



UNIVERSITY OF
SWAZILAND

FACULTY OF HEALTH SCIENCES

B.Sc. ENVIRONMENTAL HEALTH AND FOOD SCIENCE

END OF SEMESTER I EXAMINATIONS

TITLE OF PAPER: FOOD PROCESSING

COURSE CODE: EHM323

DURATION: 2 HOURS

DATE: DECEMBER 2015

INSTRUCTIONS:

1. READ THE QUESTIONS CAREFULLY
2. ANSWER ANY FOUR (4) QUESTIONS
3. EACH QUESTION CARRIES 25 MARKS. WHERE A QUESTION IS SUBDIVIDED INTO PARTS, THE MARK FOR EACH PART IS SHOWN IN BRACKETS.
4. NO PAPER SHOULD BE BROUGHT INTO THE EXAMINATION ROOM
5. BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER

SPECIAL REQUIREMENTS: CALCULATOR

QUESTION 1

Write notes on the following terms:

- a. Surface activity. [5]
- b. Bulk density. [5]
- c. Boundary layer. [5]
- d. Overrun. [5]
- e. Radappertisation. [5]

[25]

QUESTION 2

- a. A liquid (100 kg h^{-1}) containing 12% solids is to be concentrated to produce a liquid containing 32% solids.
 - i. Use a diagram to show the mass flow. [5]
 - ii. Write equations to show the total balance and solids balance given that the mass of water to be removed is m , and mass of concentrate produced is C . [2]
 - iii. How much water is removed per hour? [5]
- b. Discuss the concept of streamline and turbulent flow of fluids with respect to:
 - i. Flow rate. [3]
 - ii. Reynold's number. [5]
 - iii. Viscosity and density. [5]

[25]

QUESTION 3

- a. Define a Non-Newtonian fluid. [2]
- b. Give three food examples of Non-Newtonian fluids. [3]
- c. Briefly discuss the concept of surface tension. [10]
- d. Discuss the changes that take place during frozen storage of food. [10]

QUESTION 4

- b. What is the objective of size reduction in food processing? [4]
- c. Write the equations representing:
 - i. Kick's Law. [2]
 - ii. Rittinger's Law. [2]
- d. Explain the similarities or differences between the two laws. [4]
- e. Use an equation to describe Bernoulli's principle. [8]
- f. Using a food example, explain why homogenization is considered a process of size reduction. [5]

[25]

QUESTION 5

- a. List five (5) types of equipment used in drying food. [5]
- b. Use diagrams to illustrate, discuss the mechanisms involved in drying food using heated air. [10]
- c. Describe the effects of drying on the texture and colour of food. [10]

[25]

END OF EXAMINATION PAPER