

## Himachal Pradesh Public Service Commission

No. 3-108/2024-PSC (R-I)

Dated 16-04-2025

**Syllabus for the descriptive type Subject Aptitude Test (SAT) for the recruitment to post of Assistant Professor (Orthopaedics) Class-I (on regular basis) in the Department of Medical Education & Research, H.P. The SAT paper shall be of 03 hours duration having 120 Marks. The SAT paper shall have two parts i.e. Part-I and Part-II and cover the following topics of MS (Orthopaedics) M.Ch. (Orthopaedics) level.**

### **PART-I (60 MARKS)**

#### **1. Basic Sciences:-**

- Anatomy and function of joints,
- Bone structure and function,
- Growth factors and fracture healing,
- Cartilage structure and function,
- Structure and function of muscles and tendons,
- Tendon structure and function,
- Stem Cells in Orthopaedic Surgery,
- Gene Therapy in Orthopaedics.

#### **2. Diagnostic Imaging in Orthopaedics:-**

**(Should know the interpretation and Clinical Correlation of the following): -**

- Digital Subtraction Angiography (DSA),
- MRI and CT in Orthopaedics,
- Musculoskeletal USG,
- PET Scan,
- Radio-isotope bone scan.
- DEXA Scan

#### **3. Metabolic Bone Diseases:-**

- Rickets and Osteomalacia,
- Osteoporosis,
- Scurvy,

- Mucopolysaccharoidoses,
- Fluorosis,
- Osteopetrosis.

#### **4. Endocrine Disorders:-**

- Hyperparathyroidism,
- Gigantism, Acromegaly.

#### **5. Bone and Joint Infections:-**

- Pyogenic Haematogenous Osteomyelitis - Acute and Chronic,
- Septic arthritis of the hip in children- addition on clinical relevance
- Fungal infections,
- Miscellaneous infections,
- Bone and joint brucellosis,
- AIDS and the Orthopaedic Surgeon (universal precautions),
- Musculoskeletal Manifestations of AIDS,
- Pott's spine,
- Tubercular synovitis and arthritis of all major joints.
- Prosthetic Joint Infection- clinical relevance

#### **6. Poliomyelitis:-**

- General considerations,
- Polio Lower limb and spine,
- Management of Post-Polio Residual Paralysis (PPRP).
- Post-Polio Syndrome

#### **7. Orthopaedic Neurology:-**

- Cerebral Palsy,
- Duchenne Muscular dystrophy

#### **8. Peripheral Nerve Injuries:-**

- Traumatic,
- Entrapment Neuropathies.

### **9. Diseases of Joints:-**

- Osteoarthritis,
- Calcium Pyrophosphate Dihydrate (CPPD), Gout,
- Rheumatoid Arthritis

### **10. Systemic Complications in Orthopaedics:-**

- Shock
- Crush syndrome,
- Disseminated Intravascular Coagulation (DIC),
- Acute Respiratory Distress Syndrome (ARDS)/ Fat embolism syndrome

### **11. Bone Tumors:-**

- Benign bone tumors,
- Malignant bone tumors,
- Tumor like conditions,
- Metastatic bone Tumors.

### **12. Miscellaneous Diseases:-**

- Fibrous Dysplasia,
- Paget's disease,
- Peripheral vascular disease,
- Orthopaedic manifestations of Hemophilia

### **13. Regional Orthopaedic Conditions of Adults and Children:-**

- The spine,
- The shoulder,
- The elbow,
- The hand,
- The wrist,
- The hip,
- The knee,
- The foot and ankle,
- The pelvis.

## **PART-II (60 MARKS)**

### **1. Biomaterials:-**

- Orthopaedic metallurgy,
- Bio-degradable implants in Orthopaedics,
- Bone substitutes,
- Bone Banking.

### **2. Fracture and Fracture-Dislocations:-**

#### **General considerations**

- Definitions, types, grades, patterns and complications,
- Pathology of fractures and fracture healing,
- Clinical and Radiological features of fractures and dislocations,
- General principles of fracture treatment,
- Recent advances in internal fixation of fractures,
- Locking plate osteosyntheses,
- Less Invasive Stabilisation System (LISS),
- Ilizarov technique,
- Bone grafting and bone graft substitutes.
- Open fractures and soft tissue coverage in the lower extremity,
- Compartment syndrome,
- Fractures of the upper extremity and shoulder girdle,
- Fractures of the lower extremity,
- Fractures of the hip and pelvis,
- Malunited fractures,
- Delayed union and non union of fractures,
- Fractures/dislocations and fracture - dislocations of spine.

### **3. Dislocations and Subluxations:-**

- Acute dislocations,
- Old unreduced dislocations,
- Recurrent dislocations

#### **4. Traumatic Disorders of Joints (Sports Injuries):-**

- Ankle injuries,
- Knee injuries,
- Shoulder and elbow injuries,
- Wrist and hand injuries.

#### **5. Arthrodesis:-**

- Arthrodesis of lower extremity and hip,
- Arthrodesis of upper extremity,

#### **6. Arthroplasty:-**

- Biomechanics of joints and replacement of the following joints,
- Knee,
- Ankle,
- Shoulder,
- Elbow.

#### **7. Minimally Invasive Surgery (MIS):-**

- **Arthroscopy**
  - General principles of Arthroscopy,
  - Arthroscopy of knee and ankle,
  - Arthroscopy of shoulder and elbow.

#### **8. Amputations and Disarticulations:-**

- Amputations and disarticulations in the lower limb,
- Amputations and disarticulations in the upper limb.

#### **9. Rehabilitation - Prosthetics and Orthotics.**

#### **10. Pediatric orthopaedics:-**

- Fractures and dislocations in children,
- Perthes' disease,
- Slipped capital femoral epiphysis,
- Developmental Dysplasia of hip

- Neuromuscular disorders.

## 11. Spine:-

- **Spinal trauma:** diagnosis and management including various types of fixations
  - Rehabilitation of paraplegics/quadruplegics,
  - Management of a paralyzed bladder,
  - Prevention of bed sores and management of established bed sores
  - Exercise programme and Activities of Daily Living (ADL)
  - Psychosexual counselling
- **Degenerative disorders of the spine**
  - Prolapsed Inter Vertebral Disc (PIVD),
  - Lumbar Canal Stenosis (LCS),
  - Spondylolysis/Spondylolisthesis,
  - Lumbar Spondylosis
  - Ankylosing Spondylitis,
  - Spinal fusion: various types and their indications.

## 12. Triage, Disaster Management, BTLS and ATLS.

## 13. Recent advances in orthopaedics:-

- Autologous chondrocyte implantation,
- Mosaicplasty,
- Video assisted Thoracoscopy (VATS),
- Endoscopic spine surgery,
- Bearing surfaces in Total Hip Arthroplasty
- Microsurgical techniques in Orthopaedics,
- Designing a modern orthopaedic operation theatre,
- Sterilization,
- Theatre Discipline,
- Laminar air flow,
- Modular OTs.