



TEERTHANKER MAHAVEER UNIVERSITY

(Established under Govt. of U. P. Act No. 30, 2008)

Delhi Road, Moradabad (U.P.)

SYLLABUS FOR TMU RESEARCH APTITUDE TEST IN ORAL AND MAXILLOFACIAL SURGERY

The syllabus for TMU Research Aptitude Test (TRAT) in Oral and Maxillofacial Surgery is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/aptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

Applied Basic Sciences: applied anatomy, physiology, biochemistry, general and oral pathology and microbiology and pharmacology

Minor Oral Surgery: principles of surgery: developing a surgical diagnosis, basic necessities for surgery, aseptic technique, incisions, flap design tissue handling, haemostasis, dead space management, decontamination and debridement, suturing, oedema control, patient general health and nutrition, impacted tooth, exodontias, local anaesthesia, general anaesthesia, maxillary sinus, preprosthetic surgery, dental implants, endodontic surgery, cysts of jaw, distraction osteogenesis, maxillofacial trauma, management of medical emergency, sutures and techniques, hemostasis.

Maxillofacial Surgery: salivary gland, TMJ disorders, oncology, orthognathic surgery, cleftlip and palate, orthognathic surgery, cryosurgery, laser surgery, bone grafting, cyst and tumors of jaw.

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.

Craniofacial Surgery: basic knowledge of developmental 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 TMU RESEARCH APTITUDE TEST IN ORAL MEDICINE AND RADIOLOGY

The syllabus for TMU Research Aptitude Test (TRAT) in Oral Medicine and Radiology is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/aptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

Neoplasia:

1. Introduction.
2. Pre malignant and malignant lesions of oro facial region
3. Classification of Tumors.
4. Characteristics of benign and malignant tumors.
5. Carcinogenesis & Carcinogens - Chemical, Viral and Microbial.
6. Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome.
7. Spread of tumors.
8. Management: Chemotherapy, Radiotherapy.

Muco-cutaneous Lesions:

1. Red and white lesions.
2. Vesiculo - bullous lesions
3. Immunologically mediated

4. Genetic/Hereditary
5. Infections. Bacterial, Viral, Fungal and protozal
6. Mis

Bone in Health and Disease:

1. Introduction
2. Phatho-Physiology of Bone remodeling
3. Diseases effecting the jaw bones
4. Syndromes affecting bone

Psychosomatic aspects of oral diseases:

- Salivary gland disorders
- Tongue in oral and systemic diseases
- TMJ dysfunction and diseases
- Oral manifestations of systemic diseases
- Oro - facial pain
- Congenital and Hereditary disorders involving tissues of oro facial region, and Molecular Biology
- Hematological, Dermatological, Metabolic, Nutritional, &Endocrinal conditions with oral manifestations
- Neuromuscular diseases affecting oro -facial region
- Immunity as related to oro - facial lesions, including AIDS, Allergy and other miscellaneous conditions
- Cysts, Neoplasms, Odontomes, and fibro - osseous lesions
- Oral changes in Osteo - dystrophies and chondro - dystrophies
- Forensic odontology
- Therapeutics in oral medicine -clinical pharmacology and Evidence based oral care in treatment planning
- Radiation Physics, Production of X-ray, Factors controlling X-ray production, Units of Radiation and Dosimetry
- Radiation Biology, Effects on the body and mucous membrane, and radiation protection.
- Radiographic technique, Intraoral and extraoral radiograpy processing. Faults and Interpration
- Radiotherapy.
- Advanced Imaging.



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SYLLABUS FOR TMU RESEARCH APTITUDE TEST IN ORAL PATHOLOGY & MICROBIOLOGY

The syllabus for TMU Research Aptitude Test (TRAT) in Oral Pathology & Microbiology is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/aptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

1. Oral Genodermatosis.
2. Genetics of Oral and Maxillofacial Diseases.
3. Oral-cancer/pre-cancer.
4. Dermatologic diseases.
5. Oro-facial Pain and neuromuscular disorders including TMJ disorders.
6. Microbial genetics and infections of oral and Para - oral regions.
7. Tumor Markers.
8. Tumor Immunology.

- 9.** Defense mechanism of the oral cavity.
- 10.** Bone Pathology.
- 11.** Oral Soft tissue tumors.
- 12.** Hematological disorders and Hematological malignancies.
- 13.** Neoplastic disorders and genetics of Salivary gland tumors.
- 14.** Frozen sections and cytological smears.



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SYLLABUS FOR TMU RESEARCH APTITUDE TEST IN ORTHODONTICS AND DENTOFACIAL ORTHOPAEDICS

The syllabus for TMU Research Aptitude Test (TRAT) in Orthodontics and Dentofacial Orthopaedics is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/apptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

- 1. Dentofacial Orthopaedics:**
 - Principles
 - Biomechanics
 - Appliance design and manipulation
- 2. My functional Orthodontics:**
 - Basic principles
 - Contemporary appliances
 - Case selection and evaluation of the treatment results
- 3. Cleft Lip and Palate Rehabilitation:**
 - Diagnosis and treatment planning
 - Mechanotherapy
 - Team rehabilitative procedures

4. Biology of Tooth Movement:

- Principles of tooth movements
- Applied histophysiology of bone
- Molecular and ultra cellular consideration in tooth movement



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SYLLABUS FOR TMU RESEARCH APTITUDE TEST IN PEDODONTICS & PREVENTIVE DENTISTRY

The syllabus for TMU Research Aptitude Test (TRAT) in Pedodontics & Preventive Dentistry is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/aptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

1. Growth & Development
2. Child Psychology & Behaviour Management
3. Case History, Diagnosis & Treatment Planning In Pediatric Dentistry
4. Infant Oral Health Care, Anticipatory Guidance, Dental Home Concept
5. Preventive Dentistry Concepts
6. Cariology
7. Pediatric Operative Dentistry
8. Pediatric Endodontics

- 9.** Pharmacology As Applied To Pediatric Dentistry
- 10.** Hospital Pediatric Dentistry
- 11.** Oral Habits
- 12.** Preventive & Interceptive Orthodontic Procedures In Pediatric Dentistry
- 13.** Traumatic Injuries To Anterior Teeth
- 14.** Dental Materials Used In Pediatric Dentistry
- 15.** Pediatric Oral Medicine & Oral Pathological Conditions
- 16.** Oral Manifestations Of Systemic Conditions In Children & Their Management
- 17.** Dental Care Of Children With Special Needs
- 18.** Child Abuse & Neglect
- 19.** Dental Health Education & School Dental Health Programmes
- 20.** Minor Oral Surgical Procedures In Children



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SYLLABUS FOR TMU RESEARCH APTITUDE TEST IN PERIODONTOLOGY

The syllabus for TMU Research Aptitude Test (TRAT) in Periodontology is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/aptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

- 1. ETIOPATHOGENESIS:**
 - Defense mechanisms of gingival
 - Periodontal microbiology
 - Pathogenesis of plaque associated periodontal diseases
 - Dental calculus
 - Influence of systemic diseases and disorders of the periodontium
 - Stress and periodontal diseases
 - Occlusion and periodontal diseases
 - Periodontal medicine
- 2. 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

3. TREATMENT OF PERIODONTAL DISEASES

(A) 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

(B) Periodontal therapy

- Preparation of tooth surface
- Plaque control
- Role of orthodontics as an adjunct to periodontal therapy
- Management of dentinal hypersensitivity

(C) Periodontal surgical phase – special emphasis on drug prescription

- Osseous surgery (resective and regenerative)
- Furcation; Problem and its management
- The periodontic – endodontic continuum
- Periodontic plastic and esthetic surgery
- Recent advances in surgical techniques

(D) Future directions and controversial questions in periodontal therapy

- Research directions in regenerative therapy
- Recent advances on periodontal Microsurgery



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SYLLABUS FOR TMU RESEARCH APTITUDE TEST IN PROSTHODONTICS AND CROWN & BRIDGE

The syllabus for TMU Research Aptitude Test (TRAT) in Prosthodontics and Crown & Bridge is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/aptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

Basic sciences: Biology and anatomy of dental tissues, anatomy of the stomatognathic system. growth and development of face jaws and teeth. biology and physiology of tooth and related structures, anatomy of T.M.J. and its movements.

Gerodontics: Consequences and management of age changes in the dentition, Medical conditions and medications affecting dental treatment, geriatric nutrition, Anthropology as applied to craniofacial region, development of occlusion in deciduous, mixed and permanent, Dentitions, mastication and stomatognathic system.

Sterilization methods: Sterilization and disinfection, different methods, importance in clinical set up.

Biostatistics: Importance, 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 data statistical diagrams and graphs.

Dentist technician communication- Lab work authorization forms and instructions.

Dental Materials: Physical, mechanical and biological properties of modern dental materials. Gypsum products used in Prosthodontics, Dies and die materials, resins and denture base materials, impression materials, duplicating materials, investment materials, metals and alloys, dental waxes, casting and casting defects, Cements, Composites resins.

Complete Denture Prosthodontics: Anatomy and physiology of edentulous mouth, diagnosis and treatment planning, residual ridge resorption, preprosthetic surgeries, impressions in complete denture prosthodontics, objectives and principals of impression making, philosophies and concepts of impression making, articulators and Face bow record, J.R. and mandibular movements, hinge axis, selection and arrangement of teeth, complete denture occlusion, laboratory procedures involved in complete denture construction, denture insertion and post care , Relining and rebasing, denture repair, immediate dentures, transitional dentures, overdentures, obturators, dental implants.

Partial Denture Prosthodontics: Introduction and terminology used in partial denture prosthodontics, examination, diagnosis and treatment planning in partial denture prosthodontics, classification of partially edentulous arches, components of removable partial dentures and their functions, denture base considerations and teeth, stress breakers, principles of removable partial denture, surviving, mouth preparation for removable partial denture including preparation of abutment teeth, impression materials and procedures for partially edentulous mouth, support for the distal extension denture base, occlusal relationship and arrangement of teeth, laboratory procedures involved in cast partial dentures, denture delivery and instructions to patient, acrylic partial dentures, immediate partial dentures.

Fixed Prosthodontics: Diagnosis and Treatment Planning, periodontal considerations in fixed prosthodontics, occlusion in FPD, bio-mechanical principles of tooth preparation, individual tooth preparation, complete metal crown, partial veneer crown for anterior and posterior teeth, porcelain jacket crown, preparations for intra-coronal restorations, preparations for extensively damaged or endodontically treated teeth, provisional or temporary restorations, fluid control and soft tissue management, impression material and techniques, working casts and dies, interocclusal records techniques and materials, articulation of casts, wax patterns, articulators in fixed partial denture Prosthodontics, precision and semiprecision attachments, connectors in FPD, investing and casting, occlusal equilibration, finishing and cementation, pontics, cementing Medium, full mouth rehabilitation-philosophies, techniques, clinical and lab procedure, porcelain fused to metal restorations, porcelain laminates, resin bonded retainers(Maryland bridges), fixed removable Prosthodontics, solder joints and other connectors.

Maxillofacial Prosthodontics: Dentist and Patient interaction psychological status of the patient social support System, chemotherapy, radiation therapy their effect on oro-dental tissue, prosthodontic reconstruction of acquired mandibular defects, mandibular guidance appliance, speech prosthesis and rehabilitation, clinical and laboratory steps for their fabrication, prosthodontic reconstruction of acquired developmental defect of maxilla, obturators, clinical and laboratory steps for their fabrication, restoration of acquired and developmental facial defects, eye, auricular, nasal, lip, clinical and laboratory steps for their fabrication, cranial and facial implants, reconstructive pre- prosthetic surgery, maxillofacial

prosthesis materials, splints and stents, radiation prosthesis, methods of retention for maxillofacial prosthesis.

Advanced Dental Practice: Dentistry as a profession, health care delivery, genetics, epidemiology, bio-psycho social pathology, psychological aspects and human relation, computer applications for patient care delivery system and dental practice.

New Theories and Concepts: Introduction, importance, characteristics, basic processes in the development of new concepts and theories; philosophy and science in relation to general system theory, innovative techniques, methods and materials, historical perspectives; advanced technology and Prosthodontic implementations, forensic Prosthodontics



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SYLLABUS FOR TMU RESEARCH APTITUDE TEST IN PUBLIC HEALTH DENTISTRY

The syllabus for TMU Research Aptitude Test (TRAT) in Public Health Dentistry is divided in two parts viz. Part A and Part B as described below:

PART – A

Part A of the TRAT shall be designed to assess the research skills/aptitude of the candidate consisting of questions from the following areas:

- 1. Research Methodology:** meaning, characteristics, and ethical issues in research; types of research; research methods.
- 2. Logical Reasoning:** arguments, deductive and inductive research; logical and Venn diagram; inferences; analogies.
- 3. Data Interpretation:** interpretation of data; mapping and analysis of data, tools for data analysis; quantitative and qualitative research.
- 4. General Awareness about Basic Science:** basic science up to the level of SSC.
- 5. Mathematical Reasoning:** number series, letter series, codes; relationships, classification.

PART – B

Part-B of RAT is designed to assess the subject specific knowledge of the candidate covering the syllabus given as below:

Epidemiology: Aims & general principles, methods in epidemiology, ethical conversation in any study requirement, new knowledge regarding ethical subjects.

Public Health Education: Definition, aims, principles of health education. Health education methods, models, contents, planning health education programs.

Oral survey procedures: Planning, Implementation, WHO basic oral health methods 1997, 2013. Indices for dental diseases & condition, Evaluation

Preventive dentistry: Fluoride, Pit & Fissure, Sealents, Caries vaccines, Plaque control measures.

Delivery of Dental care: Dental person power, Dental Auxiliaries, School dental health program- Incremental and Comprehensive care. Oral health policy- National & International policy.