

**CSIR – Central Food Technological Research Institute, MYSURU 570 020**  
**SYLLABUS FOR ENTRANCE TEST FOR M.Sc (Food Technology)**

The question paper will contain short and objective questions on the following topics. There will be balanced distribution of questions from each of the subjects listed below, so that students from various eligible streams will get equal opportunity to score in the test.

**Subjects covered:** Physics, Chemistry, Mathematics, Biology, Microbiology, Biochemistry and Nutrition, Agriculture, Dairy technology, Engineering

**1. PHYSICS:**

Elements of mechanics, colligative properties, laws of thermodynamics, modes of heat transfer, electrostatics, magnetism and electrodynamics, outlines in optics and sound, electromagnetic radiation, radioactivity and elements in quantum physics.

**2. CHEMISTRY:**

The gas laws, properties of gases, electrolytes, thermo-chemistry, chemical equilibria, chemical kinetics, concept of pH and buffer, molecular orbital theory, chemical bonds and the forces involved therein, periodic table, aliphatic and aromatic hydrocarbons, organic substitution reactions, electrophilic and nucleophilic reactions, isomerism, structural and optical isomers, food chemistry, composition of foods, minerals in foods, water activity in foods, carbohydrates, mono and di-saccharides, reducing and non-reducing sugars, mutarotation, starch, cellulose, pectins, plant acids and proteins, primary, secondary and tertiary structures of proteins, protein denaturation, peptide bonds, amino acids, saturated and unsaturated fats, rancidity.

**3. MATHEMATICS:**

Theory of quadratic equations, binomial theorem, uses of natural and common logarithms, trigonometry, ratios and their relations, basics of matrices, vectors, determinants.

**4. BIOLOGY:**

Botany, systematics of plants, ecology, cytology and physiology of plants, economic botany, zoology, molecular basis of life, nucleic acids and their role in life, elements of genetics, organisation of animal tissues, elements in human physiology, endocrine glands, digestion, absorption, respiration, general physiology of animals, systematics of animals.

**5. MICROBIOLOGY:**

Historical development in microbiology, morphology, cytology, reproduction and genetics of bacteria, yeasts and moulds, culture technique and identification, stains and staining techniques, growth, nutrition and physiology of micro-organisms, control and food safety, general principles of food preservation, microbiological standards.

## **6. BIOCHEMISTRY AND NUTRITION:**

Enzymes, coenzymes and cofactors, hormones, elements of carbohydrate, fat and protein metabolism, elements of photosynthesis, vitamins and their function in body, minerals and their function in body, elements in protein synthesis, RDA, nutritional deficiencies, role of vitamins, water, dietary fiber and minerals in health, macro and micronutrients and their role in health, foods for specific diseases like PKU, CVD and diabetes.

## **7. AGRICULTURE AND DAIRY TECHNOLOGY:**

Agriculture, weather and crops, soil and water resources, soil and water conservation, soil fertility and fertilizer use, cropping patterns and weed control, diseases, insect pests and nematodes of crops, agricultural engineering, agriculture marketing and storage, farm management, field crops, plantation crops, commercial crops, horticultural crops, foliage crops and grasses, condiments, spices, medicinal and aromatic plants. Dairy science: Dairy cattle management, diseases of cattle, chemistry of milk, microbiology of milk and milk products, milk standards.

## **8. ENGINEERING:**

Units, dimensions and conversions, fundamentals of fluid flow, pressure, energy and head relationships and their measurements, emulsions – basics and examples, basics of mixing: equipment and applications, mechanical operations: size reduction and sieve analysis, centrifugation and filtration, power and steam generators, strength of materials – basics, heat exchangers, basics of computers.

## **9. FOOD TECHNOLOGY:**

Maillard's reaction, engineering of foods, preservation: drying, pasteurization, canning, concentration and freezing, infant foods, geriatric foods, sports foods and convalescent foods.

## **10. HORTICULTURE:**

Global scenario of horticultural crops, divisions of horticulture, area and production, export and import, classification of horticultural crops, nutritive value of horticultural crops, horticultural therapy, horticulture zones of India, horticultural developmental agencies, soil and climatic factors on crop production influence of soil, physical and chemical properties and climatic factors, light, temperature, photoperiod, relative humidity, rainfall, micro climate, pollution, influence of biotic and abiotic stresses on crop production.

## **11. HOME SCIENCE:**

Human development and nutrition during life span: pregnancy, infancy, childhood, adolescence, adulthood and the older adulthood (geriatrics), fundamentals of sociology-society and culture: structure, function, interrelationship and scope, community health, consumer studies, health education, home management- meaning, concepts, family- meaning, functions, life cycles, management and responsibilities of family members.

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# Subject for M.Sc. Food Technology

## Semester – I

- (1) Food Chemistry
- (2) Basic & Food Microbiology
- (3) Principles of General Engineering
- (4) Applied Mathematics & Statistics

## Semester – II

- (1) Principles of Food Processing
  - (2) Biochemistry & Nutrition
  - (3) Basics of Food Engineering
  - (4) Fundamentals of Molecular Biology & Bioinformatics
  - (5) Baking & Confectionery Technology
  - (6) Nutraceuticals & Functional Foods
- } **Elective**

## Semester – III

- (1) Microbial Fermentations
  - (2) Food Biotechnology & Bioengineering
  - (3) Minor Project (Dissertation)
  - (4) Packaging Technology & Supply Chain
  - (5) Animal Products Technology
  - (6) Lipidomics
- } **Elective**

## Semester – IV

- (1) Technology & Infestation Control of Cereals, Legumes & Oilseeds or Technology & Infestation Control of Fruits & Vegetables or Technology & Infestation Control of Plantation Products & Flavours } **Elective**
- (2) Major Projects (Investigation)
- (3) Agri-Food Business Management & Intellectual Property
- (4) Food Quality, Safety & Analysis
- (5) Molecular Biology and Genetic Engineering