Unit-I - The basic science of endocrinology and metabolism:
- 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 D$_3$ 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, Rickets, 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: Turner's 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.

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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

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