

Dr. D. Y. Patil Vidyapeeth, Pune

Pattern for Pre-Ph. D. Examination for the faculties of

**Medicine, Dentistry, Biotechnology & Bioinformatics, Nursing,
Allied Medical Science (Physiotherapy), Ayurved, Homoeopathic**

Paper I	Research Methodology & Biostatistics No of total Questions - 10 (5 Questions on Research Methodology and 5 Questions on Biostatistics) Each Questions carries 5 marks	Total Marks - 50
Paper II	Recent advances in the concerned speciality No of total Questions - 10 Each Questions carries 5 marks	Total Marks - 50
Paper III	Presentation & Discussion (Relevant to the Research topic for Ph. D.)	Total Marks - 50

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Pre Ph.D Syllabus – Faculty of Dentistry

Paper I – Research Methodology & Biostatistics

Section A – Research Methodology

(5 Questions – 5 Marks each)

1. Dental

Sr. No.	Topic
1.	Introduction to research methodology in dental & medical practice and the research question
2.	Concept of populations and samples
3.	Fundamental principles of measurements and data management
4.	Ethical issue in clinical research
5.	Architecture of Research Designs
6.	a) Descriptive and cross sectional studies b) Case control studies
7.	a) Cohort studies b) Randomized controlled trials, Qualitative studies, Systematic reviews metanalysis.
8.	Evidence based dentistry.
9.	Methods of Data Collection
10.	Data Interpretation (Qualitative & Quantitative)
11.	How to prepare a research proposal, Literature survey for the proposed research work.
12.	Writing the research protocol
13.	Critical appraisal of a journal articles relevant to the proposed topic.
14.	Presentation and publishing a research article.

Section B: Biostatistics

(5 Questions – 5 Marks each)

1. Dental

Sr. No.	Topic
1.	Measures of disease frequency
2.	Measures of effect and association
3.	Estimation and hypothesis testing including tests of significance (Chisquare, t-tests, ANOVA, Non parametric tests)
4.	The concept of confidence intervals.
5.	Sample size and sampling methods.
6.	SPSS/SAS/Stata/Epi Info applications
7.	Measurement errors, reliability, validity and bias.
8.	Confounding and measures to deal with it (Matching, stratified analysis

	and multivariate analysis)
9.	Study of diagnostic tests (Sensitivity, specificity, ROC curve, Bays' theorem)

PAPER – II

Recent Advances in concerned speciality

(1) Conservative Dentistry & Endodontics - Dentistry

(10 Questions – 5 Marks each)

Sr. No.	Topic
1	Recent Advances in Adhesive Dentistry
2	Recent Advances in Restorative resins
3	Recent Advances in metal free ceramics
4	Recent Advances in radiology
5	Recent Advances in caries diagnosis and prevention
6	Recent Advances in Endodontic instrumentation and shaping techniques
7	Recent Advances in Intracanal medicaments and irrigants
8	Recent Advances in obturation materials and obturation techniques
9	Recent Advances in Post Endodontic Restoration including post and core material
10	Recent Advances in understanding Endodontic microbiology
11	Magnification in Restorative Dentistry and Endodontics
12	Lasers in Conservative dentistry and Endodontics
13	Ultrasonic and Sonic Advances in Endodontics

(2) Oral Medicine & Radiology - Dentistry

(10 Questions – 5 Marks each)

1. Current trends in the diagnosis and management of oral pre-cancer and oral cancer
2. Molecular level studies for the pathogenesis of oral cancer and autoimmune conditions affecting the oral cavity
3. Investigations and active intervention of Temporo-Mandibular Disorders
4. Applications of CBCT and Nuclear Imaging in the dental practice
5. Newer drug therapies for treatment of oral mucosal lesions
6. Active team work with the general radiologists and radiotherapists for radiotherapy management of head, neck and face malignancies
7. Role in environment protection regarding hazardous effects of the radiation, use of lead etc.
8. Application of advanced radiographic techniques in Forensic Medicine
9. Generation of new knowledge in Implant Dentistry imaging

(3) Oral Pathology & Microbiology - Dentistry

(10 Questions – 5 Marks each)

Sr.No.	Topic
1	Cell Biology
2	Oral Biology
3	Embryology and applied gross anatomy of head and neck including histology
4	Oral Physiology
5	Basic molecular biology and techniques
6	Basic histology techniques, microscopy and advanced diagnostic aids
7	Basic and Clinical Pathology
8	Developmental disturbances along with the syndromes affecting oro-maxillofacial region
9	Odontogenic cysts and tumours
10	Oral potentially malignant disorders: etiopathogenesis, diagnosis and new concepts
11	Oral Oncology: etiopathogenesis, diagnosis and prognosis of various benign and malignant neoplasms along with the newer concepts
12	Oral microbiology and immunology with applied aspects
13	Salivary gland disorders with diagnostic aids
14	Blood Disorders: Laboratory diagnosis, genetics and recent advances
15	Mucocutaneous disorders
16	Forensic Odontology
17	Recent advances in Oral Pathology and Microbiology

(4) ORAL AND MAXILLOFACIAL SURGERY - Dentistry

(10 Questions – 5 Marks each)

1. Recent advances in the management of maxillary sinus disorders – FESS, flaps for the closure of oroantral fistula.
2. Recent advances in the management of salivary gland disorders- sialoendoscope, lithotripsy, role of nerve stimulator in parotid surgery, loupes in parotid surgery.
3. Recent advances in maxillofacial trauma- bioresorbable plates and screws.
4. Recent advances in Orofacial clefts- neonatal lip repair, intrauterine cheiloplasty, intravelar palatoplasty, nasal endoscope, videofluoroscopy.
5. Recent advances in dental implants – implant site management, BMP, PRF, physics forceps, zygomatic implants, pterygoid implants, all on four implants.
6. Recent advances in oral cancer- diagnosis and management.
7. Recent advances in the management of Orofacial infections.
8. Distraction osteogenesis.
9. Recent advances in reconstruction of Orofacial region- principles of microvascular surgery and various flaps used in reconstruction.
10. Miscellaneous- LASERS, Peizosurgery, navigation surgery, robotic surgery, gene therapy, stem cell therapy.

(5) Orthodontics – Dentistry

(10 Questions – 5 Marks each)

1. Orthodontic biomechanics

- a. Concepts of classical mechanics
- b. Scalar and vector quantities
- c. Force
- d. Statics and dynamics
- e. Components and resolution of forces
- f. Moment of a force and principle of moments
- g. levers
- h. Loading of a beam
- i. Equilibrium
- j. Moment of a couple
- k. Resolution of system of forces and couples
- l. stress, strain, elasticity
- m. Torsion
- n. Bending moment of a beam and shearing force
- o. Friction

2. Orthodontic mechanisms

- a. Load deflection properties
- b. Mechanical response of periodontal support
- c. Tooth mobility
- d. Center of rotation
- e. Wire under load-stress strain analysis
- f. Torsion in wire loops, helical springs
- g. Compression and tension coil springs
- h. Rectangular cross section of wires and torque
- i. Torquing auxiliaries
- j. Orthodontic anchorage and mechanical analysis ~ maximum anchorage requirements
- k. Appliance design factors
- l. Optimal tooth movement and orthodontic forces.
- m. Orthopedic forces in the maxilla and mandible

3. Recent advances in diagnosis and treatment planning in orthodontics radiodiagnosis cbct and computer aided cephalometric analysis and imaging techniques and assessment.

- predictions of
- Occlusal stability or change
- Imaging techniques and assessment
- Radiography
- cephalometries
- cephalometric methods
- cephalometric analysis
- cephalometric superimpositions and assessment of
- Morphological change
- Photography
- Other imaging methods, MRI-TMJ.

4. Current research in orthodontic therapies, strategies, outcomes

- a. Review of treatment / corrective methods and options
- b. Active mechanical components
- c. passive appliances
- d. retention: relapse control - truth and fiction'
- e. special clinical strategies
- f. space maintenance
- g. extraction site selection factors
- h. Enamel reduction.
- i. Expansion of arch perimeter
- j. dental space opening and closing
- k. Over corrections'
- l. Surgical exposures
- m. jaw growth modification
- n. surgical orthodontics
- o. prosthodontic options ~ orthopedic methods
- p. orthodontic and orthopedic anchorage requirements
- q. timing of orthodontics
- r. timetable of clinical management and planning
- s. treatment hypothesizing
- t. patient consultation
- u. case studies: problems, examples and solutions

5. Interdisciplinary and interdepartmental concepts in treatment of special cases, oral clefts, craniofacial and jaw syndromes' anomalies of dental developments, tmj dysfunction, medically compromised patients.
Evidence based research

6. Concepts: such as accelerated tooth movement, gene expression during myofunctional therapy and related craniofacial research

(6) Pedodontics - Dentistry

(10 Questions – 5 Marks each)

Sr. No.	Topics
1.	<p>Child Psychology :</p> <ul style="list-style-type: none"> • Development & Classification of Behavior, personality, intelligence in children, theories of child psychology management. • Behaviour Management : Non-Pharmacological. • Child Abuse & Dental Neglect. • Conscious sedation, Pharmacological, Deep sedation & General anesthesia in pediatric Dentistry(Including Other Drugs, Synergic & Antagonistic Action Of Various Drugs Used In children) • Stage of Psychological child development, fear anxiety, apprehension & its. • Pharmacological Methods.
2.	<p>Dental Caries :</p> <ul style="list-style-type: none"> • Historical background • Definition, Aetiology & Pathogenesis. • Caries pattern in primary, young permanent and permanent and extensive caries. Definition, Aetiology, pathogenesis, Clinical features Complication & Management. • Subjective & Objective methods of caries detections with emphasis on caries • Dietary Modifications & Diet Counseling. • Recent advances in the early diagnosis of dental caries.
3.	<p>Preventive Pedodontics</p> <ul style="list-style-type: none"> • Concept, chair side preventive measures for dental diseases, high-risk caries including rampant & extensive caries- Recognition, Features & preventive Management, Pit Fissures Sealants, Oral Hygiene measures, correlation of brushing with dental caries and periodontal disease. • Diet & Nutrition as related to dental caries Diet Counseling.
4.	<p>Microbiology & Immunology as related to Old Disease in Children :</p> <ul style="list-style-type: none"> • Basic concepts, Immune system in human body, Auto Immune diseases. • Histopathology, Pathogenesis, Immunology of dental caries, Periodontal diseases, Tumors, Oral Mucosal Lesions etc.

5.	Dental Material used in Pediatric Dentistry : <ul style="list-style-type: none"> • Nano Technology • Recent advances in dental materials. • Chemo- mechanical caries removal. • Loses in Pediatric dentistry.
6.	Pediatric Endodontics : <ul style="list-style-type: none"> • Primary Dentition: - Diagnosis of Pulpal dieses 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 • Prosthesis consideration in pediatric Dentistry. • Recent advances in pediatric diagnosis and Endodontics.
7.	Tramatic Injuries in Children : <ul style="list-style-type: none"> • Classification & Importance • Sequalae & raction of teeth to trauma • Management of trauma. • Management of Traumatized teeth with latest concepts. • Management of Jaw fracture in children
8.	Space Maintenance : <ul style="list-style-type: none"> • Definition, Etiology • Classification. • Factors to be considered before giving a space maintainer. • Different space maintainers according to clinical situations. • Clinical features of digit sucking, tongue thrusting, mouth breathing & various other secondary habits. • Management of oral habits in children • Space Analysis • Cepholometric
9.	Fluorides : <ul style="list-style-type: none"> • Historical background. • Systemic & topical fluorides. • Mechanism of action. • Toxicity & Management. • Defluoridation techniques.
10.	Management of handicapped child and management of patient with systemic condition :

	<ul style="list-style-type: none"> • Definition, Etiology & Classification , Behavioral ,clinical features, & Management of • Physically handicapping Conditions • Mentally compromising Conditions • Genetic disorders
11.	<p>Hospital Dental Services for Children & the use of general Anesthesia :</p> <ul style="list-style-type: none"> • Obtaining Hospital Staff Privileges • Indications for general anesthesia in the treatment of children • Psychologic effects of Hospitalization on children • Outpatient versus Inpatient surgery • Medical History and Physical Examination • Admission to the Hospital • Operating room Protocol • Properties of Inhalation General Anesthetics • Anesthetic Preperation of the child • Perioral cleaning, Draping, and Placement of Pharyngeal throat pack • Restorative dentistry in the Operating Room • Completion of the Procedure • Postanesthesia care unit • Postoperative care
12.	<p>Growth of the Fare & Dental Arches :</p> <ul style="list-style-type: none"> • The Nature of Growth • Craniofacial Pattern • Growth and facial pattern • Growth and pattern of Occlusion • Growth and dental arch pattern • Summary
13.	<p>Multi Disciplinary Team Approach to cleft lip & Palate Management :</p> <ul style="list-style-type: none"> • Classification of Cleft Lip and Palate • Multidisciplinary cleft lip and palate team • General Responsibilities of team members • Multidisciplinary sequencing of treatment in clefts
14.	<p>Cephalometrics & facial Esthetics :</p> <ul style="list-style-type: none"> • Radiographic technique • Cephalomatric tracing technique • Reference points for Lateral teacing

	<ul style="list-style-type: none"> • Referance Lines, Angles, And Planes • Interpretation of Measurements • Lateral cephalometric assessment • Frontal (Posteroanterior) cephalometric Assessment • Directions of Growth • Computerized cephalometric Diagnoses and treatment planning • Anteroposterior interarch discrepancies • Facial types • Vertical arch Discrepancies • Angle Classification of occlusion • Evalutaion of facial Esthetics.
15.	<p>Community Oral Health :</p> <ul style="list-style-type: none"> • Childrens oral Health & Dental care • The structure of dental public health in the united states and its role in children;s oral health • Community oral health programs with an impact on children’s oral health • Conclusions.

(7) Periodontology - Dentistry

(10 Questions – 5 Marks each)

Recent developments in the field of molecular biology with respected to Periodontal Diagnosis

1. Currents trends & concepts in classification of periodontal disease
2. Current concepts about genetics & periodontal disease
3. Recent understandings in Periodontal Medicine
4. Current Status of Local Drug Delivery
5. Current Concepts in Prescription of Anti Microbials for Periodontal Therapy
6. Advanced Radiographic Aids in the Periodontics.
7. Recent advances in Periodontal Flaps
8. Recent Advances in Regenerative Periodontal Therapy
9. Recent Advances in Periodontal Plastic Surgery
10. Recent Advances in Implant Site Management
11. Recent Advances in Implant Surgical Technique & Technology

12. Recent Advances in Laser Assisted Periodontal Procedures
13. Recent Advances in Stem Cell Therapy in Periodontics
14. Recent Advances in Gene Therapy

(8) Prosthodontics - Dentistry

(10 Questions – 5 Marks each)

1. REMOVALBE PROSTHODONTICS AND IMPLANTS

a) Complete Dentures and Implant supported Prosthesis.

- Edentulous Predicament
 - Effect of aging of edentulous patients
 - Sequelae caused by wearing complete dentures
 - Temporomandibular disorders in edentulous patients
 - Nutrition Care for the denture wearing patient
 - Preparing patient for complete denture patients
 - Pre-prosthetic surgery
 - Immediate Dentures, over dentures
 - Single Dentures
 - Art of communication in the management of the edentulous predicament
 - Materials prescribed in the management of edentulous patients
 - Articulators
 - Fabrication of complete dentures
 - Mandibular movements, Maxillo Mandibular relations and concept of occlusion
 - Selecting and arranging artificial teeth and occlusion for the edentulous patient
 - Try in
 - Speech consideration with complete dentures
 - Waxing contouring and processing the dentures
 - Implant supported Prosthesis for partially edentulous patients
- i) Implant supported Prosthesis for partially edentulous patients : Science of Osseointegration, clinical protocol for treatment with implant supported over dentures, managing problems and complications, implant Prosthodontics for edentulous patients; current and future directions.
- ii) Implant supported prosthesis for fully edentulous patients :

- Introduction and Historical Review
- Biological, clinical and surgical aspects of oral implants
- Diagnosis and treatment planning
- Radiological interpretation for selection of fixtures
- Splints for guidance for surgical placement of fixtures
- Intra oral plastic surgery
- Guided bone and Tissue generation consideration for implants fixtures.
- Implants supported prosthesis for complete edentulism and partial edentulism
- Occlusion for implants supported prosthesis
- Peri-implant tissue and management
- Maintenance and after care
- Management of failed restorations
- Work authorization for implant supported prosthesis – definitive instructions, legal aspects, delineation of responsibility.

b) Prosthodontic treatment for partially edentulous patients – Removalbe Partial Prosthodontics;

- Scope definition and terminology, Classification of partially edentulous arches
- Components of RPD
- Education of patient
- Diagnosis and treatment planning
- Design, treatment sequencing and mouth preparation
- Surveying
- Diagnosis and treatment planning
- Preparation of Mouth for removable partial dentures
- Preparation of Abutment teeth
- Impression Materials and Procedures for Removable Partial Dentures
- Support for the Distal Extensin Denture Base
- Laboratory Procedures
- Initial placement , adjustment and servicing of the removable partial denture
- Relining and rebasing the removable partial dentures
- Repair and addition to removable partial dentures

- Removable partial denture consideration in maxillofacial prosthetics.

2. MAXILLOFACIAL REHABILITATION

- Scope terminology
- Definitions
- cross infection and hospital waste management
- Work authorization
- Behavioral and psychological issues in Head and neck cancer
- Psychodynamic interactions- clinical 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 the mandible
- Acquired defects of hard palate, soft palate
- Clinical management of edentulous and partially edentulous maxillectomy patients
- Facial defects
- Restoration of speech
- Velopharyngea function
- Cleft lip and palate
- Cranial implants
- Maxillofacial trauma
- Lip and cheek support prosthesis
- Laryngectomy aids
- Obstructive sleep apnoea
- Sleep apnoea
- Tongue [prosthesis
- Esophageal prosthesis
- Vaginal radiation carrier
- Burn stents
- Nasal stents

- Auditory inserts
- Trisums appliances
- Mouth controlled devices for assisting the handicapped
- Custom prosthesis for lagophthalmos of the eye.
- Osseointegrated supported
- Facial and maxillofacial prosthesis
- Resin bonding for maxillofacial prosthesis
- Implant rehabilitation of the mandible compromised by radiotherapy
- Craniofacial Osseointegration
- Prosthodontic treatment
- Material and laboratory procedures for maxillofacial prosthesis

3. EVALUATION, DIAGNOSIS AND TREATMENT OF OCCLUSAL PROBLEMS

- Scope definition
- Terminology
- Optimum oral health
- Anatomic harmony
- Functional harmony
- Occlusal stability
- Causes of deteriorations of dental and oral health
- Anatomical, physiological, neuro-muscular, Psychological, Consideration of teeth
- Muscles of mastication
- Temporomandibular joint
- Intraoral 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 diagnosis intra articular problems
- Relating treatment to diagnosis of internal derangements of TMJ
- Derangements of TMJ
- Occlusal splints
- Selecting instruments to diagnosis and treatment
- Mounting casts

- Pankey-mann-schuyler philosophy of complete occlusal rehabilitation
- Long centric Anterior
- Anterior guidance
- Restoring lower anterior teeth
- Restoring upper anterior teeth
- Determining the types of posterior occlusal contours
- Method 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 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
- Cephalometric for occlusal analysis
- Solving severe arch malrelationship problems
- Transcranial radiography
- Postoperative care of occlusal therapy.

4. FIXED PROSTHESIS

- Diagnosis and treatment planning
- Periodontal considerations
- Blomechanical principle of tooth preparations
- Isolation and fluid control
- Resins, Gold and gold alloys, glass Ionomer restorations
- Restorations of endodontically treated teeth, Stomatognathic Dysfunction and management.
- Management of failed restorations.

5. TMJ- Temporomandibular joint dysfunction –scope definitions, and terminology

- Etiology, diagnosis and cranio Mandibular pain
- Occlusion splint therapy
- Occlusion adjustment procedures – Reversible

6. ASTHETICS

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 exercise 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.

(9) Public Health Dentistry

(10 Questions – 5 Marks each)

1. Dental Public Health

- History
- Definition and concepts of dental public health
- Differences between clinical and community dentistry
- Critical review of current practice
- Dental problems of specific population groups such as chronically ill, handicapped and institutionalized group.

2. EPIDEMIOLOGY OF ORAL DISEASES AND CONDITIONS:

- Dental caries, gingival, periodontal disease malocclusion, dental Fluorosis, oral cancer, TMJ disorders and other oral health related problems.

3. ORAL SURVEY PROCEDURES:

- Planning

- Implementation
 - WHO basic oral health methods 1997
 - Indices for dental diseases and conditions
 - Evaluation
4. **DELIVERY OF DENTAL CARE:**
- Dental person power – dental auxiliaries
 - Dentist –population ratios,
 - Public dental care programs
 - School dental health programs – Incremental and comprehensive care
 - Private practice and group practice
 - Oral health policy – National and international policy
5. **PAYMENT FOR DENTAL CARE:**
- Prepayment
 - Post – payment
 - Reimbursement plans
 - Voluntary agencies
 - Health insurance
6. **EVALUATION OF QUALITY OF DENTAL CARE:**
- Problems in public and private oral health care system program
 - Evaluation of quality of services, governmental control
7. **PREVENTIVE DENTISTRY:**
- Levels of prevention
 - Preventive oral health programs screening, health education and motivation
 - Prevention of all dental diseases – dental caries, periodontal diseases, oral cancer, malocclusion and Dentofacial anomalies
 - Role of dentist in prevention of oral diseases at individual and community level.
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- Fluoride
 - History
 - Mechanism of action
 - Metabolism
 - Fluoride toxicity
 - Fluorosis
 - Systemic and topical preparations
 - Advantages and disadvantages of each
 - Update regarding Fluorosis
 - Epidemiological studies
 - Methods of fluoride supplements
 - Defluoridation techniques
 - Plaque control measures
 - Health Education
 - Personal oral hygiene
 - Tooth brushing technique
 - Dentifrices, mouth rinses
 - Pit and fissure sealant, ART

- Preventive oral health care for medically compromised individual
- Update on recent preventive modalities
- Caries vaccines
- Dietary counseling

8. **PRACTICE MANAGEMENT:**

- Definition
- Principles of management of dental practice and types
- Organization and administration of dental practice
- Ethical and legal issues in dental practice
- Current trends

Paper III – Presentation & discussion - Dentistry

The presentation of the Research topic by the candidate will be evaluated by an Expert Committee in the concerned faculties. The candidate will be required to make a presentation under the following headings –

1. Need for Selection of the topic.
2. Aims & Objectives
3. Current Scenario (In relation to topic of research)
4. Detail study plan.
5. Evaluation Parameters.
6. Expected impact of study / Implications.

He / She will also be required to provide a brief report (10 sets) of the contents of the presentation (not exceeding 10 pages) to the members of the Committee.

Paper	Marks	Title
Paper I	50 marks	Research Methodology & Biostatistics (Section A & B)
Paper II	50 marks	Recent Advances in concerned speciality
Paper III	50 marks	Presentation & discussion
Total	150 marks	

- The student should obtain a minimum of 55% marks in order to be declared successful at the Pre-Ph.D. examination.