



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Technology) 2023 & Previous Admissions
IV Semester Final Examination – June 2025

Pafe.2220

Unit Operations in Food Processing II (2+1)

Marks: 50
Time: 2 hours

I State True or False

(10x1=10)

1. Duhring line states that boiling point temperature of a solution is non-linearly proportional to that of water at the same pressure.
2. In rising film evaporator, vapors and products are separated at the bottom of the evaporator body.
3. Ice crystals formed during quick freezing are generally larger than those formed during a slow freezing process.
4. Nucleation precedes ice crystals formation.
5. Dry ice is the name of solid CO₂.
6. Liquid-liquid mixture is separated with solvent extraction by adding soluble solvent.
7. Distillation process consists of only two processes i.e. distilling and condensation reflux.
8. In high temperature short time method of pasteurization, milk is heated at temperature 62 °C for 15 minutes.
9. Sterilization is achieved by heat and chemicals alone.
10. Butter is an example of emulsion.

II Write short notes on ANY FIVE of the following

(5x2=10)

1. Write short notes on
 - (i) Boiling point elevation
 - (ii) Duhring plot
2. Enlist different multiple effect evaporators classified according to the direction of feed and steam.
3. What is freeze concentration?
4. Write short notes on Nucleation.
5. List the names of two different equations to calculate freezing time.
6. What is lyophilisation?
7. Define leaching.

III Answer ANY FIVE of the following

(5x4=20)

1. With the help of neat and clean schematic diagram, briefly explain about falling film evaporator.
2. What is the significance of Plank's equation? Write the formula of the equation and mention each components with its SI unit.
3. What is continuous flash distillation? Write down the overall material balance and material balance for the volatile components.
4. What is frying method and explain different types of frying methods?
5. What is pasteurization? Explain Batch pasteurization.
6. Define Crystallization and briefly enlist seven classes of crystals depending upon the arrangement of the axes to which the angles are referred.
7. What is emulsification process? List with examples the types of liquid-liquid emulsion. Also write the factors which helps in determining the stability of emulsions.

IV Write an essay on ANY ONE of the following

(1x10=10)

1. Explain Freezing system – direct contact systems, air blast, and immersion.
2. Explain about
 - (a) Plate heat exchanger
 - (b) Tubular heat exchanger
