

2.14 40135 FOOD AND DAIRY TECHNOLOGY

UNIT-1 GENERAL EDUCATIONAL OBJECTIVES:

- 1.1 To study about the scope of dairy technology and food technology
- 1.2 To study about the Milk and milk constituents
- 1.3 To study about the analysis milk
- 1.4 To study about the Constituents of food
- 1.5 To study about the Food spoilage & Food poisoning
- 1.6 To study about the Preservation techniques
- 1.7 To study about the Food products & Applications

UNIT-2 SPECIFIC EDUCATIONAL OBJECTIVES:

- 2.1 An overview of Dairy industry
- 2.2 Scope of dairy technology and food technology

UNIT-3 INTRODUCTION TO MILK

- 3.1 Milk and milk constituents
- 3.2 Properties of milk- Colour, smell, taste, acid, base equilibrium, freezing point, boiling point, and viscosity
- 3.3 Microorganisms associated with milk, bacteria, fungi, yeast
- 3.4 Sources of contamination, milch animal, utensils & equipment, water, milking premises, personnel, packaging material
- 3.5 Biochemical activities in milk- Souring, Lactic acid fermentation, gassy fermentation, proteolysis

UNIT-4 MICROBIOLOGICAL ANALYSIS MILK

- 3.1 Rapid platform test- organoleptic, clot on boiling, titratable acidity, sedimentation, alcohol test, pH and DMC
- 3.2 Standard plate count, reductase test- Reassuring test, MBRT

UNIT-4 FOOD CHEMISTRY

- 4.1 Constituents of food
 - 4.1.1 Water- Types of water in food, moisture content, water activity
 - 4.1.2 Carbohydrates – Introduction, occurrence, physical & chemical properties- absorption, solubility, inversion of sugar, taste, crystallization, effect of heat - maillard reactions, caramelization.
 - 4.1.3 Proteins - Introduction, occurrence, physical & chemical properties- solubility, precipitation, hydration, structure formation, surface properties. Application of proteins in food.
 - 4.1.4 Enzymes- enzymatic browning, enzymes as food processing aids- Bread making, brewing, cheese production, vegetable preservation, tendering of meat
 - 4.1.5 Lipids- Introduction, occurrence, physical & chemical properties- emulsification, refractive index, specific gravity, smoke, flash & fire points, turbidity point.

4.1.6 Vitamins- Water soluble vitamins- B group vitamins, vitamin C & its uses. Fat soluble vitamins- Vitamins A, D, E, K & its uses

4.1.7 Minerals- Major minerals-Calcium, phosphorous, magnesium, sulphur, sodium & potassium & its uses.

4.2 Food additives- Definition, preservatives, antioxidants, acidulants, neutralizers & buffers, colouring agents, flavoring agents, sweeteners, Stabilizers / Gelling Agents / Thickeners

UNIT-5 FOOD SPOILAGE AND FOOD POISONING

5.1 Food spoilage

5.1.1 Introduction

5.1.2 Types of spoilage – physical, chemical, biological

5.1.3 Chemical spoilage – heavy metals, Ago-chemicals, sanitizers

5.1.4 Biological spoilage- Microbial spoilage- yeast, moulds, fungal, bacteria

5.1.5 Autolysis- enzymes, oxidation by air

5.1.6 Infestation

5.2 Food poisoning

5.2.1 Introduction

5.2.2 Microbial poisoning - Endotoxin, staphylococcal poisoning, botulism and salmonellosis, Mycotoxins- aflatoxin

UNIT-6 PRESERVATION TECHNIQUES

6.1 Thermal processing– Pasteurization, sterilization, blanching, canning

6.2 Drying / Dehydration

6.3 Low temperature- Refrigeration, freezing

6.4 Chemical preservation

6.5 Irradiation & Smoking

UNIT-7 FOOD PRODUCTS & APPLICATIONS

7.1 Yogurt- Definition, production, uses

7.2 Cheese - Definition, production, uses

7.3 SCP - Definition, production, uses

7.4 Edible Fungi - Definition, production, uses

7.5 Probiotics- Definition, uses

7.6 Prebiotics- Definition, uses

7.7 Synbiotics-Definition, uses

7.8 Nutraceuticals - Definition, uses

7.9 Edible vaccines - Definition, uses

7.10 Utilization of waste food for the production of Valuables

Reference Books:

1. Food Microbiology by W.C. Frasier
2. Modern Food Biotechnology by Jay J M
3. Food Microbiology by Betty C Hobbs