

Detailed Syllabus for the post of Junior Instructor (Dairying) in Industrial Training

(Cat.No:048/2022)

Module 1: Dairy Development and Cooperative System

(5 marks)

Dairy Development in India - Dairy Cooperatives – Operation Flood – Milk Production in India and Kerala with reference to Global Milk Production – Per capita availability of milk – Role of milk and milk products in human nutrition – Nutritive value of milk

Module 2: Dairy Husbandry

(10 marks)

Dairy Cattle Breeds – Indigenous and Exotic – Genetics and Breeding – AI Techniques – Frozen Semen Technology – Dairy Cattle Management - Animal Husbandry Practices and Healthcare – Vaccination Schedule - Clean Milk Production – Types of milking

Module 3: Fundamentals of Dairy Chemistry

(10 marks)

Milk Composition and its constituents - Nutritional Importance of milk constituents - Physico-Chemical properties of milk - Feed and Environmental factors influencing the composition of milk - Thermal stability of milk

Module 4: Fundamentals of Dairy Microbiology

(10 marks)

Common microorganisms in milk – Factor affecting growth of micro-organisms - Milk Fermentation – Desirable and undesirable fermentation – Spoilage of milk - Control of Microbial Spoilage - Milk borne diseases - Milk in Relation to Public Health – Common starter cultures in dairy industry, classification, characteristics and propagation

Module 5: Dairy Processing and Technology

(20 marks)

Milk processing – Milk procurement, collection and transportation – Standardization – Pasteurization – Bactofugation - Homogenization of milk - packaging of milk – Cleaning and sanitation – Cleaning in Place (CIP) System - Cleaning agents

Dairy Technology – Manufacture of Fat rich dairy products – cream – butter – ghee – Ice cream – Concentrated and Dried Milk Products- Cheese - Fermented milk products – Manufacture of Dahi – Yoghurt – Shrikhand – Indigenous milk products – Effective utilization of dairy by - products

Module 6: Dairy Engineering

(10 marks)

Characteristics and selection of materials for construction of dairy equipment – Pipes and Fittings -Principle and design of Pasteuriser, Homogeniser, Cream Separator – Principle of Heat Exchange – Energy consumption in milk processing operations – Refrigeration requirement in dairy processing operations – Boiler – Types, operation and design – Boiler efficiency – Process Schedule in dairy plant – Energy conservation measures – ETP system – Cold Storage and Insulation

Module 7: Dairy Plant Management

(5 marks)

Milk Losses – Managing Productivity – Human resources (Manpower planning for dairy plant operation) - Types of layout – Essential features of dairy plant design

Book-keeping and Accountancy - General principles of book keeping and accountancy, single and double entry system - Maintenance of accounts and working capital management - Product costing

Module 8: Milk Quality Analysis

(10 marks)

Sensory analysis of Milk – Determination of Specific gravity, fat, SNF, TS, Acidity and pH in milk and their significance and interpretation – Determination and significance of MBR Test – SPC –

Phosphatase activity in milk – Preservatives, Neutralizers and Adulterants in milk and their detection – Advanced analytical techniques in milk

Module 9: Sampling of Milk and Milk Products

(10 marks)

Sampling – Sampling Personnel – Sealing & Labeling of samples – Preparation of a sampling report – Sampling equipment – sample containers – Sampling techniques – Preservation of samples – Storage and transport of samples – minimum sample size – Sampling for microbiological examination

Module 10: Milk and Milk Products Standards

(10 marks)

Classes of Milk – Legal / Statutory standards of milk and milk products – bacteriological standards of milk and milk products – FSSAI, ISO standards – Maximum Permissible limits of Aflatoxin, Pesticides, Antibiotic residues and Heavy metals in milk and milk Products – Storage of milk and milk Products – Labeling of milk and milk Products

NOTE: - It may be noted that apart from the topics detailed above, questions from other topics prescribed for the educational qualification of the post may also appear in the question paper. There is no undertaking that all the topics above may be covered in the question paper