RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS OF COMPETITIVE EXAMINATION FOR THE POST OF ASSISTANT PROFESSOR (Super Speciality)
CLINICAL IMMUNOLOGY AND RHEUMATOLOGY
MEDICAL EDUCATION DEPARTMENT

I Understanding of Basic Immunology-

- Cells and organs of the immune system
- Innate immune system
- Adaptive immune system
- TCR, HLA, Ig genes
- Antigen presentation and processing
- Generation of adaptive immune response
- Cytokines, chemokines and other mediators
- Complement pathway
- Function of phagocytes, mast cells, basophils and eosinophils
- Immune response to microbes
- Infections in the immuno-compromised host
- Aging and immune system
- Vaccines
- Primary immunodeficiency disorders
- Types of hypersensitivity reactions
- Tolerance induction in Thymus and Bone marrow
- Mechanisms leading to breakage of tolerance
- Transplantation immunology

II Immunology of Musculoskeletal Diseases-

- Role of innate immune system
- Role of adaptive immune system
- Role of different inflammatory mediators
- Role of Complement
- Immune biomarkers in rheumatic diseases

III Basic Biology of Rheumatic Diseases-

- Anatomy, physiology, biochemistry, pathology, microbiology and serology, and immune response in musculoskeletal health and disease states
- Cell biology, Molecular biology, Molecular genetics, Genomics, Pharmacology, pharmacokinetics, Protein chemistry and proteomics and their relevance in rheumatic diseases
- Collagen and connective tissue in health and disease
- Articular cartilage and bone in health and disease
- Skeletal muscle in health and disease
- Biomechanics of articulation and their derangements in diseases.
- Neurophysiology of pain

IV Basis of Allergic Disorders-

- Basis of hypersensitivity reactions
- Pathogenesis of airway allergy
- Drug induced hypersensitivity
- Anaphylaxis and serum sickness

V Understanding of Basic Pathophysiology, Diagnosis and Management of Rheumatic Diseases-

- Systemic Lupus Erythematosus (SLE)
- Early Synovitis and Early Undifferentiated Arthritis
- Rheumatoid arthritis
- Rheumatic fever
- Spondyloarthropathies (Ankylosing Spondylitis, Psoriatic Arthritis, Reactive Arthritis, Enteropathic Arthritis, Undifferentiated Spondyloarthritis)
- Systemic sclerosis
- Polymyositis/dermatomyositis/Inclusion Body Myositis/Necrotising Autoimmune Myopathy
- Vasculitis
- Anti-phospholipid syndrome
- Sjogren's disease
- Overlap syndromes
- Undifferentiated Connective Tissue Disease
- Mixed Connective Tissue Disease
- Fibromyalgia
- Behcet's disease
- IgG4-related disease
- Sarcoidosis
- Crystal arthritides
- Osteoarthritis
- Metabolic Bone Diseases including Osteoporosis
- Osteonecrosis
- Soft tissue rheumatism
- Proliferative bone diseases
- Auto-inflammatory syndromes
- Primary Immunodeficiency Diseases
- Systemic disease associated with rheumatic manifestations (metabolic, endocrine and malignancy)
- Infections of musculoskeletal system
- Rheumatic manifestations of Haemophilia and Hemoglobinopathies
- Rheumatic manifestations of HIV
- Organ specific autoimmune disease
- Others (Polymyalgiarheumatica, panniculitis, relapsing polychondritis, Pyoderma Gangrenosum, Immune-related adverse events of checkpoint inhibitors, heritable diseases of connective tissue)
- Imaging in Rheumatic diseases

VI Paediatric Rheumatology-

- Juvenile idiopathic arthritis
- Other paediatric rheumatic diseases (including childhood onset SLE. Myositis, vasculitis)

VII Basis and Delivery of Immunological Therapies-

• Anti-inflammatory medications: steroids, NSAIDs, and antihistamines
• Immunomodulatory/immunosuppressive drugs-
    a. Synthetic drugs b. biological therapy c. IVIG therapy d. Anti-cytokine therapies
• Cell based therapies-
    a. Stem cell including MSCs
    b. Regulatory T cells
• Gene therapy
• Vaccines
• Plasmapheresis and experimental immunotherapies

VIII Immunodiagnostics-

- Understanding of principles of all basic techniques utilized in immunology
- Evaluation of autoantibodies (ANA, ENA/ANA Immunoblot, ANCA, Rheumatoid factor, Anti-CCP, APLA)
- HLA typing
- Synovial fluid analyses including polarising light microscopy, Synovial biopsy and pathology
- Evaluation of immune system function (immunodeficiency tests)
- Nail fold capillaroscopy
- Salivary Gland Biopsy
- Skin Biopsy
- Muscle Biopsy
- Renal Biopsy
- Acute phase reactants
- Musculoskeletal Ultrasound
- ELISA for autoantibodies
- Nephelometry for proteins
- Flow-cytometry
- Immunodeficiency tests including NBT test for evaluation of phagocytic function (observation only), Immunoglobulin estimation (IgG, IgM, IgA, IgE and IgG subclass), Lymphocyte proliferation assay (Observation only) and Enumeration of lymphocyte subsets in peripheral blood using flow cytometry

IX Others-

- Pregnancy and Rheumatic diseases
- Cardiovascular risk in Inflammatory Rheumatic diseases
- Cancer and Rheumatic diseases
- Clinical Research methods in Rheumatic diseases

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Pattern of Question Papers:

1. **Objective Type Paper**
2. **Maximum Marks: 150**
3. **Number of Questions: 150**
4. **Duration of Paper : 2.30 Hours**
5. **All Questions carry equal marks**
6. **There will be Negative Marking**

   (**For every wrong answer one-third of the marks prescribed for that Particular question shall be deducted.)**