UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

PROGRAMME	:	**BACHELOR OF SCIENCE IN FOOD SCIENCE, NUTRITION AND TECHNOLOGY YEAR IV**
COURSE CODE	:	**FSNT 403**
TITLE OF PAPER	:	**FOOD INGREDIENT TECHNOLOGY IN PRODUCT DEVELOPMENT**
TIME ALLOWED	:	**TWO (2) HOURS**
INSTRUCTIONS	:	**ANSWER QUESTION ONE (1) AND ANY OTHER (2) QUESTIONS**

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QUESTION 1 [COMPULSORY]

a. Discuss the three toxicity tests performed on all food additives and explain how the Acceptable Daily Intake (ADI) and Maximum Residue Level (MRL) are determined.

[20 marks]

b. Discuss potassium nitrite and sulphur dioxide, stating clearly why they are used in food processing, how they react with food, and their health concerns.

[20 Marks]

[Total = 40 marks]

QUESTION 2

a. A hot chocolate mix has the following ingredients; sugar, cocoa powder, skim milk powder, corn syrup solids, vegetable fat, milk protein, carrageenan, polyfructose, stabilizer, flavourants, emulsifier, colourants, anti-caking agent.

i. Discuss the interaction of carrageenan with milk proteins at high and low pH.

[6 marks]

ii. Discuss the function of stabilizer, emulsifier, and anti-caking agent used in the hot chocolate mix, giving an example of each.

[9 marks]

iii. Choose two other ingredients from the mix and discuss their functions.

[6 Marks]

b. Discuss calcium induced alginate gellation and its possible application in food.

[9 marks]

[Total = 30 marks]

QUESTION 3

a. Explain the following terms:-
   i) Food additive.
   ii) Genotoxic compound

[5 marks]

b. Differentiate between fat substitutes and fat mimetics. Describe two examples in each type of fat replacers.

[10 marks]

c. Discuss the function of the following food additives, giving a food example in each case

   i. Locust bean gum
   ii. Xylitol
   iii. Aspartame
   iv. Annato extract
   v. Potassium iodide

[15 marks]

[Total =30 marks]

QUESTION 4

a. Describe 3 functions of acidulants. [6 marks]

b. Discuss the function of the following food additives, giving a food example in each case

   i. Turmeric
   ii. L-glutamic acid
   iii. Sucralose
   iv. Calcium silicate

[12 marks]

d. Explain the function of the following food additives and give an example in each class

   i. Chelating agents
   ii. Surface active agent
   iii. Fungicidal preservative
   iv. Antioxidant

[12 marks]

[Total = 30 marks]