



1ST SEM. 2015/16

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**UNIVERSITY OF SWAZILAND
FINAL EXAMINATION PAPER**

PROGRAM : **BACHELOR OF SCIENCE IN FOOD
SCIENCE, NUTRITION AND TECHNOLOGY
YEAR III**

COURSE CODE : **FSNT 302**

TITLE OF PAPER : **FOOD MACHINERY AND PLANT DESIGN**

TIME ALLOWED : **TWO (2) HOURS**

INSTRUCTIONS : **ANSWER QUESTION ONE (1) AND ANY
OTHER TWO (2) QUESTIONS. ILLUSTRATE
YOUR ANSWERS WITH DIAGRAMS
WHERE NEEDED**

**DO NOT OPEN THIS PAPER UNTIL PERMISSION HAS BEEN GRANTED BY
THE CHIEF INVIGILATOR**

QUESTION 1 (COMPULSORY)

- (a) A food processor approaches you seeking advice on the selection of equipment. Outline guidelines which would help you properly advise the processor. (15 Marks)
- (b) List the advantages of converting an existing facility to a food processing establishment. (10 Marks)
- (c) Identify **five (5)** issues related to functional area design of a food processing plant and describe one in detail. (15 Marks)

[TOTAL MARKS = 40]**QUESTION 2**

- (a) With the aid of sketch describe the air flow directions/patterns of centrifugal and cross-flow fans. (10 Marks)
- (b) Write short notes on the following: (4x5=20 Marks)
- i. Brown field
 - ii. Relationship chart
 - iii. Clean-in-place (CIP) system
 - iv. Cyclone

[TOTAL MARKS = 30]**QUESTION 3**

- (a) With the help of a sketch, describe how a continuous screw press works and indicate its application in food processing. (10 Marks)
- (b) Describe blast and chest freezers and indicate the advantages of one over the other. (10 Marks)
- (c) State the purpose of size reduction of solids in food processing and name two categories of size reducers. (10 Marks)

[TOTAL MARKS = 30]

QUESTION 4

- (a) With the help of a sketch, name the components of fluidized bed dryer and describe one in detail.
(12 Marks)
- (b) Identify the components of an evaporator and give **three (3)** applications of an evaporator in food processing operations.
(9 Marks)
- (c) State **six (6)** factors to be considered in selecting the location of a food processing plant.
(9 Marks)

[TOTAL MARKS = 30]