

GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 3165103

Date: 29/05/2026

Subject Name: DAIRY TECHNOLOGY

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

- Q.1**
- (a) Explain the composition and major constituents of milk. **03**
 - (b) Discuss the factors affecting the composition and quality of milk. **04**
 - (c) Describe common flavour defects found in market milk and their causes. **07**
- Q.2**
- (a) Differentiate between homogenized, toned and standardized milk. **03**
 - (b) Explain the process and importance of milk sterilization. **04**
 - (c) Define recombined milk. Describe its preparation and uses. **07**
- OR**
- Q.2**
- (c) A dairy plant processes 10,000 litres of milk per day to make toned milk 3% fat, 8.5% SNF using buffalo milk 7% fat, 9% SNF and skim milk 0.1% fat, 9% SNF. Calculate the quantity of each required. **07**
- Q.3**
- (a) Describe the classification and types of cream. **03**
 - (b) Explain the process of butter production and the factors affecting overrun. **04**
 - (c) A cream containing 40% fat is used to make butter with 82% fat. Calculate the expected butter yield from 100 kg of cream. **07**
- OR**
- Q.3**
- (a) Discuss the causes of fat losses during butter manufacture. **03**
 - (b) Explain the significance of pasteurization and cooling of cream before churning. **04**
 - (c) Write a brief note on grading of butter. **07**
- Q.4**
- (a) Enumerate the ingredients of ice cream and state their functions. **03**
 - (b) Explain the process of ice cream manufacturing with a neat flow diagram. **04**
 - (c) An ice cream mix contains 10% fat, 12% milk solids-not-fat MSNF, 15% sugar, and 0.3% stabilizer/emulsifier. Calculate the total solids. **07**
- OR**
- Q.4**
- (a) Explain the concept of overrun in ice cream. Give its formula. **03**
 - (b) A batch of ice cream mix weighing 50 kg yields 85 L of ice cream density ≈ 0.95 kg/L. Calculate overrun. **04**
 - (c) Write a short note on texture defects in ice cream. **07**
- Q.5**
- (a) Discuss the composition and types of cheese. **03**

- (b) Explain the manufacturing process of cheddar cheese with neat flow diagram. **04**
(c) Write a short note on processed cheese and its advantages. **07**

OR

- Q.5** (a) Explain the process of production of condensed milk with a labeled flow diagram. **03**
(b) Describe the types and properties of dried milk. **04**
(c) A condensed milk sample contains 9% fat and 26% total solids TS. Calculate the percentage of water removed from milk originally containing 4% fat and 12% TS. **07**
