

RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS OF SCREENING TEST FOR THE POST OF ASSISTANT PROFESSOR (Super Speciality) ENDOCRINOLOGY MEDICAL EDUCATION DEPARTMENT

Unit-I - The basic science of endocrinology and metabolism :

- History of Endocrinology, evaluation of concept of endocrine glands, hormones, intermediary Metabolism. Influence of human genome project in endocrinology.
- Types of hormones and their molecular structure.
- Regulations of synthesis and secretion of various hormones. Feedback mechanism.
- Biological rhythms.
- Mechanism of action of various steroid and peptide hormones.
- Basic principles of Genetics, immunology and oncology as applied to clinical endocrinology and metabolism.
- Laboratory techniques: Hormonal assays: RIA, CLIA, IRMA, ELISA, LCMS HPLC, Clinical chemistry of hormone and metabolic disorders, cytogenetics, FISH, chromosomal microarray, molecular genetics and biochemical genetics of endocrine and metabolic disorders.
- Basic principles of imaging and their applications in endocrinology : Nuclear imaging including PET scan, CT, MRI,USG and conventional radiology.
- Research methodology: Design of study Epidemiology, statistical methods. Existing and upcoming laboratory techniques in endocrinology and metabolism.
- Endocrine disruptors, environmental toxins and endocrinology.
- Dynamic endocrine tests.

Unit-II - Adrenal Glands :

- Anatomy and physiology of Adrenal gland.
- Structural, biochemical and molecular pathology of various adrenal disorders.
- Drugs used in treatment of adrenal disorders and diagnosis.
- Adrenal imaging.
- Applications of hormonal assays and other biochemical investigations in diagnosis of various adrenal disorders.
- Dynamic hormonal tests for adrenal dysfunctions.
- Epidemiology, Etiopathogenesis, diagnosis and management of various adrenal disorders like : Cushing syndrome, Addison disease, congenital adrenal hyperplasia, adrenal tumors, pheochromocytoma, hyperaldosteronism etc. Endocrine hypertension.
- Adrenal disorders in special situations like childhood, adolescence and pregnancy.
- Genetic disorders of adrenal gland.

Unit-III - Metabolic bone disease :

- Skeletal ultrastructure and physiology
- Regulation of bone mass.
- Regulation of calcium, phosphate, magnesium and vitamin D₃ metabolism.
- Hormonal and metabolic investigations in bone disorders.
- Markers of skeletal metabolism.
- Radiologic assessment of metabolic bone disorders: Conventional X-rays, DEXA, Bone scan.
- Histomorphometry of metabolic bone diseases.

- Epidemiology etiopathogenesis, diagnosis and management of metabolic bone diseases like Osteoporosis, Ricketts, osteomalacia, Paget's disease, osteogenesis imperfecta, osteoporosis, Mccune Albright syndrome. Disorders of calcium, phosphate and magnesium metabolism.
- Hereditary and congenital disorders of bone and mineral metabolism.
- Bone and mineral metabolic disorders during pregnancy.

Unit-IV - Pituitary & Hypothalamus :

- Embryogenesis, structure, physiology of pituitary and hypothalamus.
- Nuclei of hypothalamus and their relation with pituitary functions.
- Secretion of various releasing hormones of hypothalamus and hormones from pituitary.
- Causes of growth hormone excess, their clinical presentation, work up of these patients and various modalities of treatment of patients with growth hormone excess.
- Dynamic tests for pituitary function.
- Causes of growth hormone deficiency, their genetic transmission, their presentation and treatment.
- Space occupying lesions in pituitary, their presentation and management

Unit-V - Posterior pituitary :

- Development and mechanism of working of posterior pituitary.
- Mechanism of control of osmolality.
- Diabetes insipidus: its definition various types, work up and management.
- Syndrome of inappropriate antidiuretic hormone (SIADH) and its presentation and management.
- Electrolyte imbalance :- Hyponatremia, Hypernatremia, Hypokalemia.

Unit-VI - Growth failure and short stature :

- Causes of short stature.
- Presentation of different kind of short stature.
- Work up of patient of short stature.
- Treatment of patients of short stature along with growth hormone therapy.
- Growth hormone resistance.

Unit-VII - Hypopituitarism :

- Various types including congenital, Sheehan syndrome, lymphocytic hypophysitis and other varieties. Their presentation and management .

Unit-VIII - Thyroid gland :

- Development, structure, vascular supply of thyroid gland.
- Synthesis and secretion of thyroid hormones and their regulation.
- Thyroid function test including hormonal assays, antibodies.
- Nuclear and radiologic imaging.
- Etiopathogenesis, presentation work up and management of various thyroid disorders like : Hypothyroidism, hyperthyroidism, thyroiditis, tumors and nodules including thyroid cancer.
- Radio-iodine therapy.
- Iodine deficiencies and its presentation.
- Effect of iodination of salt and development of thyroid disorders.
- Thyroid hormone resistance.
- Thyroid disorders during infancy, childhood and pregnancy.

Unit-IX - Parathyroid gland :

- Development, anatomic structures, eutopic and ectopic parathyroid glands.
- Parathyroid imaging.
- Causes, clinical presentation their evaluation and management of various parathyroid disorders like : Hypoparathyroidism, Hyperparathyroidism, Parathyroid hormone resistance and parathyroid tumors.
- Management of hypercalcemia.
- Surgical management of parathyroid disorders.

Unit-X - Gonads and puberty :

- Abnormal development of gonads and genitalia, their presentation, evaluation and management of various disorders like : Female pseudohermaphrodite, male pseudohermaphrodite, true hermaphrodite, delayed puberty, precocious puberty.
- Clinical presentation work up and management of various disorders like hypogonadotropic hypogonadism, hypergonadotropic, hypogonadism.
- Somatic stigmata and abnormal pubertal development, work up and management of : Turners syndrome, Klinefelter's syndrome, kallmann syndrome.
- Infertility and assisted reproduction.

Unit-XI - Diabetes Mellitus and Metabolic syndrome :

- Definition, epidemiology, diagnosis and classification of diabetes.
- Etiopathogenesis of diabetes including, various genetic mutations for development of type 1, type 2 and MODY (Maturity onset diabetes of young).
- Clinical presentation work up and management of various types of diabetes : Type 1, Type 2, Gestational diabetes, Secondary diabetes, MODY (Maturity onset diabetes of young).
- Oral drugs for management of diabetes and their classes and mechanism of action.
- Newer modalities in diabetes management including CGMS and insulin pumps.
- Newer drugs in management of diabetes like : Insulin analogues, DPP-IV inhibitors, Exenatide, Liraglutide.
- Acute complications of diabetes
 - Diabetic ketoacidosis.
 - Hyperosmolar nonketotic Coma.
 - Hypoglycemia.
- Chronic complications of diabetes, their prevalence, presentation, work up and management of
 - Nephropathy.
 - Neuropathy.
 - Retinopathy .
 - Peripheral vascular diseases.
 - Hypertension .
 - Ischemic heart disease.

Unit-XII - Lipid Disorders :

- Pathophysiology of disorders of Lipid Metabolism.
- Management of Lipid Disorders.

Unit-XIII - Obesity :

- Physiology of Energy Homeostasis.
- Genetics of Obesity.
- Pathophysiology of Obesity.
- Childhood Obesity.
- Obesity Syndromes.

- Clinical Features and Complications of Obesity.
- Medical and Surgical Management of Obesity.

Unit-XIV - Gastrointestinal Stromal Tumor (GIST) :

- Pathophysiology of pancreatic and GUT Hormones.
- Diagnosis and management of pancreatic and gut endocrine tumors.
- Gastrinoma.
- Insulinomas.
- Somatostatinomas.
- Glucagonomas.
- VIPoma.

Unit-XV - Endocrinology of HIV/AIDS

Unit-XVI - MEN (Multiple endocrine Neoplasia) :

- Their types, various glands affected, their genetic transmission, presentation, treatment and management of carrier stage.\, Molecular diagnostics as applied to MEN.

Unit-XVII - Auto immune endocrinopathies :

- Types, etiopathogenesis presentation, genetic transmission and management of various auto-immune endocrine disorders including polyglandular auto-immune syndromes.

* * * * *

Pattern of Question Papers:

1. Objective Type Paper
2. Maximum Marks : 180
3. Number of Questions : 180
4. Duration of Paper : Three Hours
5. All Questions carry equal marks
6. There will be Negative Marking

* * * * *