

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE IN FOOD SCIENCE TECHNOLOGY

FOST 335: UNIT OPERATIONS IN FOOD PROCESSING

STREAMS: BSc, FOOD SCIENCE & TECHNOLOGY Y3S1

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 5/12/2018

8.30 A.M - 10.30 A.M.

INSTRUCTIONS:

- Answer ALL Questions in Section A and any other Two Questions in Section B
- Do not write anything on the question paper

SECTION A: (COMPULSORY) [30 MARKS]

1. Describe the main components of a fermenter. [7 Marks]
2. (a) Describe the components of a fluidized bed dryer. [4 Marks]
(b) Describe the heat exchange component of an evaporator. [3 Marks]
3. If a cream separator has discharge radii of 5cm and 7.5 cm and if the density of skim milk is 1032 kg m^{-3} and that of cream is 915 kg m^{-3} , calculate the radius of the neutral zone so that the feed inlet can be designed. [6 Marks]
4. (a) Explain homogenization. [6 Marks]
(b) Explain concentration polarization in membrane separation systems. [4 Marks]

SECTION B: [40 MARKS] - ATTEMPT TWO QUESTIONS

5. (a) Describe the use of propeller agitators in mixing. [8 Marks]
(b) Describe the use of tumbler mixers. [7 Marks]
(c) Explain five principal components of a batch heater. [5 Marks]
6. (a) Explain the main components of distillation equipment for the continuous fractionation of liquids. [4 Marks]
(b) Explain the theory of centrifugal pumps. [5 Marks]
(c) Describe the application of filtration in the food industry. [11 Marks]

7. Describe the operation of the following mills:

(a) Crushing rolls

[5 Marks]

(b) Hammer mill

[5 Marks]

(c) Bühler mill

[5 Marks]

(d) Ball mills

[5 Marks]

.....