

**CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE
MYSORE**

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 streams at B.Sc. will get equal opportunity to score in the Test.

Subjects covered	Physics / Chemistry Mathematics / Biology / Microbiology / Biochemistry & Nutrition / Agriculture & Dairy Technology / Engineering
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Physics

Elements of mechanics, colligative properties, Laws of Thermodynamics: Mode of heat transfer : Electrostatics, magnetism and electrodynamics: Outlines in optics and sound : Electro-magnetic radiation : Radioactivity and elements in quantum physics

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 structure of proteins. Protein denaturation, peptide bonds, amino acids.

Mathematics

Theory of quadratic equations; Binomial theorem; uses of natural and common logarithms; Exponential series: Differentiation, successive differentiation, maxima minima. Differential equations; First order and linear. Integration and Integral equations. Trigonometry; Ratios and their relations; Matrices, vector, determinants

Biology

Botany: Systematics of plants, Ecology, cytology and physiology of plants, Economic botany. Zoology: Molecular basis of life, Nuclear 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

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. Economic importance of bacteria, yeast and moulds; Food contamination, control and food safety; General principles of food preservation; Microbiological standards

Biochemistry & Nutrition

Enzymes, Coenzymes and cofactors; Hormones. Elements of carbohydrate, fat and protein metabolism; elements of photosynthesis; Vitamins and their function in the body; Minerals and their function in body; Elements in protein biosynthesis; Nucleic acids and their importance

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

Engineering

Units, dimensions and conservations; Fundamental of fluid flow; Pressure, energy and head relationships and their measurements; Emulsions – basics and examples; Basics of mixing; Equipment and applications; Separation processes; Centrifugation and filtration; Mechanical operations; Size reduction and sieve analysis; Power and steam generators; Strength of materials – Basics; Heat exchangers
