



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences

DEGREE IN ENVIRONMENTAL HEALTH

FINAL EXAMINATION PAPER 2008

TITLE OF PAPER : **FOOD CHEMISTRY**

COURSE CODE : **EHS 501**

DURATION : **2 HOURS**

MARKS : **100**

INSTRUCTIONS : **READ THE QUESTIONS & INSTRUCTIONS CAREFULLY**
QUESTION ONE & ANY OTHER TWO

: **ANSWER ~~ONLY FOUR~~ QUESTIONS**

: **EACH QUESTION CARRIES 25 MARKS**

: **WRITE NEATLY & CLEARLY**

: **NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM**

: **BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER**

DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.

QUESTION 1 [COMPULSORY]

- a. What are the disadvantages of Maillard reactions in foods? [8 marks]
- b. Briefly describe factors that affect the bioavailability of minerals in food. [8 marks]
- c. Maltose is a **reducing** sugar while sucrose is a **non-reducing** sugar. What is the meaning of the terms and what is the cause of this difference? [8 marks]
- d. What are the differences and similarities between starch and cellulose molecules? [8 marks]
- e. Why would it not be advisable to press ripe fruits? [8 marks]

[TOTAL MARKS = 40]

QUESTION 2

- a) Fatty acid double bonds can be in 'cis' or '*trans*' isomers. Which one has a lower melting point and which one is more common in natural fats and oils? ¹⁰ [15 Marks]
- b) Discuss the factors that affect the melting point of fats ²⁰ [15 Marks]

[TOTAL MARKS = 30]

QUESTION 3

- a. What do you understand by primary, secondary and tertiary structure of proteins and which of these is most likely to be affected by protease enzymes? [20 Marks]
- b. Animal protein is said to be nutritionally superior to plant protein. Explain [10 Marks]

[TOTAL MARKS = 30 Marks]

QUESTION 4

- a. Discuss the differences between true solutions, gels, colloids and emulsions. Which of the four dispersion systems would be stabilized by surface active molecules? [10 Marks]

b. Explain the importance of the structure of a water molecule in the formation of hydrogen bonds

(8 Marks)

c. What is the difference between water activity and moisture content and which one of the two has more effect on chemical and microbial reactions?

[12 Marks]

[TOTAL MARKS = 30 Marks]