



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

DEGREE IN ENVIRONMENTAL HEALTH AND FOOD  
SCIENCE

**FINAL EXAMINATION PAPER 2017**

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) Peptide bond,       | [1 Mark] |
| (ii) Denaturation,      | [1 Mark] |
| (iii) Colloidal,        | [1 Mark] |
| (iv) Emulsion,          | [1 Mark] |
| (v) Dispersion,         | [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) Briefly discuss how reducing water activity help preserve foods. [15 marks]

**Total [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) Outline what is putrifaction of proteins. [13 Marks]

**Total [25 Marks]****QUESTION THREE**

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

- |                                                                                                                                                                  |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| (i) Ascorbic acid degradation,                                                                                                                                   | [5 Marks] |
| (ii) Modification of oils,                                                                                                                                       | [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) Caramellisation                                                                                                                                              | [5 Marks] |
| (vi) Factors affecting the magnitude of the interaction of free energy (V) between particles in aqueous systems,                                                 | [5 Marks] |
| (vii) Compound lipids.                                                                                                                                           | [5 Marks] |

**Total [25 Marks]**

**QUESTIONS FOUR**

(a) Discuss the differences among D-xylose, L-arabinose and D-ribose. [10 Marks]

(b) What are the factors that influence enzymatic activities? [15 Marks]

**Total [25 Marks]**

**QUESTIONS FIVE**

(a) What is the importance of lipids in foods? [3 Marks]

(b) Discuss the classification of fatty acids. [22 Marks]

**Total [25 Marks]**