



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF APPLIED AND HEALTH SCIENCES

DEPARTMENT OF PURE & APPLIED SCIENCES

UNIVERSITY EXAMINATION FOR:

BACHELOR OF SCIENCE IN FOOD TECHNOLOGY AND

QUALITY ASSURANCE (BSFQ14S &BSFQ15S2)

YEAR 2 SEMESTER 2

AFS 4205 : FOOD CHEMISTRY I

PAPER II

SERIES: APRIL 2016

TIME: 2 HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

Do not write on the question paper.

Question ONE

- 1 a)** Explain the importance of water determination in foods (**4 marks**)

- b)** Discuss the functions of monosaccharides (**6 marks**)

- c) i.** Distinguish between essential and non-essential amino acids (**2 marks**)

- ii.** Outline the **EIGHT** essential amino acids (**4 marks**)

d) Discuss the effects of heat on fats and oils (4 marks)

e) Discuss vitamin D under the following;

i Sources (1 mark)

ii Function (1 mark)

iii Deficiency (1 mark)

iv. Outline the TWO major classifications of vitamins, giving an example in each case (3 marks)

f) Discuss the ways of inhibiting *Maillard* reactions (4 marks)

QUESTION TWO

a) Using the structure of water, discuss the importance of hydrogen bonding (10 marks)

b) With the aid of a graph, sketch a typical sorption isotherm and use it to explain the states of water in foods (10 marks)

QUESTION THREE

i. Using starch as an example, illustrate the formation of α 1,4 and α 1,6 glycosidic bonds (4 marks)

ii. Use the structure in (i) above to discuss the properties that make it suitable for food processing operations (6 marks)

iii. Discuss the functions of oligosaccharides (4 marks)

iv. What are the differences and similarities between starch and cellulose (6 marks)

QUESTION FOUR

Discuss the functional properties of proteins (20 marks)

QUESTION FIVE

a) Explain the factors that affect the bioavailability of minerals in food **(8 marks)**

b) Discuss the disadvantages of Maillard reactions in foods **(6 marks)**

c) Discuss the chemical properties of an ideal emulsifier **(6 marks)**