



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

DEGREE IN ENVIRONMENTAL HEALTH AND FOOD SCIENCE

FINAL EXAMINATION PAPER 2019

TITLE OF PAPER : FOOD CHEMISTRY

COURSE CODE : EHS 321

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) Bound water | [1 Mark] |
| (vii) Water activity | [1 mark] |
| (viii) Water holding capacity | [1 mark] |
| (ix) Water binding and hydration | [1 Mark] |
| (x) Nutrient standardization | [1 Mark] |

(b) Briefly discuss how reducing water activity help preserve foods. [15 marks]

Total [25 Marks]

QUESTION TWO

(a) Elaborate why vitamin A is very often used as an indicator vitamin for oxidation losses. [5 marks]

(b) Discuss the properties of carbohydrates. [15 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) Factors affecting the magnitude of the interaction of free energy (V) between particles in aqueous systems, | [5 Marks] |
| (vi) Deamination. | [5 Marks] |
| (vii) Decarboxylation | [5 Marks] |

Total [25 Marks]

QUESTIONS FOUR

(a) Briefly discuss the denaturation of proteins. [5 Marks]

(b) Discuss the factors that can induce protein denaturation? [20 Marks]

Total [25 Marks]

QUESTIONS FIVE

(a) What is the importance of lipids in foods?

[3 Marks]

(b) Discuss the degradation of lipids.

[22 Marks]

Total [25 Marks]