

2021  
29th Jan.

**M.Tech. Food Technology**  
**Semester II End Semester Examination 2021**  
**Course Code: MFTC-204**  
**Course Title: Dairy Technology and Engineering**

**Time: 3 hours for writing and 15 min. for uploading**

**Max Marks: 75**

**Attempt as asked. Marks are mentioned against each question**

**Q1. Briefly answer the following:**

**(Total: 15 marks)**

- (p) What is seeding and forced crystallization? (2)
- (q) Name the two classes of neutralizers used for neutralization of cream stating their advantages and disadvantages. (2)
- (r) What is reconstituted and recombined milk? (2)
- (s) Give two examples of acid dessicated dairy products. (2)
- (t) Define pilot sterilization test. (2)
- (u) What role do positive displacement pumps have in milk homogenizer? (2)
- (v) What are the legal standards for spray dried milk? (2)
- (w) What is syneresis? (2)
- (x) By-product obtained during manufacture of butter is \_\_\_\_\_. (1)

**Q2. Write short notes on any three of the following**

**(5x3)**

- (f) HTST pasteurization
- (g) Precipitation of casein
- (h) Defects in butter, causes, prevention
- (i) Sterilization and UHT treatment
- (j) Overrun

**Q3. Answer any three of the following:**

**(5X3)**

- (f) Draw a line diagram showing manufacture of processed cheese.
- (g) Give flow diagram for preparation of sweetened condensed milk. What happens when condensed milk is stored at 0°C or below?
- (h) Describe factors affecting yield and composition of milk.
- (i) Draw a flowsheet showing general method and ingredients used in manufacture of ice cream. Give the freezing time and temperature of different types of ice-cream freezers.
- (j) Determine the acidity if 19.0 ml of 0.1N NaOH is required to titrate a 10ml sample of milk, the sum titratable acidity of that sample, is articulated as percent lactic acid. (Formula:  $C_3H_5O_3$ ); mol. weight = 90 g/mol; equivalent weight = 90 g/equiv)

**Q4. Answer any three of the following**

**(5x3)**

- (f) Write in short traditional method for the preparation of *paneer* and *channa*.
- (g) Explain multiple effect evaporation and applications in dairy industry.

**Section- B (4\*10=40 marks)**

Any four

- Q1.** What are the legal standards of cream? Describe factors that influence the efficiency of cream separation. Name the common types of cream separators and describe briefly.
- Q2.** What are three major stages of spray drying? Discuss basic operations involved in production of milk powder.
- Q3.** Describe in brief the housing, feeding and milking management practices of milch animals which ensure production of good quality milk.
- Q4.** Name various ice cream ingredients and their purpose. Give principle and method of manufacture of ice cream with the help of a flow diagram. Give the freezing time and temperature of different types of ice-cream freezers.
- Q5.** Define condensed milk as per FSSAI. What are the requirements of high grade condensed milk? Give the causes of following defects in condensed milk:
- a. Gassy Fermentation
  - b. Age thickening
  - c. Sandiness
- Q6.** Write a short note on any four:
- a. Adulterants in milk
  - b. Modern method of *gulabjamun* preparation
  - c. Pasteurization efficiency
  - d. Infant foods
  - e. National Milk Grid
  - f. Precipitation of casein