MANAV RACHNA INTERNATIONAL INSTITUTE OF RESEARCH & STUDIES
(Deemed to be University under section 3 of the UGC Act 1956)

Ph.D ADMISSION TEST (MR-PAT)

Ph.D in Prosthodontics

Module 1: Complete Denture Prosthodontics

1.1 Diagnosis and treatment planning
1.2 Anatomy of edentulous arches and their implications in prosthesis design
1.3 Classification of edentulism and residual ridge morphology
1.4 Pre-prosthetic surgical and non-surgical interventions
1.5 Selection of impression trays and border molding techniques
1.6 Comparison of open-mouth and closed-mouth impression techniques
1.7 Recording vertical dimension and centric relation: techniques and devices
1.8 Facebow, Hinge axis, orientation jaw relation
1.9 Occlusion rims: fabrication, adjustment, and function
1.10 Articulators
1.11 Teeth selection: anatomical, semi-anatomical, non-anatomical
1.12 Wax try-in: evaluation of esthetics, phonetics, and vertical dimension
1.13 Insertion and troubleshooting: pressure spots, overextensions, occlusal errors
1.14 Management of difficult cases: eg. xerostomia, neuromuscular disorders, resorbed ridges
1.15 Geriatric nutrition
1.16 Single dentures, immediate dentures, overdentures, unconventional dentures
1.17 Denture base materials

Module 2: Removable Partial Denture Prosthodontics

2.1 Clinical examination, diagnosis and treatment planning for partially edentulous patients
2.2 Principles of biomechanics in RPD design
2.3 Surveying
2.4 Selection and design of major and minor connectors
2.5 Types of rests and rest seats: classification, design, placement
2.6 Design of direct and indirect retainers and their role in Kennedy Class I and II
2.7 Types and function of precision and semi-precision attachments
2.8 Functional impression techniques for distal extension cases
2.9 Sequential steps in fabrication of cast partial dentures
2.10 Maintenance and hygiene practices for RPDs
2.11 Evaluation of fit and occlusion before delivery
2.12 Stress management in RPD
2.13 Various types of partial dentures

Module 3: Fixed Prosthodontics

3.1 Diagnosis and treatment planning for fixed prostheses
3.2 Biomechanics of fixed partial dentures and long-span bridges
3.3 Abutment evaluation and splinting principles
3.4 Tooth preparation for various restorations: full coverage, onlays, inlays, laminates
3.5 Margination, taper, and reduction guidelines for tooth prep
3.6 Impression materials: addition silicone, polyether, digital impressions
3.7 Impression procedures and soft tissue management

3.8 Provisionalization: direct and indirect techniques, materials
3.9 Pontic design: hygienic, ridge lap, modified ridge lap, ovate
3.10 Cementation protocols and factors affecting retention
3.11 Evaluation of occlusion in fixed prostheses
3.12 Complications & Failures: recurrent caries, fracture, loss of retention, periodontal issues

Module 4: Implantology

4.1 Patient selection criteria and medical contraindications
4.2 Diagnostic imaging: CBCT, radiographs, surgical stents
4.3 Classification of implants based on geometry, surface, and connection
4.4 Surgical asepsis, surgical guides and step-by-step implant placement
4.5 Guided bone regeneration and sinus lift procedures
4.6 Immediate vs. delayed loading and associated risks
4.7 Implant-supported overdentures and bar-retained prostheses
4.8 Hybrid prostheses: indications, planning, fabrication
4.9 Screw-retained vs. cement-retained restorations
4.10 Complications: peri-implant mucositis, implant failure, prosthetic misfit
4.11 Maintenance therapy and recall protocol for implant patients

Module 5: Maxillofacial Prosthodontics

5.1 Epidemiology and classification of maxillofacial defects
5.2 Psychological aspects and patient counseling
5.3 Diagnosis and treatment planning
5.4 Fabrication techniques: conventional, digital, and 3D printing
5.5 Materials: medical-grade silicone, PEEK, PMMA, polyurethane
5.6 Retention strategies: magnets, adhesives, osseointegrated implants
5.7 Speech therapy integration and feeding appliances
5.8 Pediatric considerations in maxillofacial prosthetics
5.9 Documentation and communication with the surgical team
5.10 Rehabilitation of oncology patients and radiation considerations
5.11 Intraoral and extraoral maxillofacial prosthesis

Module 6: Occlusion and TMJ

6.1 Determinants of occlusion and their clinical application
6.2 Centric relation vs maximum intercuspation: clinical significance
6.3 Occlusal interferences and their management
6.4 Mounting on semi-adjustable and fully adjustable articulators
6.5 Evaluation of occlusion using articulating papers, T-scan
6.6 Classification and pathophysiology of temporomandibular disorders (TMDs)
6.7 Clinical examination: joint sounds, range of motion, palpation
6.8 Imaging in TMD: MRI, CT, panoramic radiographs
6.9 Splint therapy: stabilization, repositioning, soft splints
6.10 Rehabilitation of occlusion post-orthognathic surgery or trauma

Module 7: Esthetic and Digital Prosthodontics

7.1 Smile design software and digital workflows
7.2 Role of esthetic mock-ups and wax-ups
7.3 Principles of pink and white esthetics
7.4 Digital shade matching and communication with the lab
7.5 Digital dentures: workflow, advantages, limitations
7.6 Monolithic zirconia and multilayered ceramics

7.7 3D printing in dentures, crown, bridge, and implant prosthetics
7.8 Minimally invasive esthetic restorations: veneers, no-prep options
7.9 Managing esthetic failures and revisions

Module 8: Research Methodology & Recent Advances

8.1 Research ethics and regulatory guidelines (ICMR, GCP)
8.2 Qualitative vs quantitative research
8.3 Systematic reviews and meta-analyses: methodology and interpretation
8.4 Use of statistical software: SPSS, R, GraphPad
8.5 Biostatistical tests: eg. t-tests, ANOVA, Chi-square, regression analysis
8.6 Recent advances in material sciences: graphene, nanocomposites, fiber-reinforced polymers
8.7 Smart materials and self-healing materials in prosthodontics
8.8 Digital twin technology and AI in treatment simulation
8.9 Regenerative technologies: PRF, stem cells, scaffold-based therapy

Suggested Readings:

1. Books:
   - Zarb, Bolender: Prosthodontic Treatment for Edentulous Patients
   - Shillingburg: Fundamentals of Fixed Prosthodontics
   - McCracken's Removable Partial Prosthodontics
   - Misch CE: Contemporary Implant Dentistry
   - Sheldon Winkler: Essentials of Complete Denture Prosthodontics
   - Beumer: Maxillofacial Rehabilitation
   - GPT-9: Glossary of Prosthodontic Terms
   - Journal of Prosthodontics, Journal of Prosthetic Dentistry, International Journal of Prosthodontics, The International Journal of Oral and Maxillofacial Implants
2. Weblinks:
   - https://www.ncbi.nlm.nih.gov
   - https://www.sciencedirect.com
   -https://www.prosthodontics.org/branemark/