

Total number of printed pages-4

53 (FPT 502) FPTC-III

2017

**FOOD PRODUCT TECHNOLOGY-III**

Paper : FPT 502

**(Milk & Milk Products)**

Full Marks : 100

Time : Three hours

**The figures in the margin indicate full marks for the questions.**

Answer **any five** questions.

1. (a) Estimate MF(%), SNF(%) and Energy (kcal) for the following milk types :
  - (i) Toned Milk
  - (ii) Standardized Milk.

3+3=6
- (b) State the factors affecting the composition of milk. 

4
- (c) Write about the following physico-chemical properties of milk :
  - (i) Density
  - (ii) Freezing point

6+4=10

Contd.

2. (a) Tabulate the bacteriological standards of raw milk. 4
- (b) Discuss about the various cooling methods employed for milk storage before transportation. 12
- (c) How many kg each of 40% cream and 4% milk will be required to make 1000kg of a mixture testing 5% fat ? 4
3. (a) Define "Standardization" and "Separation" of milk. 2+2=4
- (b) Define "Pasteurization" of milk. Explain batch pasteurization of milk with proper diagram. 2+8=10
- (c) Calculate the flow rate of milk through a centrifugal separator if : number of disks = 100 ; disk angle of inclination =  $45^\circ$ , outer radius  $R_o = 0.15m$ , Inner radius  $R_n = 0.05m$ , limiting diameter of fat globules  $d = 1.8\mu m$ , rpm=5000, density difference of milk and fat globule  $\Delta\rho = 105 kg/m^3$ , absolute viscosity  $\mu = 1.05 \times 10^{-3} kg/ms$ , correction factor  $C = 06.06$  6

4. (a) Explain the homogenization process of milk with proper diagram. 6+4=10
- (b) Explain about the CIP system used in the cleaning and sanitization of HTST pasteurizer. 6
- (c) Provide the flow diagram for the manufacturing process of recombined milk. 4
5. (a) Explain about the gravity method for milk cream production. 6
- x (b) Mention *any four* defects in cream production along with the preventive measures. 4
- (c) Provide the flow diagram for the manufacturing of butter and detail it shortly. 10
6. (a) Give the flow diagram for the production of condensed milk and explain the process shortly. 10
- (b) Mention the flow diagram for the processing of evaporated milk. 5
- (c) Write the production problems in the processing of evaporated milk. 5

7. (a) Write about the classification of ice cream. 8
- (b) Explain about the different sweeteners used in the manufacturing of ice cream. 6
- (c) Give the flow diagram for the production of cheddar cheese. 6