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**(DEEMED TO BE UNIVERSITY), PUNE, INDIA**  
**PhD Entrance Test – 2025**  
**SECTION-II: Rheumatology - 35 Marks**

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**1. Basic Principles in Rheumatology:-**

- a) Biology of Joints
- b) Articular Structures:- Hands - Wrists - Elbows –Shoulders – Neck - Low Back- Spines - Hip joint and Pelvic Girdle - knees – ankles-feet.
- c) Connective tissue:- Normal and Pathological synovial tissue - collagen - collageneses - proteoglycans – mediators derived from polyunsaturated fatty acids – prostaglandins –thromboxanes - leukotrienes - mediators of acute and chronic inflammation - vascular endothelium – interleukins – free radicals - nitric oxide - apoptosis.
- d) Formation and resorption of bone - bone as a tissue and an organ.
- e) Muscle: Anatomy - contractile proteins - ultrastructure of the muscle fibre - neuro muscular junction -physiology of motor unit- excitation - contraction coupling – biochemistry of contraction — muscle energy metabolism — pharmacology of the motor unit.
- f) Nerve: Neuropathies of special interest in Rheumatology - laboratory investigations – pain pathways
- g) Synovial physiology
- h) Collagen in normal and diseased connective tissue: - Chondrocyte structure and function - articular cartilage.
- i) Immunology: – cells involved in auto immune diseases and inflammation – Antigen presenting cells- Innate immunity – T-cells – B-cells- Synoviocytes – Fibroblast function & fibrosis – chondrocytes – Neutrophils & eosinophils – platelets and rheumatic diseases. Effector mechanisms in auto immunity & inflammation –auto immunity – Genetics of rheumatic diseases – Rheumatoid factor – ANA – Immune complexes –complement system – prostaglandins, Leukotrienes & related compounds – Endothelial cell biology, angiogenesis and requirement of cells – cytokines – Apoptosis

**2. Clinical Pharmacology in Rheumatic diseases:-**

Developing a clinical trial design - salicylates – nonsteroidal anti-inflammatory drugs - anti  
malarials - gold compounds - D.Penicillamine - methotrexate - glucocorticoids -sulfasalazine  
- leflunomide immunoregulatory agents -cytotoxic agents – therapeutic apheresis - Ionizing  
radiation - antilymphocyte antibodies - Cyclosporine A and other agents NSAID gastropathy  
-antihyperuricemic drugs - tetracyclines - intravenous – immunoglobulin -autologous stemcell  
transplantation - leflunomide – Biologicals.

### **3. Specific articular and connective tissue diseases:-**

Rheumatoid arthritis - Felty's syndrome – Sjogren's syndrome - spondyloarthropathy -  
ankylosing spondylitis - Reiter's syndrome, reactive arthritis - HLA B 27 related and non-  
related arthritis – Adult Still's disease. Psoriatic arthritis - enteropathic arthritis – systemic  
lupus erythematosus - mixed connective tissue disease - overlap syndromes - vasculitic  
syndrome - vasculitides and related disorders - polyarteritis - vasculitis associated with  
rheumatic diseases - hypersensitivity -vasculitis - Churg - Strauss Vasculitis - Wegener's  
Granulomatosis - Takayasu's arteritis, Cogan's syndrome - Kawasaki's disease -giant cell  
arteritis - polymyalgia rheumatica - Behcet's disease Scleroderma - localised fibrotic  
disorders - eosinophilic fascitis -scleroderma - inflammatory disease of muscle - polymyositis  
- dermatomyositis - gout and related disorders of purine metabolism - diseases associated with  
deposition of calcium pyrophosphate or hydroxyapatite - osteoarthritis – relapsing  
polychondritis – amyloidosis - sarcoidosis -iron storage disease - multicentric  
reticulohistiocytosis - Ochronosis - infectious arthritis - bacterial arthritis – mycobacterial and  
fungal infections - lymes disease -viral arthritis haemophilic arthropathy -  
Hemoglobinopathies and arthritis –arthropathies associated with endocrine disorders -  
hypertrophic osteoarthropathy - neuropathic joint disease musculoskeletal syndrome  
associated with malignancy -heritable disorders of structural proteins - metabolic bone disease  
- osteoporosis osteonecrosis osteomalacia involving joints - rheumatic fever - childhood  
S.L.E. and dermatomyositis - Scleroderma, vasculitis, antiphospholipid antibody syndrome,  
soft tissue rheumatism - rheumatic, complications of drugs - ANCA related vasculitis -  
panniculitis - hyper lipidemias -tumours and tumor like lesions involving joints -  
hypermobility syndromes, reflex sympathetic dystrophy - familial mediterranean fever -  
Paget's disease.

### **4. Differential approach to major rheumatic syndromes:**

Examination of Joints:- Acute and chronic monoarticular arthritis - Polyarthritis - temporomandibular joint diseases-shoulder and neck pain -low back pain - foot pain - the fibro-myalgia syndrome – skin and rheumatic diseases - eye and rheumatic diseases – neurologic manifestations - cardiac manifestations pulmonary manifestations of connective tissue diseases - arthritis and gastrointestinal and liver diseases - nutrition and rheumatic diseases -Psychosocial aspect of rheumatic diseases - kidney and rheumatic diseases.

## **5. Reconstructive surgery in rheumatic diseases:**

Principles of reconstructive surgery – pre-operative evolution – choice of procedure – post operative management and follow up –surgery in children. Disease Activity scoring.

## **6. Medical orthopaedics and rehabilitation:-**

Sports Medicine - entrapment neuropathies - chronic pain syndromes and management - Physiotherapy - occupational therapy - health outcome assessment -rehabilitation of patients with rheumatic diseases