FOOD TECHNOLOGY (FT)

Food Chemistry and Nutrition:

Food chemistry: Carbohydrates -Structure and functional properties of mono, di&oligo-polysaccharides including starch, cellulose, pectic substances and dietary fibre; Proteins - Classification and structure of proteins in food. Lipids-Classification and structure of lipids, Rancidity of fats, Polymerization and polymorphism; Pigments-Carotenoids, chlorophylls, anthocyanins, tannins and myoglobin; Food flavours-Terpenes, esters, ketones and quinones; Enzymes-Enzymatic and non-enzymatic browning in different foods;

Nutrition: Balanced diet, Essential amino acids and fatty acids, PER, Water soluble and fat soluble vitamins, Role of minerals in nutrition, Antinutrients, Nutrition deficiency diseases.

Food Microbiology & Biotechnology:

Food Microbiology: Characteristics of microorganisms-Morphology, structure and detection of bacteria, yeast and mold in food, Spores and vegetative cells; Microbial growth in food- Intrinsic' and extrinsic factors, Growth and death kinetics, serial dilution method for quantification; Food spoilage-Contributing factors, Spoilage bacteria, Microbial spoilage of milk and milk products, meat and meat products; Foodbome disease-Toxins produced by Staphylococcus, Clostridium and Aspergillus; Bacterial pathogens- Salmonella, Bacillus, Listeria, Escherichia coli, Shigella, Campylobacter;

***Biotechnology*:** Fermented food- Buttermilk, yoghurt, cheese, sausage, alcoholic beverage, vinegar, wine, beer, whisky, sauerkraut and soya sauce.

Food Technology:

Cereals, pulses and oil seeds: Composition, nutritive value, processing methods and products of i) rice, wheat, and maize, barley, oats & minor millets; ii) Bengal gram, red gram, green gram, black gram, chick peas iii) Ground nut, soya bean, sunflower & other oil seeds.

Fruits, vegetables and plantation crops: Extraction, clarification concentration and packaging of fruit juice, Production of jam, jelly, marmalade, squash, candies, and pickles, pectin from fruit waste, tea, coffee, chocolate and essential oils from spices.

Meat, fish, poultry & milk: Post mortem changes of meat, freezing, aging, pickling, smoking and tenderization of meat, Drying and canning of fish. Structure, composition, nutritive value and functional properties of eggs and its preservation by different methods. Milk and milk products processing: Milk processing flow sheet, filtration/clarification, storage of milk, standardization - simple problems in standardization, Homogenization, pasteurization- types of pasteurization process. Manufacture of Cream, Butter, Ghee, Milk powder, Cheese.

Food Engineering:

Fluid Mechanics: Nature of fluids, flow properties of fluids, flow through pipes & fittings, flow measurement, transportation of fluids - pumps, compressors and blowers; Heat transfer: Heat transfer by conduction, convection, radiation, boiling and condensation, steady & unsteady state heat transfer; Other unit operations: size reduction, homogenization, filtration, sedimentation, centrifugation, sieving, mixing, extraction, crystallization, evaporation, drying and extrusion. Types of equipment used in each unit operation, their selection, applications in food industry.

Food Quality & Standards:

Food Quality: Food Quality and Quality Attributes-Classification of Quality Attributes and their role in food Quality. Quality Assessment of Food materials - Fruits and Vegetables, Cereals and pulses, dairy Products, Meat, Poultry, Egg and Processed food Products Sensory Evaluation of Food Quality and its methods Food Adulteration and Food Safety.

Standards: FSSAI / PFA Act 1954 and Rules 1955-Scope; definitions & standards of quality. FPO and MPO-Rules, FSMS -22000:2005-Various elements included in the standard, Introduction to the family of ISO 22000 standards, Comparison of ISO 9001:2008 vs. ISO 22000:2005, FSSAI. HACCP-Terminology, Principles, Identification of CCPs, Application of HACCP System and the logic sequence involved.