



GOA UNIVERSITY
Taleigao Plateau

SYLLABUS FOR GOA UNIVERSITY ADMISSIONS RANKING TEST (GU-ART) IN FOOD TECHNOLOGY

Microorganisms

Classification and Identification of Microorganisms; Microscopic Techniques for Examination and Enumeration of Microorganisms; Media Used for the Growth of Microorganisms; Cell and Tissue Culture Techniques; Microbial Nutrition

Bacteria

Morphology and Structure; Cultivation on Microbiological Media; Reproduction and Growth; Physiology; Production and Maintenance of Pure Cultures and Cultural Characteristics; Bacterial Nutrition

Fungi (Yeasts and Moulds)

Morphology and Structure of Fungi; Cultivation on Microbiological Media; Reproduction and Growth; Physiology; Production and Maintenance of Pure Cultures and Cultural Characteristics; Classification; Association of moulds with other organisms; Fungal Nutrition

Algae

Morphology and Structure; Algal Habitats; Biological and Economical importance; Characterization and Classification; Association with other organisms; Algal Nutrition

Protozoa

Occurrence and Habitat; Free-living and Symbiotic Protozoa; Importance; Morphology and Structure; Reproduction - Asexual Reproduction, Sexual Reproduction and Regeneration; Classification and Characterization; Protozoal Nutrition

Viruses

Significance; Morphology and Structure - Nucleic Acid And Capsid Structure; Viruses of bacteria, plants and animals; Replication - Adsorption, Penetration, Transcription, Assembly and Release; Viral

Multiplication Cycle - Lytic cycle and Lysogenic Cycle (Mechanism and Prophage DNA Replication); Classification, Isolation, Identification And Cultivation Progressive and Fatal diseases associated with Viruses in Plants and Animals; Viroids and Prions

Microbial Metabolism and Physiology

Energy, Enzymes and Regulation - microbial metabolism for energy release and conservation, use of energy for biosynthesis; Energy Production by Photosynthesis - cyclic and non-cyclic photophosphorylation; Characteristics of Enzymes; Bacterial Genetics - Gene Structure, Replication and Mutation; Structure of Double Helical DNA; Central Dogma; Recombinant DNA Techniques, Genetically Modified Foods

Mechanisms of Control of Microorganisms

Hygiene, Asepsis and Sanitation; Physical and Chemical Methods to Control Microorganisms

Hydrocarbons

Classification of Hydrocarbons; Aliphatic and Aromatic Hydrocarbons; Alkanes, Alkenes, Alkynes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions

Carbohydrates

Definition, Structure, Properties, Functions, Classification, Dietary Sources, Deficiencies and Excess, Metabolic Pathways - Glycolysis, Gluconeogenesis, Glycogenesis, Glycogenolysis, Citric Acid Cycle, Dietary Fibre – Definition, Sources and Functions

Proteins and Amino Acids

Definition, Structure, Properties, Functions, Classification, Dietary Sources, Chemical Reactions, Deficiencies and Excess, Metabolic Pathways - Transamination, Deamination, Decarboxylation, Urea Cycle, Denaturation of Proteins

Lipids, Fats and Oils

Definition, Structure, Properties, Functions, Classification, Dietary Sources, Chemical Reactions, Deficiencies and Excess, Metabolic Pathways - Fatty Acid Oxidation, Biosynthesis of Fatty Acids, Synthesis and Functions of Cholesterol

Vitamins and Minerals

Classification, Functions, Dietary Sources, Diseases due to Deficiencies and Excess

Physiology

Digestion, Absorption, and Transport of Foods and Nutrients

Diet-Related Diseases

Malnutrition, Diabetes, Cardiovascular Disease, Anaemia, Cancer – causes and basic dietary guidelines for prevention and management

Food Hygiene

Food-borne Infections & Intoxications - Food Poisoning, cholera, gastrointestinal diseases; Microbial Toxins, Indicator Organisms

Basics of Food Preservation

Principles of Food Preservation, Water Activity and its significance in food preservation, Overview of the Traditional and Modern Methods of Food Preservation, Natural and Chemical Food Preservatives; Thermal Preservation, Preservation By The Use Of Low Temperatures, Microwave Processing, Hurdle Technology, Irradiation, Modified Atmosphere, Biopreservation, High-Pressure Food Preservation, Membrane Technology, Cold Plasma Technology, Enzymes and Microbes in Food Preservation

Industrial Processing Techniques

Dairy (cheese, curds, yoghurt); Beverages (wine, beer, coffee); Cereals (bread, cakes); Food Fermentation- Microbial cultures in food fermentation and their maintenance; Traditional fermented foods of India - fermented foods based on milk, meat, and vegetables; fermented beverages; Probiotics and Prebiotics; Improvement in food production - Tissue Culture, Single Cell Protein, Biofortification, Apiculture and Animal husbandry

Human Health and Diseases Malnutrition, Diabetes, Cardiovascular Disease, Anaemia, Cancer – causes and basic dietary guidelines for prevention and management; Microorganisms Causing Human Diseases (typhoid, pneumonia, common cold, amoebiasis, ascariasis, tape worm) and their control

Environmental Science

Environmental pollution - air, water and soil pollution, chemical reactions in atmosphere, smog, major atmospheric pollutants, acid rain, ozone and its reactions, effects of depletion of ozone layer, greenhouse

effect and global warming- pollution due to industrial wastes, green chemistry as an alternative tool for reducing pollution, strategies for control of environmental pollution

Chemistry in Everyday life

Chemicals in medicines - analgesics, tranquilizers antiseptics, disinfectants, antimicrobials, antifertility drugs, antibiotics, antacids, antihistamines; Chemicals in food - preservatives, artificial sweetening agents, elementary idea of antioxidants; Cleansing agents - soaps and detergents, cleansing action

Polymers

Classification - natural and synthetic, methods of polymerization (addition and condensation), copolymerization, important polymers: natural and synthetic like polythene, nylon polyesters, bakelite, rubber; Biodegradable and non-biodegradable polymers

Food Safety Standards and Agencies

Food Adulteration, BIS, ISI, FDA, FSSAI, Codex Alimentarius, FAO, WHO, FPO, ISO