

CHUKA



UNIVERSITY

**SUPPLEMENTARY/ SPECIAL EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF  
BACHELOR OF SCIENCE IN BIOCHEMISTRY**

**FOST 222: FOOD CHEMISTRY I**

**STREAMS: BSC (BIOC) Y2S2**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 02/02/2021**

**11.30 AM – 1.30 PM**

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**INSTRUCTIONS:**

**Answer ALL Questions in section A and ANY other Two Questions in section B**

**Section A (30 marks)**

1. (i) Define moisture sorption isotherms (MSIs) (2 marks)
- (ii) Describe the usefulness of the information derived from sorption isotherms (MSIs). (5 marks)
2. Use the structures of D-Glucose and L- Glucose to explain the difference between D-sugars and L-sugars. (5 marks)
3. Explain the cause of a clinical syndrome called Lactose intolerance. (3 marks)
4. (i) Distinguish between Smoke point, Fire point and Flash points thermal stability characteristics of fats. (3 marks)
- (ii) Discuss the factors that influence the melting points and heat of fusions of pure triacylglycerols. (5marks)
5. (i) Describe protein Denaturation. (3 marks)
- (ii) Explain the forces involved in the stability of protein structure. (4 marks)

**Section B (40 marks)**

6. (i) Draw a generalized moisture sorption isotherm for a low moisture segment of a food indicating various water zones. (4 marks)

(ii) Discuss the properties of water associated with each zone above. (16 marks)

7. Outline the principles and the following steps in lipid processing;

(i) Lipid refining

(ii) Degumming

(iii) Neutralization

(iv) Bleaching

(v) Deodorization

(vi) Hydrogenation (20 marks)

8. (i) Discuss the Acid-Base properties of amino acids (5 marks)

(ii) Explain the chemical reaction of amino acids with ninhydrin and its application. (5 marks)

(iii) Discuss factors responsible for protein denaturation. (10 marks)

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