



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND
TECHNOLOGY (MMUST)**

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR
(MAIN EXAMINATIONS)**

**SECOND YEAR SECOND SEMESTER EXAMINATIONS
FOR THE DEGREE OF:
BACHELOR OF SCIENCE IN FOOD SCIENCE AND TECHNOLOGY**

COURSE CODE: AFS 203

COURSE TITLE: FOOD CHEMISTRY

DATE: 22ND APRIL 2022

TIME: 8.00-10.00AM

Instruction to candidates

**ANSWER ALL QUESTIONS IN SECTION A AND ANY TWO IN
SECTION B**

MMUST observes ZERO tolerance to examination cheating

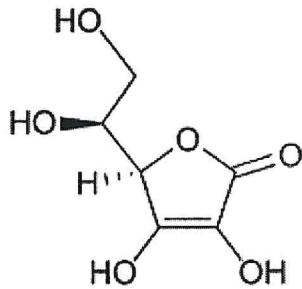
This paper consists of THREE printed pages. Please Turn Over

SECTION A: ANSWER ALL QUESTIONS

- Using structures, explain why saturated fatty acids have a higher melting points than unsaturated fatty acids (4marks)
- Differentiate between:
 - Triglycerides and phospholipids
 - Aromatic and aliphatic amino acids
 - Cis and Trans fatty acids
 - Essential and nonessential amino acids (4marks)
- Using structures, explain how a tristearate is formed (3marks)
 - Give its two physical properties (1marks)
- With reference to relevant structures what do you understand by the term asymmetric carbon. (2marks)
 - Using the amino acids Serine and threonine below, explain the formation of a peptide bond. (4marks)
$$\begin{array}{c} \text{HO}-\text{CH}_2-\underset{\text{NH}_2}{\text{C}}-\text{COOH} \quad \text{H}_3\text{C}-\underset{\text{HO}}{\text{C}}-\underset{\text{NH}_2}{\text{C}}-\text{COOH} \end{array}$$
- What is an amphipathic lipid? (1marks)
 - Describe specific functions of steroids (2marks)
 - Draw the structure of a fatty acid with 18:2 and give its structural name (3marks)
- Using structures, differentiate between starch and cellulose (4marks)
 - What terms are used to describe a five and six membered carbon ring monosaccharide respectively (1marks)
 - Explain why sucrose is not a reducing agent while maltose is a reducing agent (2marks)
- Differentiate between the following, with examples
 - Homopolysaccharide and heteropolysaccharide
 - macro and micro minerals (2marks)
 - State any two changes that proteins undergo when they are denatured (2marks)
- Briefly describe the four structures of protein (4marks)
- Describe the following in relation to the effect of salt on protein solubility
 - Salting-in
 - Salting out (4marks)

10. Illustrate how you would test for protein in a food sample using any of the protein tests (4marks)

11. a) Identify the following vitamin (1marks)



b) Explain one physical and one chemical property of the vitamin (2marks)

SECTION B : (20 MARKS) ANSWER ANY TWO QUESTIONS

12. a) Discuss two challenges flavourists encounter in flavour chemistry (2marks)

b) Discuss the flavour perception of food (6marks)

c) List the 5'ribonucleotide salts (2marks)

13. Discuss the physical and chemical properties of carbohydrates and explain their uses in the food industry (10 marks)

14. Oxidative rancidity of fats is of great concern to a food processor. Discuss (10marks)

15. a) Your mother prepared a fruit salad which turned brown. Explain this scenario. (4marks)

b) Explain any three ways she would have used to chemically solve the problem? (6marks)

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