Himachal Pradesh Public Service Commission

No. 3-69/2024-PSC (R-I) **Dated 03-05-2025**

Syllabus for the descriptive type Subject Aptitude Test (SAT) for recruitment to post of Assistant Professor (Pathology), Class-I (on regular basis) in the Department of Medical Education & Research, H.P. The SAT 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 MD (Pathology)/Ph.D (Pathology)/D.Sc (Pathology) level.

PART-I (60 MARKS)

1. **General Pathology:**
   - Normal cell and tissue structure and function,
   - The changes in cellular structure and function in disease,
   - Causes of disease and its pathogenesis,
   - Reaction of cells, tissues, organ systems and the body as a whole to various sublethal and lethal injuries.

2. **Systemic Pathology:**
   - The study of normal structure and function of various organ systems and the aetiopathogenesis, gross and microscopic alterations of structure of these organ systems in disease and functional correlation with clinical features.

3. **Surgical Pathology:**

   Knowledge
   - Demonstrate an understanding of the Histogenetic and patho-physiologic processes associated with various lesions.
   - Identify problems in the laboratory and offer viable solutions.

4. **Autopsy Pathology:**

   Knowledge
   - Aware of the technique of autopsy
   - Understanding of various disease processes so that a meaningful clinico-pathological correlation can be made.

- Demonstrate ability to perform a complete autopsy independently with some physical assistance, correctly following the prescribed instructions. Correctly identify all major lesions which have caused, or contributed to the patient's death, on macroscopic examination alone and on microscopy in at least 90% of the autopsies in an average teaching hospital.
- In places where non-medico-legal autopsies are not available each student should be made to observe at least five medico-legal autopsies.
- Write correctly and systematically Provisional and Final Anatomic Diagnosis reports.

PART-II (60 Marks)

1. **Cytopathology:**

Knowledge

- Should possess the background necessary for the evaluation and reporting of cytopathology specimens.
- Demonstrate familiarity with the following, keeping in mind the indication for the test.
  - Choice of site from which smears may be taken
  - Type of samples
  - Method of obtaining various specimens (urine sample, gastric smear, colonic lavage etc.)
  - Be conversant with the principles and preparation of solutions of stains.

2. **Haematology**:

- Laboratory Medicine (Clinical Biochemistry/Clinical Pathology including Parasitology).
- Transfusion Medicine (Blood Banking).
- techniques and principles and to interpret data in the following fields:
  - Immunopathology
  - Electron microscopy
  - Histochemistry
  - Immunohistochemistry
  - Cytogenetics
  - Molecular Biology

- Maintenance of records
- Information retrieval, use of Computer and Internet in medicine.
- Quality control, waste disposal.

3. Laboratory Medicine

Knowledge

- Possess knowledge of the normal range of values of the chemical content of body fluids, significance of the altered values and its interpretation.
- Possess knowledge of the principles of following specialized organ function tests and the relative utility and limitations of each and significance of the altered values.
  - Renal function test
  - Liver function tests
  - Pancreatic function tests
  - Endocrine function tests
  - Tests for malabsorption
- Know the principles, advantages and disadvantages, scope and limitation of automation in the laboratory.
- Know the principles and methodology of quality control in the laboratory.

4. Transfusion Medicine (Blood Banking)

Knowledge

- Aspects of Transfusion Medicine.
  - Basic immunology
  - ABO and Rh groups
  - Clinical significance of other blood groups
  - Transfusion therapy including the use of whole blood and RBC concentrates
  - Blood component therapy
  - Rationale of pre-transfusion testing.
  - Infections transmitted in blood.
  - Adverse reactions to transfusion of blood and components
  - Quality control in blood bank.

5. Basic Sciences (in relation to Pathology)

a. Immunopathology

Knowledge

- Demonstrate familiarity with the current concepts of structure and function of the immune system, its aberrations and mechanisms thereof.
- Demonstrate familiarity with the scope, principles, limitations andinterpretations of the results of the following procedures employed in clinical and experimental studies relating to immunology.
    - ELISA techniques
    - Radioimmunoassay
    - HLA typing.
- Interpret simple immunological tests used in diagnosis of diseases and inresearch procedures.
    - Immunoelectrophoresis
    - Immunofluorescence techniques especially on kidney and skin biopsies
    - Anti-nuclear antibody (ANA)
    - Anti-neutrophil cytoplasmic antibody (ANCA).

b. Electron Microscopy:

Knowledge

- Demonstrate familiarity with the principles and techniques of electronmicroscopy and the working of an electron microscope (including Transmission and Scanning Electron microscope: TEM and SEM).
- Recognise the appearance of the normal subcellular organelles and their common abnormalities (when provided with appropriate photographs).

c. Enzyme Histochemistry

Knowledge

- Should be familiar with the principles, use and interpretation of common enzyme histochemical procedures (Alkaline Phosphatase, Acid Phosphatase, Glucose-6-Phosphate Dehydrogenase, Chloroacetate Esterase).

d. Immunohistochemistry

Knowledge

- Demonstrate familiarity with the principles and exact procedures of various immunohistochemical stains using both PAP (Peroxidase-antiperoxidase) and AP-AAP (Alk. Phosphatase-anti-Alk. Phosphatase) ABC (Avidin-Biotin Conjugate) systems; employing monoclonal and polyclonal antibodies.
- Be aware of the limitations of immuno-histochemistry.

e. Molecular Biology

Knowledge

- The principles of molecular biology especially related to the understanding of disease processes and its use in various diagnostic tests.
- Conversant with the principle and steps and interpretation of Polymerase Chain Reaction (PCR), Western Blot, Southern Blot, Northern Blot and Hybridisation) procedures.

f. Cytogenetics

Knowledge

- Demonstrate familiarity with methods of Karyotyping and Fluorescent in-situ Hybridisation (FISH).

g. Tissue Culture

Knowledge

- Demonstrate familiarity with methods of tissue culture.

h. Principles of Medical Statistics Knowledge

- Demonstrate familiarity with importance of statistical methods in assessing data from patient material and experimental studies.