



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

(10x1=10)

I Fill up the blanks

- 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 $3.9 \text{ kJ/kg}^{\circ}\text{C}$ and that of the product is $3.5 \text{ kJ/kg}^{\circ}\text{C}$. Overall heat transfer coefficient is $2300 \text{ W/m}^2\text{C}$. Calculate

- (a) Steam consumption
- (b) Steam Economy
- (c) Heating surface area
