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UNIVERSITY OF ESWATINI

FINAL EXAMINATION PAPER

PROGRAMME : BACHELOR OF SCIENCE IN FOOD  
SCIENCE, NUTRITION AND TECHNOLOGY  
LEVEL 4

COURSE CODE : FNS407

TITLE OF PAPER : FOOD INGREDIENT TECHNOLOGY

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. Food additive (6 Marks)
  - ii. Mutagen (4 Marks)
  - iii. Carcinogen (4 Marks)
- b) Explain how the following toxicity tests are conducted on food additives :-
- i. Acute test (4 Marks)
  - ii. Subacute test (6 Marks)
  - iii. Chronic test (6 Marks)
- c) Explain how the following values are obtained:-
- i. Acceptable daily intake (ADI) (5 Marks)
  - ii. Maximum residue level (MRL) (5 Marks)

[TOTAL MARKS = 40]

**QUESTION 2**

- a) Discuss the perceptions of consumers on the use of food additives and explain why they are unfounded. (15 Marks)
- b) Define the following classes of food additives and give an example of a compound for each and its application :-
- i. Preservative (4 Marks)
  - ii. Emulsifier (4 Marks)
  - iii. Chelating agent (4 Marks)
- c) State **three (3)** reasons for using food colours in food. (3 Marks)

[TOTAL MARKS = 30]

**QUESTION 3**

- a) Explain the properties of the following stabilizers and give an application example in each case:-
  - i. Pregelatinized starch (5 Marks)
  - ii. Cross-linked starch (5 Marks)
  - iii. Locust bean gum (6 Marks)
  
- d) Give **four (4)** justifications for using food additives in food. (8 Marks)
  
- e) In which foods is carry-over of a food additive from a raw material or ingredient unacceptable? (6 Marks)

[TOTAL MARKS = 30]

**QUESTION 4**

- a) Explain the properties of the different types of carrageenan and their gelling properties. (15 Marks)
  
- b) Describe the function of the following food additives, giving a food example in each case:-
  - i. Simplese (5 Marks)
  - ii. Olestra (5 Marks)
  - iii. High fructose corn syrup (5 Marks)

[TOTAL MARKS = 30]