



2nd SEM. 2016/17

PAGE 1 OF 2

UNIVERSITY OF SWAZILAND
SUPPLEMENTARY EXAMINATION PAPER

PROGRAMME : **BACHELOR OF SCIENCE IN FOOD SCIENCE,
NUTRITION AND TECHNOLOGY YEAR IV**

COURSE CODE : **FSNT 410**

TITLE OF PAPER : **PROCESS CONTROL AND AUTOMATION**

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**

200

QUESTION 1 (COMPULSORY)

- (a) Discuss damped and cyclic response. (20 Marks)
- (b) Explain the functions of actuators and final control elements. Give an example for each in food process operations. (20 Marks)

[TOTAL MARKS = 40]

QUESTION 2

- (a) Discuss the purpose and principle of hot wire anemometer. (15 Marks)
- (b) With the help of sketches, describe the different types of control valves. (15 Marks)

[TOTAL MARKS = 30]

QUESTION 3

- (a) Describe the principle of radiation thermometer and explain why its use was limited in the food industry. (15 Marks)
- (b) List the level measuring techniques and discuss any two further. (15 Marks)

[TOTAL MARKS = 30]

QUESTION 4

- (a) Describe a float type level measurement technique (include a sketch). (15 Marks)
- (b) Describe the purpose and the types of control loop tuning. (15 Marks)

[TOTAL MARKS = 30]