

7

## III Year I Semester

## DAIRY CHEMISTRY

## THEORY

(60 Lectures)

(4 Credits)

**Unit1: (a) Composition of Milk:** Definition of milk, composition of cow milk, buffalo milk, sheep milk, goat milk and human milk.—Differences between the composition of cow and buffalo milks. Constituents of milk: Minor and major constituents.

(b) Colostrums: Significance, Composition, difference between normal milk and colostrums.

(20 Lectures)

**Unit2: Factors affecting composition and yield of milk** – Species, Breed, individuality, Stage of lactation, Age of the animal, Season, Interval between milking, Stage of milking, Feed, Estruses, Exercise, Milker and Drugs.

(10 Lectures)

**Unit3: Physico-chemical properties of milk** Colour, Flavour, Density and Specific gravity, Freezing point, Boiling point, Surface tension, Viscosity, Specific heat, Refractive index, Electrical conductivity, Germicidal property, PH and acidity. (15 Lectures)

**Unit4: (a) Chemistry of major constituents of milk b) Nutritive value of milk.**

(10 Lectures)

**Unit5: (a) Platform tests;** Tests for detection of adulteration of milk; Preservatives and Neutralizers. (b) FSSAI Specifications for milk.

(5 Lectures)

## Practicals:

(2 Credits)

1. Estimation of Fat in milk
2. Estimation of SNF in milk
3. Estimation of Specific gravity in milk
4. Estimation of acidity in milk
5. Estimation of pH in milk
6. Estimation of Surface tension in milk
7. Estimation of Viscosity in milk
8. Comment on the quality of given milk sample

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## DAIRY MICROBIOLOGY

### THEORY

(60 Lectures)

(4 Credits)

**Unit1:(a) Types of Microorganisms present in milk:** acid producing, gas producing, protein splitting, fat splitting, pathogenic and inert organisms.

(b) Types of microorganisms based on temperature requirement: Psychrophilic, mesophilic, thermophiles and thermotolerant microorganisms. (c) Chemical changes observed during storage of milk and abnormal fermentations observed in milk: souring, gassy fermentation, proteolysis, lipolysis, ropiness, and flavour fermentations. (15 Lectures)

**Unit2:(a) Sources of contamination of milk and their control:** exterior of the animal, interior of the udder, utensils, water, milker, flies and insects, soil and manure, milking barn, cattle shed and surroundings. (b) Methods of clean milk production. (10 Lectures)

**Unit3:(a) Microbiological examination of milk:** direct microscopic count, standard plate count, methylene blue reduction test, resazurin reduction test and coliform test. (15 Lectures)


**Unit4:Cleaning and sanitization of dairy equipment:** Desirable properties of detergents and sanitizers; Commonly used detergents and sanitizers;Methods of cleaning and sanitization(i) Hand washing, (ii) Mechanical washing (iii) Cleaninginplace. (10 Lectures)

**Unit5:Milk borne diseases:** bacterial, viral and other diseases. (10 Lectures)

### Practical:

(2 Credits)

1. MBRT test of milk
2. RRT Test of milk
3. Direct Microscopic count of milk
4. SPC of milk
5. Coliform count of milk
6. Thermotolerant count in milk
7. Thermophiles count in milk
8. Psychotropic count in milk

  
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**THEORY MODEL PAPER:** Paper -V-I, Market milk, Dairy Chemistry

Time- 3 Hours

Max. Marks: 75

**SECTION- A (SHORT ANSWERS)**

(Instructions to the paper setter: To keep at least one question from each unit, maximum eight from all)

Answer any five of the following

5x5 = 25 marks

1. Define milk. Write the chemical composition of milk.
- 2 write the PFA standards for different categories of market milk.
3. Write about various preservatives and adulterants used in milk and the methods for detection of preservatives and adulterants.
4. What is the specific gravity of milk? Write about Specific Gravity of milk.
5. Define colostrum. Write its importance.
6. Write about Acidity of milk. .
7. Write about COB test.
- 8 . Write about FSSAI specifications for milk.

**SECTION-B (ESSAY QUESTIONS)**

(Instructions to the paper setter: To keep one question from each unit)

Answer all the following questions

5x10=50 marks

9. a) Write the factors affecting quantity and quality of milk.

Or

- b) Write about nutritive value of milk.

10. a) Write a brief note on physico chemical properties of milk and also write their significance in various dairy operations.

Or

- b) Write about the significance of Specific Gravity in milk.

11. a) Write in detail the different tests for detection of adulteration in milk. Write on various Preservatives and Neutralisers added in milk and on how to detect them.

Or

b) What are the differences between composition of cow and Buffalo milk.

12. a) Write a brief note on platform tests of milk.

Or

b) Write the significance of milk fats in human nutrition.


13 a) What is Freezing point depression? How FPD does helps in detection of adulteration of milk with water?

Or

b) Write how does the stage of lactation affect the composition and yield of milk?

INTERNAL EXAMINATION -25 marks

20 marks for theory test and 5 marks for Viva Voss

  
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Dept. of Dairy Science  
S.V.Arts College, Tirupati

**SRI VENKATESWARA UNIVERSITY**

Three Year Degree Programme

III B.Sc. –**DAIRY SCIENCE** PAPER –V-I ; SEMESTER –V

**PRACTICAL MODEL PAPER: Paper –V Dairy Chemistry**

Time- 3 Hours

Max. Marks: 50

ANSWER ALL QUESTIONS

3x10= 30 marks

1. Estimate the percent SNF in given sample of milk
2. Comment on quality of given sample of milk.
3. Estimate the percent protein in given sample of milk by using Pyne's method

Identify the following equipment /item and write briefly about its use

5x2=10 marks


1. Butyrometre
2. Lactometre
3. lock stopper
4. 10 ml tilt measure for measuring Gerbers sulphuric acid
8. Phenolphthalein

Viva Voss

-5 marks

Record (submission is compulsory)

- 5 marks

  
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SECTION- A (SHORT ANSWERS)

(Instructions to the paper setter: To keep at least one question from each unit, maximum eight from all) Answer any five of the following 5x5 = 25 marks

1. What are acid producing microorganisms in milk? How does they affect the quality of milk?
2. What is gassy fermentation of milk? What are the organisms which cause gassiness in milk?
3. What are the measures to be taken for personal hygiene of milker ?
4. Write about Direct microscopic count of milk.
5. Write about sanitization practices followed in a Dairy plant.
6. What is CIP method of cleaning?
7. What are the diseases which can be transmitted through milk?
8. Name few detergents and sanitizers.

SECTION – B (ESSAY QUESTIONS)

Instructions to the paper setter: To keep at least one question from each unit.

Answer all the questions. All questions carry equal marks.

5X10= 50 Marks

9. Write the classification of Dairy microorganisms

Or

write about different types of microorganisms present in milk.

10. Write about the sources of contamination of milk.

Or

Write various steps to be taken for clean milk production.

11. Write in detail about Methylene blue reduction test.

Or

Write about Resazurine reduction test.

12. Write in detail the desirable properties of a good detergent.

Or

Write about methods of cleaning and Sanitation.

13. Write about various bacterial diseases which transmit through milk( Or) various Viral diseases which transmit through milk.

SRI VENKATESWARA UNIVERSITY

Three Year Degree Programme

III B.Sc. –DAIRY SCIENCE PAPER –V-2 ; SEMESTER –V

PRACTICAL MODEL PAPER: Paper –V -2 Dairy Microbiology

Time- 3 Hours

Max. Marks: 50

ANSWER ALL QUESTIONS 3X10=30 Marks

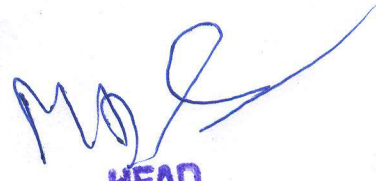
1. Assess the quality of given sample of milk through MBRT. Give interpretation.
2. Estimate the number of bacteria present in given sample of milk by DMC method
3. Write about various types of bacteria present in milk and the tests which are used to assess them.

IDENTIFY THE FOLLOWING EQUIPMENT/APPARATUS and write a brief note/Use. 5X2=10 Marks

1. Lovibond comparator
2. Petriplate
3. Nutrient Agar media
4. Autoclave
5. Hot air oven

VIVA VOSE -5 Marks

RECORD - 5 Marks

  
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