KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Agri. Engg) 2016 Admission
VI Semester Final Examination-June 2019

Fape.3207   **Dairy and Food Engineering (2+1)**

Marks: 50
Time: 2 hours

| I | **Fill up the blanks** | (10x1=10) |

1   The removal of water from a food material by sublimation from a frozen state to the vapour state is known as _____

2   Stoke's law is used to find out _____

3   In spray dryer, powder particles are separated by_____

4   The atomizer suitable for materials containing suspended solids is _____

5   CIP stands for _____

6   Freeze drying is directly proportional to_____

7   In uperization, the product is heated to final temperature for a time of _____

8   The operating pressure for ultra filtration is _____

9   The cut off moisture content between constant and falling rate of drying is called _____

10   Time-temperature requirement for in bottle sterilization of milk is _____

| II | **Write Short notes on any FIVE of the following** | (5x2=10) |

1   Factors affecting the drying capacity of drum dryer

2   Electro dialysis

3   Regeneration efficiency

4   Clarification

5   Flow diversion valve

6   Food properties in relation to evaporator performance

7   Atomization

| III | **Answer any FIVE of the following.** | (5x4=20) |

1   Describe the construction and working of rotary can washer with neat diagram

2   With the help of a graph, explain the constant rate drying period and falling rate drying period.

3   Membrane processing.

4   Factors affecting cleaning effectiveness.

5   Explain homogenization with diagram.

6   Different feeding arrangements in evaporator in detail.

7   Calculate the rate of movement of fat globule in a centrifugal separator with dia of fat globule 5 μm. Radius of bowl is 12 cm, speed is 6000 rpm. Capacity of separator is 3000 l/hr, volume is 3 litre and viscosity is 2.12 centipoise.

P.T.O

IV   **Answer any ONE of the following**   **(1x10=10)**

1   With the help of process layout explain briefly the production of butter

2   Milk is being concentrated from 17% to 52% Total Solids in a vacuum pan. The steam is supplied at 115°C and a vacuum of 66 cm of Hg is maintained in the vacuum pan. The feed to the vacuum pan is 3000 kg/hr at 50°C. The condensate leaves at condensing temperature and the product is assumed to have negligible elevation of boiling point. The specific heat capacity of feed is 3.9 kJ/kg°C and that of the product is 3.5 kJ/kg°C. Overall heat transfer coefficient is 2300 W/m²°C. Calculate

    (a) Steam consumption

    (b) Steam Economy

    (c) Heating surface area

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