

## Himachal Pradesh Public Service Commission

No. 3-66/2023-PSC (R-I)

Dated 01-05-2025

**Syllabus for the descriptive Subject Aptitude Test (SAT) for the recruitment to post of Assistant Professor (Nephrology), (Super-Speciality), 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 DM Nephrology 2/3 years course as recognized by M.C.I. after M.D. Medicine or M.B.B.S. and 5 years direct course leading to D.M. Nephrology level.**

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

**1. Renal Anatomy and Physiology**

Anatomy of kidney, Podocyte structure and function, Renal circulation and Glomerular hemodynamic, Renal handling of sodium, potassium, calcium, magnesium, phosphorus, uric acid, renal Acid Base handling, urine concentration and dilution, renin angiotensin aldosterone system, hormones and kidney.

**2. Electrolyte, Water and Electrolyte Balance**

Disorders of sodium and water balance, potassium balance, acid base balance, calcium balance, magnesium balance, phosphorus balance, Diuretics.

**3. Evaluation of Kidney Diseases**

Approach to a patient with kidney disease, laboratory assessment of kidney diseases - GFR, Urinalysis, proteinuria, kidney imaging, kidney biopsy.

**4. Primary Glomerular Disease**

Inherited disorders of glomerulus, mechanism of immune glomerular injury, infection related glomerulonephritis, rapidly progressive and crescentic glomerulonephritis, IgA nephropathy - HSP, Membrano-proliferative and C3 glomeropathies, Membranous nephropathy, Nephrotic syndrome - Podocytopathies - MCD, FSGS, fibrillary and immunotactoid glomerulopathy.

**5. Secondary Glomerular Diseases**

SLE, MCTD, Vasculitic diseases of kidney, Anti GBM disease, hereditary nephritis, nail patella syndrome, Fabry's disease, glomerular involvement in bacterial, viral, parasitic infections.

**6. Systemic Diseases of the Kidney**

Tropical nephrology, diabetes and kidney, prevention, treatment and management of diabetic nephropathy, cardiac failure and kidney, liver failure and kidney, Sjogren's syndrome and kidney, rheumatoid arthritis and kidney, Anti phospholipid syndrome.

**7. Pregnancy and Kidney Disease**

Renal physiology and complications in normal pregnancy, pregnancy with preexisting kidney disease.

**8. Kidney and Hypertension**

Role of kidneys in hypertension, endocrine causes of hypertension, renovascular hypertension, antihypertensive treatment, interventional treatment of resistant hypertension, malignant hypertension and other hypertensive crisis.

**9. Acute Kidney Injury**

Diagnosis and staging of AKI, pathophysiology – Ischaemic, nephrotoxic, contrast induced AKI, AKI in tropics, evaluation, complication and prevention and management of AKI.

**10. Chronic Kidney Disease**

Epidemiology, demographics, risk factors of CKD, CKD-Mineral Bone disease with therapeutic approach, cardiovascular, haematological aspect of CKD, neurological aspect of CKD, endocrine aspect of CKD, dermatologic aspect of CKD, Nutritional management of CKD, stepped care approach, drug dosing.

**11. Microvascular and Macrovascular Diseases of Kidney**

Thrombotic microangiopathies, Haemolytic uremic syndrome, Thrombotic thrombocytopenic purpura, Atheroembolic renal disease.

**12. Cystic and Tubular Disorders**

Cystic diseases of kidney - acquired and inherited, tubulointerstitial nephritis - Acute and Chronic, Endemic nephropathies, CKDu.

**13. Urinary Tract Infections, Urinary Tract Obstruction and Nephrolithiasis**

Infections of urinary tract, reflux nephropathy, nephrolithiasis, nephrocalcinosis.

**PART-II (60 MARKS)**

**1. Dialysis**

Physiological principles and urea kinetic modelling, adequacy of dialysis, haemodialysis apparatus, water treatment plant, vascular access, complications during dialysis, anticoagulation during dialysis, continuous renal replacement therapy, hemodiafiltration, home haemodialysis, poisons and dialysis, plasmapheresis, wearable kidney. Peritoneal dialysis- physiology, models, adequacy, volume status, ultrafiltration failure, peritonitis, complications of peritoneal dialysis.

**2. Transplantation**

Immunology, histocompatibility, evaluation of recipient and donor, brain death and donation after circulatory death donor criteria and care of deceased, early course of

patient with kidney transplant, induction therapies and maintenance therapy for renal transplant recipient, tolerance, ABO incompatible transplant, sensitised patient transplant, kidney transplant rejections, vascular complications post kidney transplant, Chronic allograft failure, infections post-transplant, xenotransplant.

3. **Critical Care Nephrology**

Principles, epidemiology, imaging techniques, organ crosstalk, extracorporeal blood purification techniques beyond dialysis, intermittent renal replacement therapy and continuous renal replacement therapy.

4. **Onconeurology**

AKI associated with malignancies and chemotherapy, glomerular diseases and cancer, cancer screening in ESRD, Hematopoietic stem cell transplantation related kidney disease, tumor lysis syndrome, renal masses and neoplasms.

5. **Interventional Nephrology**

Kidney biopsy, vascular access pre-op evaluation, tunnel and non-tunnel catheter placement, vascular mapping, vascular access creation and dysfunction management, endovascular procedures for vascular access dysfunction, peritoneal catheter dysfunction and its management.

6. **Imaging in Nephrology**

Nuclear imaging modalities, CT, MRI, POCUS, Urography, MCU/RGU, Doppler.

7. **Recent Advances in Nephrology**

8. **Medical Ethics and Laws Related in Nephrology**

9. **Genetics in Nephrology**

Congenital and inherited disorders of kidney, diagnostic modalities and management.

10. **Nephropathology**

Approach to diagnosis of common glomerular diseases, various stains used, significance of immunofluorescence and electron microscopy.