B.E. FTBE 4TH YEAR 1ST SEMESTER EXAMINATION- 2018

FOOD PROCESS TECHNOLOGY IV   Time: 3hrs   Full Marks: 100

Use Separate Answer Script for each Part

(50 marks for each part)

PART- I

Answer question 1 and any two from the rest

1.Explain the following: 4x5
a) Soft curd milk
b) Overrun and shrinkage of icecream
c) Carbohydrate and fat of milk
d) effect of homogenization on various dairy products.

2a) Mention the basic steps of production of icecream. Comment on ageing of mix for icecream production.
b) State the functions of MSNF, stabilizer and emulsifier for preparation of icecream. c) 950 lit of icecream is made from 485 lit of icecream mix. Find % overrun in icecream.   5.5+6+3.5

3a) How milk is dried by drum drier? State and explain the factors affecting efficiency of drum drying of milk.
b) Whole milk powder contains 39.4% fat, 56.9% SNF and water. Calculate the amount of water required for 6870 kg of reconstituted whole milk of 6% fat.
     (3+6)+6

4.Write short notes on:(any three)   3x5
a)grade of milk
b) toned milk
c) salt balance of milk
d) classification of spray driers

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B.E (FTBE) FOURTH YEAR, FIRST SEMESTER EXAMINATION 2018

FOOD PROCESS TECHNOLOGY -IV

PART - II (50 MARKS)

Answer Q1 and Any Two from the rest

Q1. a. Comparatively discuss the two 'processes at origin' for manufacture of coffee. Besides blending, which are the finishing operations in coffee processing that dictate its market price? **4 + 2**

  b. Enumerate the significant operations in manufacture of 'dark chocolate' which contribute to its characteristic 'flavor', and 'gloss'. **6**

  c. Diagrammatically enumerate the manufacturing step that contributes to difference in texture between 'caramel' and 'fudge' candies. **4**

  d. Why are PUFA-rich oils not preferred as high stability oils? Suggest two applications of these oils in food processing. **2 + 2**

Q2. a. Which is the most important technological challenge in mayonnaise manufacture? How is flavor reversion in mayonnaise redressed? **2 + 2**

  b. Comparatively evaluate 'Dry bag, indirect compression' HPP and 'Wet bag, direct compression' HPP with the aid of diagrams. How does HPP find use in food freezing? **5 + 1**

  c. Heat penetration curve is plotted for a canned food processed in a retort at 250°F. It took 6 min from the introduction of steam to the time the retort reached 250°F. It the initial product temperature was 160°F and steam was introduced into the retort for 40 min, determine the F_0 value by Stumbo's procedure taking data from relevant tables. Given: heating and cooling curves parameters $f_h = f_c = 25$ min; $J_h = 1.4$ and $J_c = 1.8$. Consider z value for *Clostridium botulinum* type B. **5**

Q3. a. What are the desirable quality attributes of margarine with special referenced to SFI values? How would you minimize lid-slosh in margarine? **3 + 2**

  b. Enumerate the packed column conditions and the criteria that coffee particles must meet in manufacture of instant coffee. **2 + 1 + 2**

c. In formulation of 'tub margarine', enumerate the roles of the three product development methods - 'application development', 'analytical development' and 'triglyceride replication'.   **5**

Q4. a. Explain the significance of the following in manufacture of black tea (any 3):   **3 × 2 = 6**

1. Withering
2. Oxidation
3. Under-fermentation
4. Short rolling

Would all of these be significant in manufacture of green tea?   **1**

b. How is co-efficient of static friction determined for food grains? How is angle of repose related to moisture content food grains?   **2 + 1**

c. Explain the concepts of lethality and integrated lethality in the holding tube of a continuous sterilization system, for fluids in laminar flow. A fluid food product with a viscosity of 5 cP and density of 1000 kg/m^3 is to be pasteurized in a continuous system which heats the food to 85°C followed by holding in a 1.5 inch sanitary pipe, from which it leaves at 82.2°C. The process should give 12D reduction of *S. aureus*, which has a $D_{82.2°C}$ of 0.0063 min. Using standard tables and graphs, calculate the length of the holding tube if the flow rate is 19L/min.   **5**