



1ST SEM. 2017/18

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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.**

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

QUESTION 1 (COMPULSORY)

- (a) Describe important requirements of a food processing machine. (12 Marks)
 - (b) Describe the steps involved in process design (10 Marks)
 - (c) Describe how fluidized bed works. (10 Marks)
 - (d) Briefly describe relationship chart with the help of example. (8 Marks)
- [TOTAL MARKS = 40]

QUESTION 2

- (a) Describe the rotary drum filter. (10 Marks)
 - (b) Write short notes on the following:
 - i. Gauge rolls
 - ii. CIP system
 - iii. Drum dryers
 - iv. pneumatic conveyors
- (4x5=20 Marks)
- [TOTAL MARKS = 30]

QUESTION 3

- (a) State the characteristics of displacement and dynamic pumps. (8 Marks)
 - (b) Briefly describe the stages in spray drying. (12 Marks)
 - (c) State the purpose of size reduction of solids in food processing. (10 Marks)
- [TOTAL MARKS = 30]

QUESTION 4

- (a) List **eight (8)** factors that need to be considered in selecting location for food processing plant. (12 Marks)
 - (b) Describe filtration and centrifugation as a separation process. (8 Marks)
 - (c) Describe twin screw extruders and state their advantages (10 Marks)
- [TOTAL MARKS = 30]