Syllabus for MTech Entrance Examination- 2026

MTech (Food Technology) in Food Process Engineering, Food Process Technology and Food Safety and Quality Assurance

Unit 1: Basics of Food Preservation and Processing

Principles and objectives of food preservation; thermal processing methods such as pasteurization and sterilization; low-temperature preservation including refrigeration and freezing; drying and dehydration; evaporation and concentration; membrane processing; extrusion and mixing operations; Modified Atmosphere Packaging (MAP), Controlled Atmosphere Storage (CAS), and shelf-stable foods.

Unit 2: Food Chemistry and Nutrition

Structure, properties, and functions of carbohydrates, proteins, and lipids in foods; vitamins, minerals, pigments, food flavours; enzymes and their role in food systems; enzymatic and non-enzymatic browning; nutritional significance of foods; functional foods, probiotics, prebiotics, and nutraceuticals; chemical changes during food processing and storage.

Unit 3: Food Microbiology

Classification and characteristics of food microorganisms; factors affecting microbial growth in foods; microbial growth and destruction; beneficial microorganisms in fermented foods; food spoilage organisms; foodborne infections and intoxications; important foodborne pathogens and mycotoxins; basic methods used for microbial analysis of foods.

Unit 4: Food Properties

Physical properties of food materials, including size, shape, density, porosity, and moisture content; frictional and flow properties of particulate foods; thermal, optical, and dielectric properties; fundamentals of rheological behaviour and viscoelasticity of foods.

Unit 5: Heat, Mass and Momentum Transfer

Fundamental principles of heat, mass, and momentum transfer; conduction, convection, and radiation heat transfer; heat exchangers; fluid flow and pressure drop relationships; diffusion and mass transfer; psychrometric principles and humidification operations; significance of dimensionless numbers in food processing.

Unit 6: Processing of Food Grains, Spices and Plantation Crops

Composition and processing of cereals, pulses, millets, and oilseeds; cleaning, grading, milling, and parboiling operations; oil extraction and refining; processing of spices, tea, coffee, cocoa, and coconut; extraction of essential oils and oleoresins; utilization of processing by-products.

Unit 7: Processing of Fruits and Vegetables

Post-harvest handling and storage of fruits and vegetables; processing of juices, jams, jellies, pickles, and tomato products; dehydration and freezing technologies; fermented fruit and vegetable products; packaging and storage; utilization of processing waste and by-products.

Unit 8: Dairy Technology

Composition and properties of milk; milk processing operations including clarification, standardization, pasteurization, homogenization, and sterilization; manufacture of major dairy products such as butter, ghee, cheese, milk powder, ice cream, paneer, and khoa; dairy sanitation and cleaning practices.

Unit 9: Processing of Meat, Fish and Poultry Products

Composition and quality characteristics of meat, fish, poultry, and eggs; basic processing operations; preservation methods including chilling, freezing, curing, smoking, drying, and canning; cold chain management; quality assessment and by-product utilization.

Unit 10: Bakery, Confectionery and Extruded Products

Ingredients and processing of bakery products such as bread, biscuits, and cakes; manufacture of confectionery and chocolate products; principles and applications of food extrusion; production of snack foods and breakfast cereals; basics of sensory evaluation and new product development.

Unit 11: Food Conveying, Packaging and Labelling

Principles of food conveying systems; functions and requirements of food packaging; packaging materials including paper, glass, metal, and plastics; packaging machinery; active and intelligent packaging concepts; food labelling, barcoding, and testing of packaging materials.

Unit 12: Plant Layout, Instrumentation and Process Control

Principles of plant location and layout; process flow diagrams and equipment selection; measurement of process variables such as temperature, pressure, flow, and humidity; sensors and transducers; fundamentals of process instrumentation, PLC, SCADA, and process control systems.

Unit 13: Principles of Food Safety and Quality Management

Food safety hazards and contamination sources; sanitation and personal hygiene; food adulteration and detection methods; food additives and their functions; quality control and quality assurance systems; Good Manufacturing Practices (GMP), Good Agricultural Practices (GAP), HACCP; national and international food standards and regulatory frameworks.