

SRI VENKATESWARA UNIVERSITY

DAIRY SCIENCE

III YEAR - SEMESTER- VI

ELECTIVE - A

TITLE: **TECHNOLOGY OF DAIRY PRODUCTS-I**

PAPER-7

THEORY 4 Credits 60 Lecture Hours Maximum Marks:100

UNIT-I. a) Reception of Milk- Unloading, Grading, Sampling, Testing, Weighing and Recording. **b)Storage of Milk c) Straining, Filtration and Clarification of Milk.** (10 Lecture Hours)

UNIT- II. a) **Pasteurization of Milk-** Definition, Objectives, Principles of Heat exchange, Methods of Pasteurization.-(LTLT, HTST, Uperization) ,UHT, Sterilization of Milk. (15 Lecture Hours)

UNIT- III.a) **Homogenization of Milk-** Factors influencing Homogenization of Milk(Temperature and Pressure), Effect of Homogenization on Milk.

b) **Standardization of Milk:** Standardization using Pearson square method, standardization on line.

c) **Packaging of Milk-** Desirable characters and types of packaging materials, Forms of Packaging.

d) **Disposal of Dairy effluents:** Sources of Dairy wastes, Necessity of treating Dairy wastes, methods of treatment, Low cost methods, Conventional methods, Activated sludge process and trickling filters. (15 Lecture Hours)

UNIT IV. **Market Milk-** Toned milk, Double toned milk, Reconstituted milk, Standardized milk, and Full cream milk, Standards and methods of manufacture. (10 Lecture Hours)

UNIT V. **Cream**-Types of Cream, Composition, Principle of separation, Methods of Cream separation(Gravity and Centrifugal methods), Types of Cream separators, Factors affecting fat losses in skim milk and fat percent in cream.

(10 Lecture Hours)

PRACTICALS

2 Credits

Maximum Marks: 50

1. RMRD Testing of Milk
2. Standardization of Milk
3. Homogenization of Milk
4. Pasteurization of Milk
5. Sterilization of Milk
6. Preparation of Toned Milk
7. Preparation of Double Toned Milk
8. Preparation of Reconstituted Milk
9. Cream Separation.

REFERENCE BOOKS

1. Outlines of Dairy Technology – Sukumar De
2. Milk Products Preparation and Quality Control- C.P.Anantha Krishnan
3. The Technology of Milk Processing- C.P. Anantha Krishnan
4. Modern Dairy Products- Lincoln M Lampert

SRI VENKATESWARA UNIVERSITY

Three Year Degree Programme

III B.Sc. –DAIRY SCIENCE PAPER –6; SEMESTER –VI

THEORY MODEL PAPER: Paper –6 TECHNOLOGY OF DAIRY PRODUCTS -I

Time- 3 Hours

Max. Marks: 75

SECTION- A (SHORT ANSWERS)

Answer any five of the following

5x5 = 25 marks

1. What are the different steps taken while receiving milk at raw milk reception dock?
2. What is Pasteurization? Write the objectives of Pasteurization.
3. Write about homogenization and its uses in the Dairy industry?
4. Write about different types of packaging milk and the material used for packaging of milk.
5. What is the necessity of disposing dairy effluents in a Dairy plant?
6. Write the PFA standards for different types of market milk sold in the consumer market.
7. What is cream? What is the principle involved for cream separation?
8. How do you minimise the fat losses in skim milk?

SECTION – B (ESSAY QUESTIONS)

Answer all the questions. All questions carry equal marks.

5X10= 50 Marks

9. Write the difference between Filtration and Clarification. What is the technique used in a clarifier?

Or

Write about the sequence involved in raw milk reception dock.

10. Define Pasteurization. Write about HTST pasteurization with the help of a neat diagram.

Or

Write about UHT method of pasteurization

11. Write in detail about Homogenization.

Or

What are the factors influencing homogenization of milk.

12. What is toned milk? Write the method of making toned milk.

Or

How do you dispose of the dairy wastes? What are the different methods of treating dairy effluents?

13. What is cream? What is the principle involved in cream separation. Write about centrifugal cream separation.

OR

Write about various factors affecting fat losses in skim milk and fat percent in cream.

CLUSTER ELECTIVE -1

TITLE: TECHNOLOGY OF DAIRY PRODUCTS- II

THEORY

4 CREDITS

60 LECTURE HOURS

MAXIMUM MARKS- 100

UNIT I . Butter 1.- PFA Standards, Definition, composition, method of manufacture (White butter, Table butter). (10 Lecture Hours)

UNIT II. Butter 2.- Over run in butter, Packaging and Storage of butter. Butter oil- Composition, Uses, method of manufacture and storage. (10 Lecture hours)

UNIT III.Cheese 1.Definition, PFA Standards, Composition, Classification, Method of manufacture of Cheddar Cheese. (15 Lecture hours)

UNIT IV.Cheese 2. Method of manufacture of Processed Cheese, Method of manufacture of Cottage Cheese, Packaging of Cheese, Ripening and Storage of Cheese. (10 Lecture Hours)

UNIT V. Ice Cream- BSI Standards, Definition, Composition, Classification, Methods of manufacture, Over run in Ice Cream, Packaging and Storage of Ice Cream. (15 Lecture Hours)

CLUSTER ELECTIVE 1. **PRACTICALS** 2 CREDITS MAXIMUM MARKS-50

1. Preparation of White butter and Table butter
2. Calculation of Over run in butter
3. Preparation of Cheddar Cheese
4. Preparation of Cottage Cheese
5. Preparation of Ice Cream mix.
6. Manufacture of Ice Cream and calculation of Over run in Ice Cream.

REFERENCE BOOKS

1. Outlines of Dairy Technology- Sukumar De
2. Milk and Milk Products – Eckles, Combs and Macy
3. Milk, Milk Products and Quality Control- C.P. Anantha Krishnan
4. The Technology of Milk Processing- C.P. Anantha Krishnan

SRI VENKATESWARA UNIVERSITY

Three Year Degree Programme

III B.Sc. –DAIRY SCIENCE - MODEL PAPER FOR CLUSTER ELECTIVE –I SEMESTER –VI

TITLE: TECHNOLOGY OF DAIRY PRODUCTS – II Time- 3 Hours

Max. Marks: 75

SECTION- A (SHORT ANSWERS)

Answer any five of the following

5x5 = 25 marks

1. Define Butter as per PFA Rules. What is butter colour?
2. What is over run in butter?
3. Write about butter culture and its importance
4. Write about different packaging material used in butter.
5. Write about Rennet
6. Write briefly about different bio chemical changes which come up during ripening of cheese.
7. What is the difference between Cheddar cheese and Cottage Cheese
8. Write about economics involved in making of Ice Cream.

SECTION – B (ESSAY QUESTIONS)

Answer all the questions. All questions carry equal marks.

5X10= 50 Marks

9. Define Butter and write in detail the manufacture of table butter with the help of a flow diagram
Or
What is the difference between table butter and white butter? What is ripening of cream for butter making?
10. How do you manufacture Butter oil. Write the significance of Butter oil in Indian Dairy development.
Or
What is over run in butter? Write the composition of Butter oil.
11. Define Cheddar cheese. Explain manufacture of Cheddar Cheese with the help of a flow diagram.
Or
How do you classify cheese? Write the composition of Cheddar Cheese. What are the bio chemical changes that take place during ripening/ curing of cheddar cheese?
12. Define Cottage Cheese. Write the manufacture techniques of Cottage Cheese.
Or

What is Processed Cheese? Write the manufacture of Processed Cheese with the help of flow diagram.

13. Write the BSI standards for Ice cream. Explain with flow diagram the manufacture of Ice Cream.

Or

What is over run in Butter? How do you pack and store Ice cream?

CLUSTER ELECTIVE 2.

TITLE: **TECHNOLOGY OF DAIRY PRODUCTS –III**

THEORY 4 CREDITS 60 LECTURE HOURS

MAXIMUM MARKS- 100

UNIT I. Evaporated Milks- Definition, PFA Standards, Composition and method of manufacture. (10 Lecture Hours)

UNIT II. Condensed Milks- Definition, PFA Standards, Composition and method of manufacture.

Milk Powder- Skim milk powder (SMP), Whole milk powder(WMP), Infant milk food, Spray dried and Roller dried methods, Definitions, PFA Standards, Method of manufacture and Storage. (15 Lecture Hours)

UNIT III.Fermented Milk Products- Dahi, Yoghurt, Acidophilus milk, Bulgarian butter milk, Kefir and Kumiss.
Definition, Composition and method of manufacture of Dahi and Yoghurt. (10 Lecture Hours)

UNIT IV.Indegenous Milk Products 1.- Ghee, Khoa, Channa, Paneer, AG Mark Standards for Ghee, PFA Standards, Definitions, Composition and methods of manufacture. (15 Lecture hours)

UNIT V. Indegenous Milk Products 2.Desi Makkan, Kulfi, Dahi, Sherbet, Surti Cheese- Definitions, Composition, PFA Standards, Methods of manufacture. (10 Lecture Hours)

CLUSTER ELECTIVE 2. PRACTICALS

2 CREDITS MAXIMUM MARKS-50

1. Preparation of Dahi
2. Preparation of Yoghurt
3. Propagation of bacterial cultures
4. Preparation of Desi butter
5. Preparation of Kulfi
6. Preparation of Khoa and associated products such as Burfi, Gulabjamun, Peda, Kalakhand etc.
7. Preparation of Channa and associated products such as Rasagulla, Sandesh etc.
8. Preparation of Ghee by various methods.

REFERENCE BOOKS

1. Outlines of Dairy Technology- Sukumar De

SRI VENKATESWARA UNIVERSITY

Three Year Degree Programme

III B.Sc. –DAIRY SCIENCE - THEORY MODEL PAPER FOR CLUSTER ELECTIVE- II

SEMESTER –VI

Paper title: TECHNOLOGY OF DAIRY PRODUCTS –III

Time- 3 Hours

Max. Marks: 75

SECTION- A (SHORT ANSWERS)

Answer any five of the following

5x5 = 25 marks

1. What is Evaporated milk? Explain its uses.
2. Define Sweetened Condensed Milk (SCM). Where do you use SCM?
3. Write the differences, advantages and disadvantages between Spray dried and Roller dried milk.
4. Define Infant milk food. Write the composition for Infant milk food.
5. What are the different fermented milk foods which are indigenous to India? Write about Shrikhand
6. Write the manufacture of Yoghurt with the help of flow diagram
7. Write about what you know on Khoa and Channa
8. Explain about making of Kulfi.

SECTION – B (ESSAY QUESTIONS)

Answer all the questions. All questions carry equal marks.

5X10= 50 Marks

9. What is Spray dried Skim Milk? Explain the manufacture of Spray dried Skim milk with the help of a flow diagram

Or

What are the differences between Spray dried milk and Roller dried milk? How do you manufacture Infant milk food?

10. What is the technology involved in making Evaporated milk. Explain in detail.

Or

What is the importance of obtaining high quality milk for making evaporated milk? Define evaporated milk.

11. Explain the therapeutic properties of fermented milk products. List the fermented milk products which you know while giving the culture organisms, percent of culture used, incubation temperature, time required for incubation and percent acidity/ alcohol present in the finished product in tabular form.

Or

Define Dahi. How do you manufacture various types of Dahi? Write the difference between Dahi and Yoghurt.

12. Define Ghee. What are the different methods of manufacture? Give AG MARK standards for Ghee.

Or

How do you manufacture Channa and Khoa? Write the importance of the two products in India.

13. What is Desi makkan? How do you manufacture Desi makkan.

Or

Write about Kulfi. What is the major difference between Ice cream and Kulfi?

CLUSTER ELECTIVE 3.

TITLE: QUALITY ASSURANCE IN DAIRY INDUSTRY 60 HOURS 4 CREDITS

MAXIMUM MARKS 100

UNIT I. Importance of quality control, Changing scenario, quality assurance and Total Quality Management (TQM) in Dairy industry. Role of National and International food regulatory systems and standards with respect to quality and safety of milk and milk products : FSSAI, PFA, AGMARK, BIS etc. Integrated food law and its main functions and features. Concepts of Quality management system(QMS)- ISO 9000:2000, Principles of QMS (15 Lecture Hours)

UNIT II. Application of food safety management system (ISO:22000). Hazard analysis and critical control points(HACCP) systems and its application in dairy industry. (10 Lecture Hours)

UNIT III. Sampling procedures, labelling of samples for analysis, choice of analytical tests for milk and milk products for chemical analysis and instrumental methods of analysis. Chemical quality of water in dairy industry. (10 Lecture Hours)

UNIT IV. Rapid enumeration techniques: Enumeration principles and procedure for rapid detection of predominant hygiene indicator organisms and pathogens like E.Coli, Salmonella, Shigella, Staphylococcus aureus, Bacillus cereus., Detection of antibiotic residues in milk-Delvo SP,MDR test, Plant and equipment hygiene: concepts of hygiene and sanitation, microbiological quality of water and environmental hygiene in dairy plant, chlorination of dairy water supply, quality of air, personnel hygiene, treatment and disposal of dairy waste water and effluents. (10 Lecture Hours)

UNIT V .Qualitative and quantitative tests for assessing microbiological quality of milk.

MBRT, RRT, Estimation of total bacterial count in milk, (SPC,DMC)

Estimation of Coliform count, Spore count, Yeast and Mould Count, Proteolitis count and Lypolitic count in milk.

(15 Lecture Hours)

PRACTICALS

Two Credits

MAXIMUM MARKS 50

In-Plant Training – 30 Days

In-Plant training in all sections of a commercial dairy plant in various sections as follows.

1. RMRD Section
2. Processing section
3. Butter and Ghee section
4. Condensed milks and Powder section
5. Indegenous milk products section
6. Quality control section
7. Boiler section
8. Refrigeration section
9. Dairy waste disposal section

Submission of project report on In-Plant training and Viva Vose.

SRI VENKATESWARA UNIVERSITY
Three Year Degree Programme
III B.Sc. –DAIRY SCIENCE - THEORY MODEL PAPER FOR CLUSTER ELECTIVE-III
SEMESTER –VI

Paper title: QUALITY ASSURANCE IN DAIRY INDUSTRY

Time- 3 Hours

Max. Marks: 75

SECTION- A (SHORT ANSWERS)

Answer any five of the following

5x5 = 25 marks

1. Write about Total Quality Management in Dairy Industry.
2. What is the role of National and International food regulatory systems with respect to quality and safety of milk and milk products?
3. What do you understand by Food Safety Management System (ISO; 22000)
4. What are the different International methods of analysis of Milk and milk products?
5. What are the different rapid enumeration methods for determining milk quality?
6. What do you know about MBRT? How do you interpret?
7. What is the importance of Chlorination of water in Dairy industry
8. What are the different quantitative microbiological tests used in dairy industry.

SECTION – B (ESSAY QUESTIONS)

Answer all the questions. All questions carry equal marks.

5X10= 50 Marks

9. Write the importance of total quality management in Dairy industry. Write about Integrated food law and its main functions and features. Explain in brief the concepts of Quality management system.

Or

Write about the role of National and International food regulatory systems and standards with respect to quality and safety of milk and milk products.

10. What do you know about HACCP(hazard analysis and critical control points)systems. Write about its application in Dairy Industry.

Or

What do you know about application of Food Safety Management system (ISO:22000)?

11. Write about choice of analytical tests for milk and milk products. Can you briefly write on various instrumental methods of analysis?

Or

How do you assess the chemical quality of water used in Dairy Industry?

12. Write a brief note on treatment and disposal of dairy waste water and effluents.

Or

What are the rapid enumeration techniques for pathogens like E.coli, Salmonella and Shigella in Dairy Industry?

13. What do you know on various qualitative tests used in dairy industry in assessing the microbiological quality of milk?

Or

Write about MBRT and RRT used in Dairy Industry along with interpretation.