

## **Pre-Registration Qualifying Entrance Examination syllabus for Ph D Programme in Home Science 2023-2024**

### **UNIT-I**

**Processing of foods:** Wheat, rice, millets, legumes, fruits and vegetables, fats and oils, sugar and confectionaries, beverages, milk and milk products, eggs, meat and fish. Concept and meaning of food quality and food Safety. National and international food laws, food standards. Hazard analysis and critical control points in processing of foods.

**Quality control in Food industry:** Product development and sensory evaluation- Food spoilage and its control. Contamination and spoilage of cereal, pulses, vegetables, fruits, flesh foods, eggs, poultry, marine products, milk & milk products.

**Food Preservation:** Principles and types and techniques of preservation. Recent concepts in food science and nutrition: Nutrigenomics, metabolomics, nutrition for space travellers, nutraceuticals, functional foods, genetically modified foods, fat substitutes, emerging food processing technologies

### **UNIT-II**

**Concept of Human Nutrition:** Determination of energy value of food – bomb calorimeter, physiological fuel value, Benedict'soxy calorimeter, BMR- factors affecting BMR.

**Carbohydrates:** classification, functions, digestion, absorption, utilization of carbohydrate and glycaemic index, Dietary fibre-classification, physiological properties and nutritional significance.

**Proteins:** classification, function, digestion and absorption, RDA, sources, Evaluation of protein quality, Deficiency- marasmus and kwashiorkor

**Lipids:** classification, functions, digestion and absorption, RDA, sources. Types of fatty acids, role of essential fatty acid, effect of deficiency and toxicity and lipid transformation in the liver and lipotropic factors deposition of fat in the body

**Minerals and Trace Elements:** Physiological role, RDA, sources, deficiency and excess (calcium, phosphorus, Iron, Fluorine, Zinc, Selenium and Iodine). Vitamins – Physiological role, RDA, sources, deficiency and excess (Fat Soluble vitamin A, D, E & K and water soluble vitamins,

### **UNIT –III**

**Pregnancy: Physiological** adjustments, food and nutritional requirements, storage of nutrients during pregnancy, complications of pregnancy and their nutritional management.

**Lactation:** Physiology of lactation, factors affecting lactation, nutritional requirements, Lactogoues foods, and nutrient requirements during lactation

**Infancy:** Growth and development, nutritional requirements, Weaning practices, weaning and supplementary Foods

**Preschool age and school age** : Growth and development, nutritional requirements, special care in feeding pre-schoolers, nutritional problems specific to this age.

**Adolescence and Adult**: Nutritional requirements, nutritional status of Indian adult population, nutritional problems common to this age.

**Elderly**: physiological and psychological problem during old age, nutritional problems. Nutrient requirements, special needs during old age

#### **UNIT-IV**

Assessment methods for research and practice: Dietary, anthropometric, clinical, functional, biochemical tests, body composition, as applicable in individuals, populations and specific situations, integrating assessment data – subjective global assessments.

Role of dietician in a health care team in hospital and community. Recent concepts in dietary management of various nutritional disorders and disease conditions: fevers, infections, Tuberculosis, Protein Energy Malnutrition, Burns, Allergy, Gastrointestinal disorders and Liver diseases. Dietary management of cardiovascular diseases, Renal disorders and obesity. Dietary management of diabetes, cancer and HIV. Role of Immune Booster compound in Covid

#### **UNIT V**

Classification of functional foods and Nutraceuticals compound -Role of phytochemical, commonly used botanicals and their active compounds. Radicals and non-radicals in oxidative stress, Nutritional effects on oxidative stress -Biotechnological intervention in nutrition transition, biotechnology and food safety. Non nutritional food components with potential health benefits – polyphenols, tannins, phytate, phytoestrogens, cyanogenic compounds, lectins, saponins and Prebiotic, probiotic, symbiotic and symbiotic-infant formula and medical foods. Food biotechnology and safety: Nutrigenomics and nutrigenetics, genetically modified foods, Biotechnological intervention in nutrition transition, biotechnology and food safety