

KERALA AGRICULTURAL UNIVERSITY

B.Tech (Agrl.Engg) 2011 Admission

VIIth Semester Final Examination- January -2015

Cat. No: Phpt.4107

Marks: 80.00

Title: Dairy and Food Engineering (2+1)

Time: 3 hours

I Fill up the blanks

(10 x 1=10)

1. Indian is the _____ producer of milk in the world
2. The unit of decimal reduction time is _____
3. The microbial death kinetic follows _____ curve
4. Over-run is defined as _____
5. At given centrifugal speed, the boundary layer between two liquids where the hydrostatic pressure of the two layers equal is known as _____
6. _____ log reduction is required for pasteurization of milk
7. Steam economy for a single effect evaporation is _____
8. In an ice-cream plant _____ type of heat exchangers are used
9. Fat content in a double toned milk is _____
10. The unit of molecular weight cut-off is _____

II Write short notes on any TEN questions

(10 x 3=30)

1. Explain CIP cleaning in a milk plant
2. Define pasteurization and sterilization
3. Mention time -temperature combinations in HTST and UHT processing of milk
4. Explain aseptic packaging of milk
5. Define D-value and Z-value
6. Write the expression for boiling point rise of a liquid
7. Define extraction and expression
8. Define filter cake resistance
9. Write the expression for Stoke's law
10. A basket centrifuge of 0.5 m diameter rotates with 2000 rpm .Calculate the centrifugal constant of rotation
11. Write short note on electrolysis
12. Write short note on rotary vacuum filter

III Write short notes on any SIX questions

(6 x 5=30)

1. Explain the Pearson's method for standardization of milk .How many parts by weight of 40% cream and 3% milk should be mixed to make milk of 5% fat
2. Write any four defects in cream ,their causes and prevention

3. Explain a drum drying system with a neat diagram
4. Derive an expression for Z-value
5. An evaporator has a rated evaporation capacity of $200 \text{ kg}\cdot\text{h}^{-1}$ of water .What will be the rate of production of the concentrated juice containing 40% total solids from a raw juice containing 10% solids
6. Explain Swenson -Walter and Vacuum crystallizers
7. Explain one application of reverse osmosis in a dairy plant
8. The radius of a centrifuge used to separate fat from whole milk is 0.12 m. The density of the whole milk and fat is 1020 kg m^{-3} and $990 \text{ kg}\cdot\text{m}^{-3}$,respectively .If the centrifuge runs at 6000 rpm ,find out the settling velocity that will separate the fat particles of size $2 \mu\text{m}$

IV Write an essay on any ONE

(1 x 10=10)

1. Explain in details the spray drying of milk with a neat diagram .Describe various parameters affecting the efficiency of a spray drying system
2. Derive expressions for constant rate filtration and constant pressure filtration
