Total number of printed pages–5

53 (FPT 502) FPTC

2019

FOOD PRODUCT TECHNOLOGY-III

Paper : FPT 502

(Milk and 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)* Mention *any four* factors that affect the composition of milk. 4

   (b) Mention the fat levels (%) of standardized, toned, double toned and skimmed milk. 4

   (c) Write short notes on the following physico-chemical properties of milk : 5+4+3=12

   (i) Acidity

   (ii) Freezing points

   (iii) Colour.

Contd.

2. *(a)* How diseases are transmitted through milk? Give *one* example for each possible way of transmission. 4

(b) Give the bacteriological standards of raw milk. 4

(c) How the selection of metals for the dairy equipment are done? Mention the requirements. *(any four)* 4

(d) Explain about the following cooling methods for the safer storage of milk: 4+4=8

(i) In-cam (or) Cam immersion

(ii) Surface cooler.

3. *(a)* Define the following terms associated with milk processing: 2×5=10

(i) Separation

(ii) Clarification

(iii) Standardization

(iv) Pasteurization

(v) Homogenization.

(b) Provide the flow diagram of HTST processing of milk and explain it. 10

4. *(a)* How many *kg* each of 35% cream and 2% milk will be required to make 1000*kg* of a mixture testing 5% fat? 4

(b) Discuss briefly about the mechanical washing of milk cans. 10

(c) Define the term Recombined milk and explain the method of manufacturing. 6

5. *(a)* Fresh milk is kept in a vessel and the fat globules begin to move upward towards the surface. Calculate the velocity of fat globules with the following data. The milk is stored at the temperature of 35°C. 4

Data:

$d = 3\mu m$

$\rho_s = 1028\ kg/m^3$

$\rho_f = 980\ kg/m^3$

$\mu = 1{\cdot}42cp\ (or)\ 1{\cdot}42\times10^{-3}kg.m/s$

(b) Calculate the rate of movement and the distance travelled by fat globules in a centrifugal separator if the diameter of particle is $4\mu m$, radius of bowl is $14cm$, rpm of the bowl 6000, capacity of the separator 4000 Litre/h, volume of milk in the bowl is 4 litres. 6

Given data,

$$\rho_s = 1028\ g/cm^3$$

$$\rho_f = 980\ g/cm^3$$

$$\mu = 2{\cdot}12 \times 10^{-2}\ g/cm.s.$$

(c) Mention the flow diagram for the manufacturing of butter and explain the process in short. 10

6. (a) Explain the production process of evaporated milk with suitable flowchart. 10

(b) Write about *any three* manufacturing defects in the production of condensed milk and mention its preventive measures. 6

(c) Mention the flowchart for the manufacture of WMP. (Whole Milk Powder) 4

7. (a) Discuss about the manufacturing process of ice-cream with proper flowchart. 10

(b) Explain the process of sweet/sour curd (dahi) manufacturing. 10

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