



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences
Department of Environmental Health Science

DEGREE IN ENVIRONMENTAL HEALTH AND FOOD
SCIENCE

FINAL EXAMINATION PAPER 2016

TITLE OF PAPER : FOOD CHEMISTRY
COURSE CODE : EHM 322
DURATION : 2 HOURS
MARKS : 100

INSTRUCTIONS :

- : READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
- : ANSWER **ANY FOUR** QUESTIONS.
- : EACH QUESTION **CARRIES 25** MARKS.
- : WRITE NEATLY & CLEARLY
- :
- : BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

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

QUESTION ONE

(a) Define the following terms;

- | | | |
|--------|--------------------|----------|
| (i) | Restoration | [1 Mark] |
| (ii) | Fortification | [1 Mark] |
| (iii) | Enrichment | [1 Mark] |
| (iv) | Vitamination | [1 Mark] |
| (v) | Standardization | [1 Mark] |
| (vi) | Carbonyl | [1 mark] |
| (vii) | Carboxyl | [1 Mark] |
| (viii) | Enolic | [1 Mark] |
| (ix) | Phenolic hydroxyl | [1 Mark] |
| (x) | Phenolase oxidases | [1 Mark] |

(b) What are the factors that influence enzyme activities? [15 marks]
[25 Marks]

QUESTION TWO

- (a) Elaborate why vitamin C is very often used as an indicator vitamin for the retention of nutrients [6 marks]
- (b) Discuss why vitamin B1 is mostly used as indicator for heat treatments [6 Marks]
- (c) Briefly, explain why the rate of enzymatic reaction in dried food is reduced. [5 Marks]
- (d) What is caramellisation? [8 Marks]
[25 Marks]

QUESTION THREE

Write short notes on any five (5) of the following;

- | | | |
|-------|--|-------------------------|
| (i) | Ascorbic acid degradation | [5 Marks] |
| (ii) | Geographical configuration of fatty acids | [5 Marks] |
| (iii) | Importance of the Maillard reaction in Food Technology | [5 Marks] |
| (iv) | Briefly outline the differences between <i>cis</i> 9-Octadecenoic and <i>trans</i> 9-Octadecenoic fatty acids and functionality of the different molecules | [5 Marks] |
| (v) | Emulsion | [5 Marks] |
| (vi) | Factors affecting the magnitude of the interaction of free energy (V) between particles in aqueous systems | [5 Marks] |
| (vii) | Peptide bonds. | [5 Marks]
[25 Marks] |

QUESTIONS FOUR

- (a) Discuss the differences among D-xylose, L-arabinose and D-ribose. [10 Marks]
- (b) What are the properties of carbohydrates? [15 Marks]

QUESTIONS FIVE

- (a) What is Protein denaturation? [2 Marks]
- (b) What are the effects of Protein denaturation? [8 Marks]
- (c) Discuss the factors that lead to denaturation of protein. [15 Marks]
[25 Marks]