2ND SEM. 2014/15

UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER

PROGRAM	:	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.

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QUESTION 1 [COMPULSORY]

(a) Discuss the advantage of proportional plus integral control over proportional control strategy. **(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) Write short notes on the following:

i. Automatic tuning
ii. Self generating transducers
iii. Settling time
iv. Event based control **(4 x 5 = 20 Marks)**

(b) Explain the working principle of resistive transducers. Give examples of their application in food process operations. **(10 Marks)**

[TOTAL MARKS = 30]

QUESTION 3

(a) Identify the essential elements of radiation thermometer and explain the characteristics of this measuring technique. **(14 Marks)**

(b) Describe **four (4)** important stages of E-nose signal processing and pattern recognition. **(16 Marks)**

[TOTAL MARKS = 30]

QUESTION 4

(a) Explain programmable automation and outline the features that characterise it. **(15 Marks)**

(b) Describe how a capacitance method is used to measure level. **(15 Marks)**

[TOTAL MARKS = 30]