



ISLAMIC UNIVERSITY OF SCIENCE & TECHNOLOGY
AWANTIPORA, KASHMIR
DEPARTMENT OF FOOD TECHNOLOGY

Syllabus for screening test for the post of Lab Assistant in Food Technology

Unit -1

S.I. Units of pressure, volume, density, specific gravity, surface tension, viscosity and conductivity

Matter, element, compound and mixtures, atoms, molecules, ions, symbols and formulae, Atomic mass (A), atomic number (Z) isotopes, isobars, isotone (recapitulation only)

Chemical equations, thermo-chemical equations, balancing of chemical equations Concept of homogenous solution, brief introduction of the terms (i) Ionization (ii) Acidity (iii) Basicity (iv) equivalent weight and gram equivalent weight with suitable examples Strength of a solution (i) Normality (ii) Molarity (iii) Molality as applied in relation to a solution Definition of pH, simple numericals and different industrial applications of pH. Buffer solution and applications of buffer Structure of water molecule, types and properties of water, water activity and its importance Basic composition, classification, sources, nutritional and industrial importance Basic composition, classification, sources, functional, nutritional and industrial importance Fat Basic composition, classification, sources, nutritional and industrial importance Oils and Fats, sources, composition their, physico-chemical properties Pretreatment, rendering, pressing, extraction methods, refining, bleaching, hydrogenation, fractionation, deodorizing, plasticizing,

Unit-2

Streak plating, pour plating, spread plating, serial dilution technique, Isolation and preservation – lyophilization, slant method, liquid nitrogen method

Growth curve and its different phases, Synchronous growth, factors affecting microbial growth, generation time-their significance Structure size and shape. Types depending upon different requirements. Gram positive and negative bacteria. Mode of reproduction. Yeast and moulds –structure: their growth requirements, mode of reproduction, its importance. Microbiology of milk and milk products like cheese, butter, Ice-cream, milk powder Microbiology of meat, fish, poultry and egg products Microbiology of fruits and vegetable



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products like jam, jelly, sauce, juice
Microbial spoilage of foods – food borne pathogens, food poisoning, food infection and intoxication
Concept of TDT, F, Z and D value

Unit -3

Principles of Salt and sugar preservation, Intermediate Moisture Food (IMF)
Principle behind different methods of proximate analysis of Moisture, Ash, Crude Fat, Crude Protein, Crude Fibre, Total Carbohydrates milk, ghee, honey, spices, pulses, oils, sweets, etc.

Low temperature required for different foods – refrigeration – refrigeration load, refrigeration systems; slow and fast freezing, freezing process; types of freezer advantages and disadvantages of freezing; storage and thawing of frozen food
Pasteurization, Sterilization, Canning: their Definition, Method, advantages and disadvantages, Evaporation, concentration, drying and dehydration, types of dryers, advantages and disadvantages, selection of dryers,

Unit-4

Units of measurement and their conversion
Physical properties like colour, size, shape, density, specific gravity, thousand grain weight/bulk density, porosity, Rheological properties of food materials and their importance
Basic principles, total mass & component mass balance, system boundaries, material balance calculations, principle of energy balance, Heat, Enthalpy, calculations of specific heat.
Preliminary Unit operation
Cleaning, sorting & Grading - aims, methods and applications
Conveying and Handling
Sieving: Separation based on size (mesh size); types of screens; effectiveness of screens
Thermometer, thermocouple, thermister and pyrometer, application and working.
Instruments for pressure Measurement
Use of Manometers, Bourdon gauge, measurement of vacuum and pressure.
Liquid level measurement- Direct and differential method.
Handling, Transportation and Storage
Various unit operations of post-harvest handling, transportation, introduction to different conveying systems like belt conveyors, chain conveyors, screw conveyors, hydraulic conveyors, pneumatic conveyors, vibrating and



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oscillating conveyors, bucket elevators – their selection, operation and maintenance.

Unit -5

Structure and chemical composition of cereals, pulses and oil seeds, anti-nutritional factors wherever applicable types of wheat, conditioning and tempering, types of wheat milling technology, pasta and extruded products Varieties of rice, classification of rice based on various physical parameters, parboiling, milling of rice, and factors affecting quality of rice products Maize: Classification of maize, dry and wet milling of corn, preparation of corn flakes Barley and sorghum: Grain characteristics, technology of malt production, milling, malting and popping of sorghum Raw Materials for Bakery Products Flour, sugar, shortening, yeast, salt etc as raw material for bakery products, their role and PFA specifications of these raw materials Manufacturing of Bakery Products Different types of bread and preparation of bread using different methods, quality evaluation of bread, staling of bread Different types of biscuits and preparation of biscuits using different methods, quality evaluation of biscuits

Unit-6

Definition of milk, composition, physical and chemical properties of milk constituents and nutritive value of milk, factors affecting composition of milk, types of milk, Platform tests like-smell, appearance, temp, sediment, acidity, lactometer reading Chemical/Laboratory test: Acidity, PH, alcohol, fat, SNF, etc.SPC, MBRT, Resazurin tests etc. Receiving, Filtration and clarification, straining, standardization Homogenization and its effects, Pasteurization: and various systems of Pasteurization; LTLT, HTST, UHT methods, Pasteurizers (Heating system, cooling system, flow controller, regenerator, flow division valve) sterilization, packaging of fluid milk.Technology of Curd, yogurt, idli, dosa, dhokla, srikhand, tempeh and miso, sauerkraut, butter milk, lassi, sausages, kashmiri dishes.Sources, micro-organism, process, nutritive value



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and advantages and limitations; Concept of production of vitamins and amino acids

Unit -7

Forms of packaging – box, bottle, tetra, pouch, shrink, vacuum, gas, CAP, MAP, aseptic etc. WVTR, GTR, bursting strength, tensile strength, tearing strength, drop test, puncture test, impact test etc. Packaging Requirements
Packaging requirements and their selection for raw and processed foods Meat, fish, poultry, eggs Milk and dairy products Fruits and vegetables Cereal grains and baked food products Bottling, can former, form fill and seal machines, bags – their manufacturing and closing, vacuum packs unit, shrink pack unit, tetra pack unit

Unit-8

Definition and scope; Composition and nutritive value of food groups; functions of foods; water balance, energy balance, energy value of carbohydrates, fats and proteins, minerals and vitamins. Balanced diet. Food additives- definitions, classification and functions, Preservatives, antioxidants, colours and flavours (synthetic and natural), emulsifiers, sequesterants, humectants, hydrocolloids, sweeteners, acidulants, buffering salts, anticaking agents, etc. - chemistry, food uses and functions in formulations; indirect food additives; toxicological evaluation of food additives.