

**SRI VENKATESWARA UNIVERSITY**  
**B.Sc. DEGREE COURSE IN DAIRY SCIENCE**  
**SEMESTER SYSTEM WITH CBCS**

**SEMESTER V**

**W.E.F. 2022-2023**

***Skill Enhancement Courses (SECs) for Semester V,  
from 2022-23***

*(Syllabus with Learning Outcomes, References, Co-curricular Activities  
& Model Q.P. Pattern)*

Structure of SECs for Semester-V

Course Number	Name of Course	Hours/Week Theory + Practical	Credits Theory+ Practical	Marks	
				IA-20	Sem End
				FW- 05	T+P
6A	<b>TECHNOLOGY OF DAIRY PRODUCTS-I</b>	3+3	3+2	25	75+50
7A	<b>TECHNOLOGY OF DAIRY PRODUCTS-II</b>	3+3	3+2	25	75+50

**Note:** *One of the main objectives of Skill Enhancement Courses (SEC) is to inculcate skills related to the domain subject in students. The syllabus of SEC will be partially skill oriented. Hence, teachers shall also impart practical training to students on the skills embedded in syllabus citing related real field situations.*

**SRI VENKATESWARA UNIVERSITY**  
**B.Sc. DEGREE COURSE IN DAIRY SCIENCE**  
**SEMESTER SYSTEM WITH CBCS**  
**SEMESTER V**  
**W.E.F. 2022-2023**

**Syllabus:**

**PAPER-6A: TECHNOLOGY OF DAIRY PRODUCTS-I**

**THEORY**                                      4 Credits              60 Lecture Hours              Maximum Marks: 100

**1.      UNIT- I**

- a)    Collection and Transportation of milk
- b)    Reception of Milk- Unloading, Grading, Sampling, Testing

Weighing and Recording

- c)    Storage of Milk
- d)    Straining, Filtration and Clarification of Milk
- e)    Cooling of milk

**(10 Lecture Hours)**

**2.      UNIT- II**

- a)    Pasteurization of Milk- Definition, Objectives, Principles of heat exchange, Methods of Pasteurization. (LTLT, HTST).
- b)    Sterilization of Milk – Definitions, Objectives, Methods of sterilization - In bottle sterilization
- c)    UHT Sterilization – Definition, Objectives, Methods of UHT processing

**(15 Lecture Hours)**

**3.      UNIT- III**

- a)    Homogenization of Milk- Definition - Theories of homogenization, Factors influencing Homogenization of Milk (Temperature and Pressure), Effect of Homogenization on physico- chemical properties of 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, Packaging of pasteurized milk, Aseptic Packaging of UHT milk.
- 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)**

4. **UNIT - IV**

- a) **Market Milk**- Toned milk, double toned milk, Reconstituted milk, Standardized milk, and full cream milk, Standards and methods of manufacture. Defects in pasteurized and sterilized milks

i. **(10 Lecture Hours)**

5. **UNIT - V**

- a) **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, Pasteurized and sterilized creams – Methods of manufacture and defects

**(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.
10. Visit to a milk processing plant

**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
5. Dairy Technology: Vol.01 Milk and Milk Processing - Shivashraya Singh

**SRI VENKATESWARA UNIVERSITY**  
**B.Sc. DEGREE COURSE IN DAIRY SCIENCE**  
**SEMESTER SYSTEM WITH CBCS**  
**SEMESTER V**  
**W.E.F. 2022-2023**

**PAPER 7A: TECHNOLOGY OF DAIRY PRODUCTS- II**

**THEORY**                      **4 CREDITS**                      **60 LECTURE HOURS**

MAXIMUM MARKS- 100

**Syllabus:**

**UNIT I**

**Butter** -FSSAI Standards, Definition, composition, method of manufacture (White butter, Table butter ) - Batch and Continuous methods - Advantages and Disadvantages - Butter churn and continuous butter making machines - Over run in butter, Packaging and Storage of butter. Butter defects - Flavor defects, body and textural defects, color defects – and their control measures; **Butter oil** – Definition – Composition – Uses - Methods of preparation – Cooling – Packaging – Storage - Judging– Defects; **Ghee** - FSSAI and AGMARK Standards, Definition, Composition, Methods of Manufacture of ghee, Keeping quality, Defects in ghee and their Prevention

(10 Lecture Hours)

**UNIT II**

**Cheese** - Definition, FSSAI Standards, Composition, Classification; Starter cultures used in major cheeses, Factors affecting the activity of starter culture, Problems associated with cheese starters; Rennet –Introduction, properties and preparation, rennet substitutes-Desirable characteristics-Microbial Rennets- Plant Rennets; Action of rennet on milk in relation to cheese making- Enzymatic coagulation of milk-Factors affecting rennet coagulation; Chemical, physical, microbiological and sensory changes of cheese during ripening; Outlines of cheese manufacture - Method of manufacture of Cheddar Cheese, - Cottage Cheese, Mozzarella cheese, Swiss cheese, Gouda cheese – Defects in Cheese-Their causes and Prevention; Processed cheese - Introduction-Definition-Classification, methods of Manufacture

(15 Lecture Hours)

### **UNIT III**

**Ice Cream and Frozen Desserts** - FSSAI Standards, Definition, Composition, Classification, Methods of manufacture – Preparation and processing of ice-cream mix, Selection of dairy and non-dairy ingredients, Pasteurization, Homogenization, Cooling and ageing, Freezing of the mix; , Packaging, hardening and Storage of Ice Cream; of the mix; Over run in ice cream-Overrun control; Ice-cream-Defects-Causes –Prevention; Indigenous frozen desserts – Kulfi, malai-ka-baraf; Milk ices-Lollies-Sherbet-Mellorine,

(15 Lecture Hours)

### **UNIT IV**

**Fermented Milk Products-** FSSAI Standards, Definition, Composition, Classification, starter cultures used and their preparation methods, Method of Manufacture of fermented milk products - Dahi, Yoghurt, Acidophilus milk, Bulgarian butter milk, Kefir, Kumiss, Misti Dahi, Chakka, Shrikhand, Lassi and buttermilk .

(10 Lecture Hours)

### **UNIT V**

**Indigenous Milk Products 1.-** FSSAI Standards, Definition, Composition, Classification, Method of Manufacture of indigenous milk products - Paneer, Khoa and khoa based sweets (burfi, peda, kalakand, gulabjamun), Chhana and chhana based sweets (rasogolla, sandesh ), basundi, Payasam/Kheer (10 Lecture hours)

### **PRACTICALS:-**

**2 CREDITS**

**MAXIMUM MARKS-50**

1. Preparation of White butter and Table butter
2. Preparation of Cheddar or cottage Cheese
3. Manufacture of Ice Cream and calculation of over run in Ice Cream.
4. Preparation of Dahi
5. Preparation of Yoghurt
6. Preparation of Kulfi
7. Preparation of Khoa and associated products such as Burfi, Gulabjamun, Peda, Kalakand etc.
8. Preparation of Chhana and associated products such as Rasogolla, Sandesh etc.
9. Preparation of Ghee by various methods.
10. Visit to a dairy products manufacturing plant

## 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
5. Dairy Technology: Vol.02.Dairy Products and Quality Assurance - Shivashraya Singh
6. Technology of Indian Milk Products - Aneja, R.P., Mathur, B.N., Chandan, R.C. and Banerjee, A.K.

# **SRI VENKATESWARA UNIVERSITY**

## **B.Sc. DEGREE COURSE IN DAIRY SCIENCE**

**V SEMESTER - W.E.F. 2022-23**

### **MODEL QUESTION PAPER**

Time: 3 hours

Marks: 75 marks

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A. Part B consists of 5 Units. Answer one full question (A or B) from each unit (i.e., Q.No 9 from Unit – I, Q.No 10 from Unit – II, Q.No 11 from Unit – III, Q.No 12 from Unit – IV, Q.No 13 from Unit – V). Each question carries 10 marks.

#### **PART – A**

**Answer any *Five* of the following question.**

**(5X5=25M)**

<b>1.</b>	
<b>2.</b>	
<b>3.</b>	
<b>4.</b>	
<b>5.</b>	
<b>6.</b>	
<b>7.</b>	
<b>8.</b>	

**(P.T.O)**

**PART - B**

**Answer All The Questions. Each question carries 10 marks (5X10= 50M)**

9.	(A)  OR  (B)
10.	(A)  OR  (B)
11.	(A)  OR  (B)
12.	(A)  OR  (B)
13.	(A)  OR  (B)