

**DETAILED SYLLABUS FOR THE POST OF ASSISTANT PROFESSOR
(NEONATOLOGY) (MEDICAL EDUCATION)**

(Cat.No. : 363/2023)

BASIC SCIENCES (10 marks)

1. Basic genetics
2. Fetal and neonatal immunology
3. Applied anatomy and embryology
4. Feto-placental physiology
5. Neonatal adaptation
6. Thermo-regulation
7. Development and maturation of lungs, respiratory control, lung functions, ventilation, gas exchange, ventilation perfusion.
8. Physiology and development of cardiovascular system, developmental defects, physiology and hemodynamics of congenital heart disease.
9. Fetal and intrauterine growth.
10. Development and maturation of nervous system, cerebral blood flow, blood brain barrier, special senses.
11. Fetal and neonatal endocrine physiology
 1. Developmental pharmacology
 2. Developmental hematology
 3. Development of liver functions and bilirubin metabolism
 4. Renal physiology
 5. Physiology of gastrointestinal tract, sucking, swallowing, digestion, absorption.
 6. Metabolic pathways pertaining to glucose, calcium and magnesium
 7. Biochemical basis of inborn errors of metabolism

GENERAL TOPICS (10 marks)

1. Research methodology
2. Biostatistics
3. Ethics in perinatology/neonatology
4. NEONATAL RESUSCITATION
5. NEONATAL VENTILATION
6. BLOOD GAS AND ACID BASE DISORDERS
7. Care of low Birth weight babies
8. Transport of neonates
9. Neonatal procedures

PERINATOLOGY (20 marks)

1. Perinatal and neonatal mortality, morbidity, epidemiology.
2. High risk pregnancy: detection, monitoring and management.
3. Fetal monitoring, clinical, electronic; invasive, and non-invasive
4. Intrapartum monitoring and procedures
5. Assessment of fetal risk, and decision for termination of pregnancy
6. Diagnosis and management of fetal diseases
7. Medical diseases affecting pregnancy and fetus, psychological and ethical considerations
8. Fetal interventions.
9. Fetal origin of adult disease

NEONATAL ASSESSMENT AND FOLLOW UP

1. Assessment of gestation, neonatal behaviour, neonatal reflexes
2. Developmental assessment, detection of neuromotor delay, stimulation techniques
3. Growth monitoring
4. Immunization

BODY SYSTEMS (50 marks)

i) RESPIRATORY SYSTEM

1. Neonatal airways: physiology, pathology; management
2. Pulmonary diseases: Hyaline membrane disease, transient tachypnea, aspiration pneumonia, pulmonary air leak syndromes, pulmonary hemorrhage, developmental defects
3. Oxygen therapy and its monitoring
4. Pulmonary infections
5. Miscellaneous pulmonary disorders.

ii) CARDIOVASCULAR SYSTEM

1. Fetal circulation, transition from fetal to neonatal physiology
2. Examination and interpretation of cardiovascular signs and symptoms
3. Special tests and procedures (Echocardiography, angiography)
4. Diagnosis and management of congenital heart diseases
5. Rhythm disturbances
6. Hypertension in neonates
7. Shock: pathophysiology, monitoring, management.

iii) GASTROINTESTINAL SYSTEM

1. Disorders of liver and biliary system.
2. Bilirubin metabolism
3. Neonatal jaundice: diagnosis, monitoring, management, phototherapy, exchange transfusion.
4. Kernicterus
5. Prolonged hyperbilirubinemia
6. Congenital malformations
7. Necrotising enterocolitis

iv) NUTRITION

1. Fetal nutrition
2. Physiology of lactation
3. Breast feeding
4. Lactation management, breast milk banking, maternal medications and nursing
5. Feeding of Low Birth Weight
6. Parenteral nutrition
7. Vitamins and micronutrients in newborn health

v) RENAL SYSTEM

1. Developmental disorders
2. Renal functions
3. Fluid and electrolyte management
4. Acute renal failure (diagnosis, monitoring, management).

vi) ENDOCRINE AND METABOLISM

1. Glucose metabolism, hypoglycemia, hyperglycemia
2. Calcium disorders
3. Magnesium disorders
4. Thyroid disorders
5. Adrenal disorders
6. Ambiguous genitalia
7. Inborn errors of metabolism

vii) HEMATOLOGY

1. Physiology
2. Anemia
3. Polycythemia
4. Bleeding and coagulation disorders
5. Rh hemolytic disease

viii) NEUROLOGY

1. Clinical neurological assessment
2. Neonatal seizures
3. Intracranial hemorrhage
4. Neuro-physiology, EEG, BERA etc.
5. Brain imaging
6. Hypoxic ischemic encephalopathy
7. Neuro-muscular disorders
8. Degenerative diseases
9. CNS malformation

ix) SURGERY AND ORTHOPEDICS

1. Diagnosis of neonatal surgical conditions
2. Pre and post operative care
3. Neonatal anesthesia
4. Metabolic changes during anesthesia and surgery
5. Orthopedic problems

x) NEONATAL INFECTIONS

1. Intrauterine infections
2. Superficial infections
3. Diarrhea
4. Septicemia
5. Meningitis
6. Osteomyelitis and arthritis
7. Pneumonias
8. Perinatal HIV
9. Miscellaneous infective disorders including HBV and Candidemia

xi) NEONATAL IMAGING

1. X-rays, ultrasound, MRI, CT Scan etc.

xii) NEONATAL OPHTHALMOLOGY

1. Developmental aspects
2. Retinopathy of prematurity
3. Sequelae of perinatal infections

xiii) Neonatal ENT disorders

xiv) Neonatal dermatology

Community Neonatology (10 marks)

1. Vital statistics, health system;
2. Causes of neonatal, perinatal death
3. Neonatal care priorities and National programmes
4. Neonatal care at primary and secondary levels
5. Role of different health functionaries

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper.