University Examinations 2012/2013

SECOND YEAR, FIRST SEMSTER, EXAMINANATIONS FOR DEGREE OF FOOD SCIENCE AND TECHNOLOGY

AFS 2205: FOOD CHEMISTRY I

DATE: AUGUST 2013   **TIME: 2 HOURS**

INSTRUCTIONS: *Answer **one** question and any other **two** questions*

QUESTION ONE – (30 MARKS)

a) Define the following terms;
   i.   Water binding or hydration
   ii.   Amorphous
   iii.   Molecular mobility
   iv.   Rancidity
   v.   Glass transition temperature

                                                                           (5 Marks)
b) Explain briefly the difference between water content of a food and water activity, and how this knowledge is applied in food science.   (5 Marks)
c) Briefly describe caramelization.   (5 Marks)
d) Describe non enzymatic browning   (5 Marks)
e) Briefly discuss protein gelation and how it is prepared.   (5 Marks)
f) Define digestibility and list factors that affect digestibility of proteins.   (5 Marks)

QUESTION TWO – (20 MARKS)

a) Define moisture sorption isotherm (MSI).
b) Explain the usefulness of the information derived from MSI.
c) List the factors that determine the shape and position of the isotherm of a food.

QUESTION THREE – (20 MARKS)

a) Discuss protein denaturation.   (10 Marks)
b) Discuss the chemical agents of protein denaturation   (10 Marks)

QUESTION FOUR – (20 MARKS)

a) Discuss oxidation of lipids as influenced by the presence of non-lipid substances.

(10 Marks)

b) Discuss any five factors influencing rate of lipids oxidation in foods.   (10Marks)

QUESTION FIVE – (10 MARKS)

a) Discuss lipolysis and its importance in food science. Give examples of specific food effects positive or negative and how to encourage or prevent them respectively.   (10 Marks)

b) Discuss any five factors to consider when choosing antioxidant to be used for different types of oil/fat.   (10 Marks)