RAJASTHAN PUBLIC SERVICE COMMISSION, AJMER

SYLLABUS OF SCREENING TEST FOR THE POST OF
ASSISTANT PROFESSOR – ENDOCRINOLOGY
MEDICAL EDUCATION DEPARTMENT

A. The basic science of endocrinology and metabolism

1. History of Endocrinology, evoluation of concept of endocrine glands, hormones, intermediary metabolism. Influence of human genome project in endocrinology.
2. Types of hormones and their molecular structure.
3. Regulations of synthesis and secretion of various hormones. Feedback mechanism.
4. Biological rhythms.
5. Mechanism of action of various steriod and peptide hormones.
6. Basic principles of Genetics, immunology and oncology as applied to clinical endocrinology and metabolism.
7. 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.
8. Basic principles of imaging and their applications in endocrinology: Nuclear imaging including PET scan, CT, MRI,USG and conventional radiology.
9. Research methodology: Design of study Epidemiology, statistical methods. Existing and upcoming laboratory techniques in endocrinology and metabolism.
10. Endocrine disrupters, environmental toxins and endocrinology.
11. Dynamic endocrine tests.

B. Adrenal Glands :

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

C. Metabolic bone disease:

1. Skeletal ultrastructure and physiology
2. Regulation of bone mass.
2. Regulation of calcium, phosphate, magnesium and vitamin D3 metabolism.
3. Hormonal and metabolic investigations in bone disorders.
5. Markers of skeletal metabolism.
4. Radiologic assessment of metabolic bone disorders: Conventional X-rays, DEXA, Bone scam

5. Histomorphometry of metabolic bone diseases.
6. Epidemiology etiopathogensis, diagnosis and management of metabolic bone diseases like :
   Osteoporosis, Ricketts, osteomalacia, Paget's disease, osteogenesis imperfecta, osteoporosis, Mc cune Albright syndrome. Diisorders of calcium, phosphate and magnesium metabolism.
7. Hereditary and congenital disorders of bone and mineral metabolism.
8. Bone and mineral metabolic disorders during pregnancy.

D. Pituitary & Hypothalamus:

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

E. Posterior pituitary:

1. Development and mechanism of working of posterior pituitary.
2. Mechanism of control of osmolality
3. Diabetes insipidus: its definition various types, work up and management.
4. Syndrome of inappropriate antidiuretic hormone (SIADH) its presentation and management.

F. Growth failure and short stature:

1. Causes of short stature
2. Presentation of different kind of short stature.
3. Work up of patient of short stature.
4. Treatment of patients of short stature along with growth hormone therapy.
5. Growth hormone resistance.

G. Hypopituitarism:

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

H. Thyroid gland:

1. Development, structure, vascular supply of thyroid gland.
2. Synthesis and secretion of thyroid hormones and their regulation.
3. Thyroid function test including hormonal assays, antibodies.
4. Nuclear and radiologic imaging.
5. Etiopathogensis, presentation work up and management of various thyroid disorders like :
   Hypothyroidism, hyperthyroidism, thyroiditis, tumors and nodules including thyroid cnancer
6. Radio-iodine therapy.
7. Iodine deficiencies and its presentation.
8. Effect of iodination of salt and development of thyroid disorders.
9. Thyroid hormone resistance.
10. Thyroid disorders during infancy, childhood and pregnancy.

I. Parathyroid gland :

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

J. Gonads and puberty:

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

K. Diabetes Mellitus and Metabolic syndrome:

1. Definition, epidemiology, diagnosis and classification of diabetes
2. Etiopathegensis of diabetes including, various genetic mutations for development of type 1, type 2 and MODY (Maturity onset diabetes of young).
3. 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).
4. Oral drugs for management of diabetes and their classes and mechanism of action.
5. Newer modalities in diabetes management including CGMS and insulin pumps.
5. Newer drugs in management of diabetes like :
   Insulin analogues, DPP-IV inhibitors, Exenatide , liraglutide
6. Complications of diabetes, their prevalence, presentation, work up and management of
   (a) Nephropathy
   (b) Neuropathy
   (c) Retinopathy
   (d) Peripheral vascular diseases
   (e) Hypertension
   (f) Ischemic heart disease

L. 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.

M. <u>Auto immune endocrinopathies</u>:

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

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Pattern of Question Papers:

1. Objective Type Paper
2. Maximum Marks: 100
3. Number of Questions: 100
4. Duration of Paper: Two Hours
5. All Questions carry equal marks
6. There will be Negative Marking

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