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. Define the following terms:-
   i. Food additive.
   ii. Toxicity
   iii. Mutagen
   iv. Carcinogen

[8 marks]

b. Discuss **four** principles that govern the use of food additives and **two** consumer perceptions regarding food additive.

[12 marks]

c. Discuss the **three** toxicity test that are performed on all compounds used as food additives

[12 marks]

d. Describe the mode of action of the following preservatives and give **two** examples of food utilizing these substances as preservatives.

   i. Sugar and salt
   ii. Organic acid such as acetic acid

[8 marks]
[Total = 40 marks]

QUESTION 2

a. Discuss the salts, mode of action and the application of the following food preservatives:-
   i. Sulphur dioxide
   ii. Sorbic acid
   iii. Benzoic acid

[15 marks]

b. Discuss the function of the following food additives, giving a food example in each case
   i. Calcium EDTA or disodium EDTA
   ii. Propylene gylcerol esters of fatty acids
   iii. Natamycin or Pimaricin
   iv. Tertiary butylated hydroquinone (TBHQ)
   v. Polysorbate 65

[15 marks]
[Total = 30 marks]

QUESTION 3

a. Discuss the composition of starch and name two types of modified starches and their applications in food [8 marks]

b. Discuss the properties, interaction with Ca^{2++} cation and applications of alginic acid and its salts.

[12 marks]

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

i. Olestra and sucrose fatty acid polyesters
ii. Polydextrose
iii. Aspartame and acesufame K
iv. Annato extract and paprika oleoresin
v. Thiamine hydrochloride and ascorbic acid

[10 marks]
[Total =30 marks]

QUESTION 4

a. Discuss properties of the different types of carrageenan and their interaction with cation and milk proteins.

[10 marks]

b. Discuss four reasons for using flavours in food. [4 marks]

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

i. Glucose isomerase and ficin
ii. L-glutamic acid and 5' Guanylic Acid
iii. Glycerol and D-Sorbitol
iv. Disodium hydrogen phosphate and calcium polyphosphate
v. Potassium bromate and ammonium persulfate

[10 marks]

d. Briefly describe the function of the following food additives

i. Acid regulators
ii. Firming agents
iii. Antifoam agents [6 marks]

[Total = 30 marks]