

# DETAILED SYLLABUS FOR THE POST OF ASSISTANT

## PROFESSOR IN KAUMARABHRITYA

### AYURVEDA MEDICAL EDUCATION

(Cat. No. 112/2021)

#### 1. Module I (8 Marks)

- Development of Kaumarbhritya tantra including ancient and modern literature. Strength of Ayurveda specific to child health care: ancient and modern developments and knowledge of special contribution from Kerala in the field of Kaumarabhritya. Vayobheta (classification of age) according to different classics: modern and Ayurvedic classification of age; importance of classification and its application.
- Anatomical and physiological differences in child compared to adult: characteristic differences with its reason both anatomical and physiological, specific characters of dosa, dhatu, mala and srotas in children, special consideration based on these differences in treatment.
- Ayurvedic consideration of physiology and pathology of Dosha, Dhatu, Mala, Ojus, Agni, Prakriti (sharirika-manasika), Kaya and Dhatuposhana in children:
  - Basic concepts of fundamental concepts with special emphasis of children.
  - Characteristic differences in children.
  - Treatment principles with special consideration of specific differences in children
- Basic concepts of growth and development, and its assessment
  - Modern and Ayurvedic concepts of growth and development.
  - Methods to assess
  - Factors which influence growth and development
- Ayurvedic and modern clinical methods of examination of healthy and diseased newborn and children
  - Examination of healthy new born including gestational age assessment
  - Basics of examination based on Lakshanadhyaya, Caraka sareera

- General examination of a child
- Systemic examination in children
- Knowledge of modern diagnostic tools like clinical and laboratory investigations, X-ray, USG, MRI etc.
  - Laboratory investigation and its interpretation
  - Different diagnostic tools- advantages, disadvantages and interpretation

## **2. Module II (8 Marks)**

- Fundamentals of Ayurvedic treatment for childhood disorders
  - Treatment fundamentals in Kaumarabhritya and thrust areas of Ayurveda
  - Special considerations in treatment considering the immaturity in children
- Applied pharmacological considerations: Ayurvedic and modern concepts of drug doses, administration, distribution, metabolism, excretion and other important factors of consideration
  - Drug dose in children– Ayurveda and modern
  - Methods of drug administration in children
  - Action of a drug in children
- National programs related to pediatrics
  - Objectives, components, implementation, present status
- Childhood Samskara
  - Time of each samskara
  - Procedure and things to be taken care of while performing
  - Relevance
  - Benefits and complications
- Principles of Child Psychology (Ayurvedic & modern concepts)
  - Basic concepts in Ayurveda and Modern

- Concept of Bala Rasayana and its application in physical and mental health of children: Definition, types and merits
  - Different examples and its merits
  - Method of administration and duration and probable action
- Concept of Vyadhi-Kshamatva avam Vardhanopaya.
  - Concept of immunity and immune enhancing measures including immunization.
  - Concepts of vyadhikshamatva, factors influencing it
  - Different methods to improve vyadhikshamatwa
  - Immunity – definition, types, importance
  - Immunization – need, significance, methods
  - Immunization schedule- based on National immunization schedule and Indian Academy of pediatrics
  - Rationale, dosage and complication of each vaccine
- Concept of Dhupana and Raksha karma and their clinical application in pediatric practice
  - Methods of dhoopana and raksha karma
  - Relevance
  - Merits

### **3. Module III (6 Marks)**

- Basics concepts of single drugs commonly used in pediatric practice with special reference to their karma like - Guduchi, Yastimadhu, Mandukaparni, Shankhapushpi, Ativisa, Pippali, Maricha, Shunti, Haritaki, Amalaki, Tulasi, Bhumyamalaki, Daruharidra, Haridra, Vidanga, Katuki, Dadima, Brahmi, Ashvagandha, Shatavari, Bala, Kampillaka, Trivrita, Jyotishmati, Vacha, Jeevanti, Rasna, Shatavari, Anantamula(Krishna Sariva), Druva, Khadir, Tankana, Tambula, Jatamansi, Sphatika.
- Properties of single drugs with its therapeutic action

- Application of these drugs in common pediatric ailments
- Knowledge of their ingredients, indications, precautions, and specific considerations
- Including adverse drug reactions (ADR) of commodity used Ayurvedic formulations in
- Pediatric practice e.g. Aravindasava, Baalachaturbhadra Churna, Kumarakalyana Rasa, Saraswatarista, Swarnaprashna (Kashyapa Samhita), Kumaryasava, Kushmanda Rasayana (Sharangdhar), Ashvagandha Rasayana (Ashtanga Hridaya), Brahmi Ghrita, Kalyanaka Ghrita, Talishadi Churna, Sitopaladi Churna, Haridra Khanda, Krimikuthara Rasa, Mugdha Rasa, Dantodbheda-Gadantaka Rasa, Rajanyadi Churna (Ashtanga Hridaya), Samvardhana Ghrita, Ashta Mangala Ghrita.
- Methods of preparation of various specific Kalpana (e.g. Lehya, Syrup, drops etc.) according to needs of children
  - Methods of preparation
  - Current importance
  - Future possibilities
- Common instruments and their application in new born care and general pediatric practice.
  - Instruments used in neonates and children – parts, mode of use, indication and contraindication
- Specific considerations in research methods related to Pediatrics
  - Specific aspects in pediatric research
  - Methods of consent / assent
- Regulatory laws related to child health management
  - Knowledge about current laws related to child health

#### **4. Module IV (12 Marks)**

- Prakrita Bija-Bijabhaga-Bijabhagavayava evam Tadjanya Vikriti (Genetics and related disorders)

- Ayurvedic genetics with modern interpretations: Human Genetics and Embryology)
- Shukra, Shonita, Shukra Shonita Doshas - Properties of sudha shukra and shonita, functions.
- Ashta dosa of sukra and sonata, prognosis, its management
- Bija-Bijabhaga-Bijabhagavayava Vikriti
  - Concept of beeja, beeja bhaga, beeja bhaga avayava, beeja bhaga avayava ekadesa
  - Disorders due to beeja dushti in female: vandhya, puti praja, varta
  - Disorders due to beeja dushti in male: vandhya, puti praja, trina putrika
- Garbhaja Bhavas
  - Matrija and pirija bhava according to different Acharya
  - Modern interpretation - Yajjah Purushiya
  - First formed components according to different Acharya
  - Factors responsible for growth and disease – the role of hita and ahita ahara
  - Athulyagotriya
  - Importance of atuya gotra in preventing hereditary diseases
  - Factors responsible for formation of healthy fetus
  - Factors responsible for sex determination
  - Factors responsible for sex abnormality
  - Factors responsible for abnormality in fetus
- Measures for obtaining good progeny.
- Garbhadhana yogya and ayogya kala
- Factors essential for conception: ritu, kshetra, ambu and beeja
- Garbhadana poorva karma
- Garbhini charya
- Modern Genetics

- Basic Concepts:
- Cell: Structure of cell, organelles, functions
- Cell division: cell cycle, different stages in mitosis and meiosis and its relevance
- Nucleus: structure, functions,
- DNA: basic structure, synthesis of proteins, duplication
- Chromosomes: structure, significance, classification
- Karyotype: chromosome preparation, peripheral blood culture, high resolution banding, applications of karyotyping
- Molecular genetics: structure of nucleic acid- DNA, RNA, transcription and translation, gene, mutation
- Cytogenetics
- Structure of gene: structure of nucleic acid
- Molecular screening.
- Human Chromosomes-structure, number and classification, methods of chromosome preparation, banding patterns.
- Single gene pattern inheritance: Autosomal & Sex chromosomal pattern of inheritance, Intermediate pattern and multiple alleles, Mutations, Non Mendelian inheritance, mitochondrial inheritance, Genomic imprinting, parental disomy- characteristics of each inheritance
- Criteria for multi-factorial inheritance- characteristics, examples of common multifactorial diseases with a genetic contribution
- Pathogenesis of chromosomal aberrations and their effects, recombinant DNA, genetic inheritance, inborn errors of metabolism: important examples.
- Chromosomal abnormalities: Autosomal & Sex chromosomal abnormalities, syndromes.
- Multifactorial pattern of inheritance: Teratology, Cancer Genetics- Haematological malignancies, Pharmaco-genetics.
- Chromosomal disorders: numerical and structural abnormalities with examples
- Chromosomal aberration (Klinefelter, Turner and Down's syndrome): genetic basis, clinical features, associated problems, management. Genetic

Counseling: family history risk assessment, common indications, Ethics and Genetics.

### **5. Module V (10 Marks)**

- Prakrita Bija-Bijabhaga-Bijabhagavayava evam Tadjanya Vikriti (Genetics and related disorders)
- Garbha (embryo): paribhasa, Garbhawastha (gestation period), sperm, ovum; spermatogenesis; oogenesis; structure of ovum
  - Sperm in the male genital tract; sperm in the female genital tract, activation and capacitation of sperm, Garbhadana vidhi
  - Garbha Masanumasika Vriddhi evam Vikasa (Ayurvedic and modern concepts of Embryo and Fetal development)
  - First week of development: fertilization, cleavage, blastocyst formation
  - Second week of development: changes in trophoblast, development of embryo
  - Third week of development: gastrulation, formation of notochord
  - Fourth to eighth week of development (Embryonic period): derivatives of germ layer, neurulation
  - Development from third month till birth (Fetal period)
  - Formation of Prakriti, their assessment in children viz. Bala, Kumara, Yauvana, Pathiya- Apathya according to Prakriti.
  - Formation of prakirti
  - Types
  - Factors influencing formation
  - Characters of each prakriti
  - Assessment of prakriti in children

- Pathya apathy based on prakriti
- Apara (Placenta) Apara Nirmana (Formation of placenta), Apara Karya (Functions of placenta); Apara Vikara (placental abnormalities)
- Formation
- Placental circulation
- Variations/ Anomalies
- Functions
- Nabhinadi (Umbilical Cord)
- Formation and functions of Nabhinadi
- Nabhi nadi vikara
- Formation, features, contents and functions of umbilical cord
- Garbha Poshana (Nutrition-from conception to birth)
- Concepts of garbha poshana
- Disorders due to improper poshana – Ayurveda and modern
- Management Ayurveda and modern
- Yamala Garbha (twins):
- etiology, incidence, types of twins.
- Cause of yamala garbha and its features
- Garbha Vriddhikara Bahvas, Garbhopaghatakarah Bhavas
- Concepts of garbhavridhikara bhava
- Concepts of garbha upaghatakarah bhava
- Effect of maternal medication, diet and illness over fetus
- Ayurvedic and modern concepts
- Teratology including effects of bija, atma karma, kal, ashaya etc. causative factors for teratogenicity, mode of actions of teratogenes, critical periods.
- Perinatal Care and Perinatal complications
- Ayurvedic and modern aspects of perinatal care

- Scientific study of Jataharini specific to children: clinical features of each type
- Prenatal diagnosis: indication and methods of prenatal diagnosis
- Samanya Janmajata Vikara (Common congenital anomalies of different systems):  
Sahaja Hridaya Vikara (Congenital Cardiac Disorders: acyanotic and cyanotic CHD with special emphasis on VSD, ASD, PDA, pulmonary valve stenosis, aortic valve stenosis, coarctation of aorta, teratology of fallot, and transposition of great arteries)  
Jalashirshaka: nidana, samprapti, poorvarupa, rupa and chikitsa (Hydrocephalus: communicating and non communicating, clinical features, management, chiary and dandy walker malformation), Khandaoushtha (cleft lip), Khanda-Talu (cleft palate), Sanniruddha Guda (Anal Stricture/imperforated anus), Pada-Vikriti(Talipes equanovarus and valgus), Tracheoesophageal Fistula (TOF), Spina bifida, Meningomyelocele, Pyloric Stenosis. (Etiology, pathogenesis, types, clinical features, prevention and management).

#### **6. Module VI (12 Marks)**

- Navajata Shishu Paribhasha, Vargikarana (Important definitions and classification related to neonates.)
- Definitions related to neonatology
- Modern and Ayurvedic classification of neonates.
- Navajata Shishu Paricharya evam Prana-Pratyagamana (Care of the newborn including recent methodology for the resuscitation):
- Basics of resuscitation – need, methods, indication and contraindication
- Prana prathyagamana based on different classics
- Samanya Navajata Shishu Paricharya (General Neonatal Care- Labour room onwards): - modern and ayurvedic concepts of new born care.
- Samanya purva evam Samaya pashchat Jata Shishu Paricharya (Management of preterm, post term and IUGR newborn)
- Preterm/ samaya poorvajatha- causes, clinical features, physiological handicaps, management and care of preterm babies – Ayurvedic and modern concepts
- Post term – causes, clinical features and management

- Small for date, IUGR and Large for date babies
- Ayurvedic concepts of garbha sosa, upavishtaka, nagodara, leena garbha and management
- Prasava Kalina Abhighataja Vyadhi (Birth injuries): Upashirshaka (Caput, cephalohematoma), Bhagna (Fractures), Mastishkantargata Raktasrava (ICH, IVH, Subdural hemorrhage) clinical features and management
- Navajata Shishu Parikshana (Examination of new born): Ayu Parikshana (including Lakshanadhyaya) Modern approach of Neonatal Examination including gestational age assessment.
- Examination of new born at birth – Ayurveda and modern
- Assessment of gestational age
- Kumaragara: Navajata Shishu Kaksha Prabandhana (Nursery management), NICU, Nursery plan, staff pattern, medical records, Visankramnikarana (sterilization), Knowledge of equipments used in nursery.
- Concepts of Kumaragara and sutikagara
- Organisation of special care neonatal unit
- Navajata Shishu Vyadhi (Early neonatal disorders): Hypothermia, Shvasavarodha (Asphyxia Neonatorum / Respiratory distress), Ulvaka (Aspiration pneumonia), Rakta Vishamayata (Neonatal septicemia), Kamala (Neonatal Jaundice), Akshepaka (Neonatal convulsion), Pandu (Anemia), Atisara (Diarrhea), Asamyaka Nabhinal kartanjanya vyadhi. Etiology, classification, clinical features, complications, prevention and management.
- Navajata Kshudra Vikara (Minor neonatal ailments): Chhardi (Vomiting), Vibandha (constipation), Udara shul (Infantile colic), Puya Sphota (Pyoderma), Shishu Netrabhishyanda (Ophthalmia neonatorum). Etiology, classification, clinical features, complications and management.
- Sadyojatasya Atyayaylka Chikitsa (Management of neonatal emergencies): Shock, Fluid and electrolyte imbalance, Convulsion, Hemorrhagic diseases of Newborn etc,

## **7. Module VII (12 Marks)**

- Treatment Procedures: Shiro-Pichu, Abhyanga, Parisheka, Pralepa, Garbhodaka Vamana (Stomach wash), Ashchyotana Neonatal resuscitation techniques, Blood

sampling, intravenous canulation, Umbilical vein catheterization, Bone marrow aspiration, Phototherapy, Naso-Gastric tube insertion, Urethral catheterization, Exchange blood transfusion, Tharacocentesis, Bone marrow infusion, Lumbar puncture. Basic knowledge of the procedure, different methods, indications and contraindications.

- Nutrition: Navjat Shishu Ahara (Neonatal feeding):
- Specific Feeding methodology as per Ayurveda and recent advances; Day to day fluid, milk, caloric requirement for the newborn, feeding technique for the preterm baby.
- Feeding methods as per Ayurveda and its relevance
- Feeding techniques based on modern
- Feeding of preterm based on gestational age
- Stanyotpatti and Prasruti (Lactation physiology), Stanya Samghatana (Composition of breast milk), Stana Sampat (Characteristics of normal breast), Stanya Sampat evarn Mahatva (Properties & importance of pure milk), Stanya-Piyusha (Colostrum); Stanya-Pana-Vidhi (Method for breast milk feeding), Stanyakshaya Stanyanasha (inadequate production and absence of breast milk), Stanya parikshana (Examination of breast milk), Stanyabhava Pathya Vyavastha (Alternative feeding methods in absence of breast milk), Various feeding methods, TPN (Total Parenteral Nutrition)
  - Stanyadosha (Vitiation of Breast milk), Stanya Shodhana (Purification of breast), Stanya Janana and Vardhanopakrama (Methods to enhance breast milk formation) - knowledge of practices in modern and Ayurveda
  - Stanya dosa- methods to assess, types, diseases caused by stanya dushti
  - Stanya sodhana methods
  - Stanya vardhana- methods – Ayurveda and modern
  - Dhatri (Wet nurse): Dhatri Guna and Dosha (Characteristics of Wet nurse), of Breast Milk Banking.
  - Dhatri- characters, guna and dosa
  - Treatment of dhatri
  - Concept of breast milk banking- indication, steps
- Lehana (Elucturies)
  - Indications, contraindications, examples, relevance
  - Bala-Poshana (Child Nutrition):

- Daily requirements of nutrients for infant and children
- Common food sources – food sources, food based on rasa
- Satmya and Asatmya Ahara (Compatible and incompatible diet)
- Examples, benefits and hazards
- Pathya evam Apathya Ahara (Congenial and non-congenial diet)
- importance, management
- Stanyapanayana (Weaning)
- Time of weaning, procedure, diseases during weaning, relevance

### **8. Module VIII (12 Marks)**

- Modern and Ayurvedic aspects of etiology, types, clinical features, complications and management of following diseases:
- Pranvaha Srotasjanya Vyadhi (Respiratory disorders)- Kasa (Cough), Shvasa (Respiratory distress Syndrome), Tamaka Shwasa (Childhood Asthma), Bronchiolitis, Shvasanaka Jwara (Pneumonia- bacterial, viral etc) Rajyakshma (tuberculosis), Vaksha-Puyata (Pyothorax), Vaksha Vata-Purnata (Pneumothorax)
- Annavaha Srotasjanya Vyadhi (Gastrointestinal disorders): Jwar (Fever), Chardi (Vomiting) Ajirna (Indigestion), Kshiralasaka, Atisara (Diarrhea), Pravahika, Vibandha (Constipation, Udarshula (Pain in abdomen), Guda bhramsh (Rectal prolapse)
- Rasa evam Raktavaha Srotasjanya Vyadhi (Hematological and circulatory disorders): Pandu (Anemia and its various types like Nutritional, haemolytic etc.) and , Raktapitta (Bleeding disorders), Vishishta Hridrog (Specific cardiac diseases- RHD etc), Hypertension, Leukemia.
- Mamsavaha Srotasjanya Vyadhi: Myopathies
- Mutravaha srotasjanya Vyadhi (Urinary System disorders): Vrikkashotha (Glomerulonephritis and nephrotic syndrome), Mutrakriccha (Dysuria), Mutraghata (Anuria),
- Vatavaha Sansthanjanya Vyadhi (Nervous system disorders): Apasmara (Epilepsy), Mastulunga-Kshaya, Mastishka-Shotha (Encephalitis), Mastishkavrana-Shotha (Meningitis),

## **9. Module IX (10 Marks)**

- Pediatric disabilities and Rehabilitation: Cerebral palsy, Ardita (Facial paralysis), Pakshavadha (Hemiplegia), Ekangag vata (Monoplegia), Adharanga Vayu (diplegia), Amavata (Juvenile Rheumatoid arthritis)
- Manovaha Srotasa Vyadhi: Breath holding spell, Shayya mutra (Bed wetting), Autism, ADHD (Attention Deficit and hyperactive disorders), Learning Disability, Mental retardation, Temper tantrum, Pica.
- Antahsravi evam Chayapachayajanya Rog (Endocrine and Metabolic disorders)
- Kuposhanjanya Vyadhi (Nutritional disorders): Karshya-Phakka-Balshosha-Parigarbhika (PEM and allied disorders), Vitamin-mineral and trace elements deficiency disorders, Hypervitaminosis
- Krimi evam Aupsargika Rog (infestations and Infections): Krimi (Giardiasis and intestinal helminthiasis, Amoebiasis) Common bacterial, viral infections with special reference to vaccine-preventable diseases: Rohini (Diphtheria), Whooping cough, Apatanaka (Tetanus including neonatal tetanus), Romantika (Measles), Karnamula Shotha (Mumps), Rubella and Masurika (Chickenpox), Antrika Jwar (Typhoid and Paratyphoid), Viral Hepatitis; Vishama Jwar (Malaria) and Kala-azar, Dengu fever, HIV (AIDS), Poliomyelitis, Mastishkavaran Shotha (Meningitis), Mastishka Shotha (Encephalitis), Chickengunia

## **10. Module X (10 Marks)**

- Tvaka Vikara (Skin disorders): Ahiputana (Napkin Rashes), Shakuni (impetigo), Sidhma, Pama, Vicharchika, Charmadal (infantile atopic dermatitis), Gudakutta.
- Anya Vyadhyi (Miscellaneous disorders): Jalodar (Ascites), Gandamala, Apachi (Cervical lymphadenitis), Kukunakadi Akshi Rog, Hodgkin & non-Hodgkin Lymphoma, Abnormal growth patterns, Short stature, Niruddha prakash (Phimosis), Paridagdha Chhavi, Utpullika
- Samghata- Bata Pravrita Rog (damstra): Dog bite. Snake bite, Scorpion bite etc
- Atyayika Balarog Prabandhana (Pediatric emergency management): Shock and Anaphylaxis, Fluid and electrolyte management, Drowning, Foreign body

aspiration, Status epilepticus, Acute hemorrhage, Acute renal failure, Febrile convulsion, Status asthmaticus, Burn, Acute Poisoning

- Balagraha: Scientific study of Graha Rogs – definition, classification, types, clinical features and management
- Life Style disorders: knowledge of common lifestyle disorders
- Significant contributions of Kashyapa samhita, Arogya raksha Kalpadrum and other texts /treatises of Ayurveda such as Harita Samhita in the field of Kaumarbhritya including relevant parts from Brihatrayi
- Relevant chapters from Ashtanga hridaya, Ashtanga Sangraha, Susruta Samhita, Caraka Samhita, Kasyapa Samhita, Arogyaraksha kalpadruma, Harita Samhita, Bhaisajya ratnavali, Bhavaprakasa, Madhava Nidana, Sarangadhara Samhita, Yoga ratnakara, Bhela Samhita and Vaidya Taraka.
- Panchakarma: Principles of Panchakarma [Swedan-Hasta-Pata sweda etc.] and their application in pediatric practice in detail
- Update knowledge of clinical pediatrics including recent researches in Kaumarbhritya
- Recent developments in Kaumarabhritya.
- Fundamentals of Hospital management with special emphases on Pediatric Ward: knowledge about pediatric ward and incorporation of relevant aspects of Kumaragara.

***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***