixed Prosthodontics

- Crown and bridge: Types, indications, and material selection
- Tooth preparation techniques: Full crown, partial crown, veneers
- Biomechanics of fixed partial dentures (FPD)
- Retention, resistance, and aesthetics in fixed prosthodontics

4. Implant Prosthodontics and Materials

- Fundamentals of dental implants: Types, materials, and placement techniques
- Prosthetic restoration of implants: Overdentures, single crowns, bridges
- Advances in materials: Zirconia, lithium disilicate, 3D-printed materials
- Complications in implant prosthodontics and digital workflows

5. Maxillofacial Prosthodontics and Esthetics

- Prosthetic rehabilitation for facial defects: Cleft lip, palate, and trauma
- Fabrication of ocular, nasal, and auricular prostheses
- Role of impression materials, customization, and color matching
- Aesthetic principles: Smile design, tooth color, and translucency
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6. Recent Advances in Prosthodontics

- Digital technology and CAD/CAM in prosthodontics
- Advances in biomaterials and nanotechnology
- Implantology and tissue engineering
- Genetics and regenerative prosthodontics

Pediatric and Preventive Dentistry

1. Growth and Development

- Craniofacial growth and dental development
- Eruption chronology and dental anomalies
- Factors influencing occlusal development
- Assessment of growth patterns in pediatric patients

2. Child Psychology and Behavior Management

- Psychological development of children and behavior assessment
- Non-pharmacological behavior management techniques
- Pharmacological management and conscious sedation
- Pain and anxiety control in pediatric dental practice

3. Preventive and Restorative Pediatric Dentistry

- Prevention of dental caries and early childhood caries (ECC)
- Pit and fissure sealants, fluoride therapy, and remineralization
- Pediatric restorative materials: composites, glass ionomers, bioactive materials
- Pulp therapy in primary and young permanent teeth

4. Traumatology and Space Management

- Classification and management of traumatic dental injuries
- Splinting techniques and pulpal management post-trauma
- Space maintainers and regainers: types and indications
- Management of developing dentition and interceptive orthodontics

5. Pediatric Oral Medicine and Special Health Care Needs

- Oral manifestations of systemic diseases in children
- Dental management of medically compromised and special needs children
- Management of developmental and genetic disorders
- Multidisciplinary approach to craniofacial anomalies

6. Recent Advances in Pediatric Dentistry

- Laser applications in pediatric dentistry
- Regenerative Endodontics and biomimetic materials
- Use of stem cells in pediatric dental tissue regeneration
- Genetic and molecular aspects of developmental dental anomalies

Public Health Dentistry

1. Introduction to Dental Public Health

- Definition, scope, and importance of dental public health
- Principles of epidemiology and prevention
- Natural history of disease and levels of prevention
- Concepts of health, disease, and determinants of oral health

2. Epidemiology of Oral Diseases

- Epidemiological methods and indices for oral diseases
- Surveillance systems and data interpretation
- Risk assessment and evidence-based prevention
- National and global trends in oral disease burden

3. Health Education and Promotion

- Theories and models of health behavior change
- Planning and evaluation of oral health education programs
- School and community oral health programs
- • Role of media and technology in health promotion

4. Preventive Dentistry and Community Interventions

- Water fluoridation and other fluoride delivery systems
- Pit and fissure sealants and dietary counseling
- Tobacco cessation and oral cancer prevention strategies
- Integration of oral health into general health programs

5. Dental Public Health Administration and Policy

- Organization of dental public health services
- Health care delivery systems in India and abroad
- Oral health policy formulation and program evaluation
- Health economics, cost-effectiveness, and resource allocation

6. Recent Advances in Public Health Dentistry

- Application of artificial intelligence and big data in epidemiology
- Teledentistry and mobile health initiatives
- Nanotechnology and vaccines for oral disease prevention
- Genetic, molecular, and microbiome research in oral health promotion