



KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Engg) 2016 Admission
IV Semester Final Examination-July 2018

Fden.2207

UNIT OPERATIONS IN FOOD ENGINEERING(2+1)

Marks: 50
Time:2 hours

1 Choose the Correct Answer.

(10x1=10)

- 1 Which rule is commonly used to describe boiling point rise of a solution?
 - a) Pearson rule
 - b) Duhring rule
 - c) Stephan-Boltzman law
 - d) Fick's law
- 2 For separation of milk a faster process is:
 - a) Separation by gravity
 - b) Separation by frictional force
 - c) Separation by centrifugal force
 - d) None of the above
- 3 A liquid mixture is separated into individual compounds or in some cases groups of components by vaporization is called:
 - a) Distillation
 - b) Coagulation
 - c) Granulation
 - d) Evaporation
- 4 Irradiation of food is:
 - a) Thermal process
 - b) Non-thermal process
 - c) High pressure process
 - d) Impregnation process
- 5 Microwave frequency which is permitted for commercial application in processing in India, is:
 - a) 2450 MHz
 - b) 2.45 MHz
 - c) 2540 MHz
 - d) 2.54 MHz
- 6 Cryogenics can be effectively used for:
 - a) Rice milling
 - b) Oil milling
 - c) Spice milling
 - d) Pulse milling
- 7 Supercritical fluid extraction technique is suitable for extraction of:
 - a) Essential oil
 - b) Protein
 - c) Carbohydrate
 - d) Germ oil
- 8 In membrane separation process, the feed mixture is separated into:
 - a) Retentate
 - b) Permeate
 - c) Both a & b
 - d) None of the above
- 9 Crystallization is considered which of the following separation processes:
 - a) Liquid-liquid
 - b) Solid-liquid
 - c) Solid-gas
 - d) Liquid-gas
- 10 Extrusion technology is a:
 - a) LTLT process
 - b) UHT process
 - c) HTST process
 - d) All of the above

P.T.O

- 2. Write short notes/answers etc on ANY FIVE** (5x2=10)
- 1 Define the term "boiling point elevation".
 - 2 State the difference between leaching and extraction
 - 3 Extrusion cooking.
 - 4 Sedimentation and Centrifugal separation.
 - 5 Mixing and various mixing equipments.
 - 6 Two advantages of vapour recompression system.
 - 7 The principle of size reduction.

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

- 1 The principle of microwave heating.
- 2 Cryogenic grinding and its advantages over other conventional grinding techniques.
- 3 What is "Food Irradiation"? Explain about irradiation technologies.
- 4 Super critical fluid extraction
- 5 In the concentration of orange juice a fresh extracted and strained juice containing 7.08 wt% solids is fed to a vacuum evaporator. In the evaporator, water is removed and the solids content increased to 58 wt% solids. For 1000 kg/h entering, calculate the amounts of the outlet streams of concentrated juice and water.
- 6 Nucleation and crystal growth in crystallization process.
- 7 Membrane separation and types of membranes used in membrane separation process.

IV Write an essay on any ONE of the following (1x10=10)

- 1 Advantages of multiple effect evaporators. Explain the various types of multiple effect evaporators with neat sketch.
- 2 Types of extruders and explain different zones in an extruder with a neat sketch.
