UNIVERSITY OF ESWATINI

FINAL EXAMINATION PAPER

PROGRAMME	:	BACHELOR OF SCIENCE IN FOOD SCIENCE, NUTRITION AND TECHNOLOGY LEVEL 4 / YEAR IV
COURSE CODE	:	FNS407 / FSNT403
TITLE OF PAPER	:	FOOD INGREDIENT TECHNOLOGY / FOOD INGREDIENT TECHNOLOGY IN PRODUCT DEVELOPMENT
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) Define the following terms:-
   i. Toxicity **(3 Marks)**
   ii. Promutagen **(3 Marks)**

(b) Explain how the following values are obtained:-
   i. Lethal dosage (LD50) **(4 Marks)**
   ii. No observable effects level (NOEL) **(6 Marks)**
   iii. Acceptable daily intake (ADI) **(5 Marks)**
   iv. Maximum residue level (MRL) **(3 Marks)**

(c) How is the mutagenicity and carcinogenicity of food compounds tested? **(6 Marks)**

(d) Explain the **five (5)** principles that govern the use of additives in food. **(10 Marks)**

[TOTAL MARKS = 40]

QUESTION 2

(a) Explain how sugars and salts can act as food preservatives. **(4 Marks)**

(b) What are the active species and mode of action in the following food preservatives?
   i. Benzoic acid **(4 Marks)**
   ii. Sorbic acid **(4 Marks)**

(c) Explain the following food additives and give an example of a compound for each and its application :-
   i. Preservative **(6 Marks)**
   ii. Emulsifier **(6 Marks)**

(d) Differentiate between fat mimetic and fat substitutes give an example in each case. **(6 Marks)**

[TOTAL MARKS = 30]

QUESTION 3

(a) Discuss the properties of the following starch based thickeners/stabilizers and give an application example in each case:-

i. Pregelatinized starch **(5 Marks)**
ii. Cross-linked starch **(5 Marks)**
iii. Waxy maize starch **(5 Marks)**

(b) Explain the source and function of the following food additives:-

i. Pectin **(3 Marks)**
ii. Polydextrose **(3 Marks)**
iii. Simplesse **(3 Marks)**
iv. Cochineal **(3 Marks)**
v. Steviol glycosides **(3 Marks)**

[TOTAL MARKS = 30]

QUESTION 4

(a) Explain the properties of the different types of carrageenan and their gelling properties. **(15 Marks)**

(b) Briefly discuss the following sweeteners :-

i. Corn syrup **(5 Marks)**
ii. High fructose corn syrup **(5 Marks)**
iii. Sorbitol **(5 Marks)**

[TOTAL MARKS = 30]