

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATION
RESIT/SUPPLEMENTARY / SPECIAL EXAMINATIONS
EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN
FOOD SCIENCE AND TECHNOLOGY**

FOST 222: FOOD CHEMISTRY I**STREAMS:****TIME: 2 HOURS****DAY/DATE: WEDNESDAY 03/11/2021****8.30 A.M - 10.30 A.M.****INSTRUCTION TO THE CANDIDATE**

- **Answer all Questions in section A and any other TWO Questions in section B**

SECTION A

1. (i) Define moisture sorption isotherms (MSIs) (2 marks)
- (ii) Describe the major lipid components (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. (5 marks)

5. (i) Describe protein Denaturation. (3 marks)
- (ii) Explain the forces involved in the stability of protein structure. (4 marks)

SECTION B

6. (i) Draw a generalized moisture sorption isotherm for a low moisture segment of a food and explain various water zones. (14 marks)
- (ii) Discuss the enzymes that are used for the industrial hydrolysis of starch to D-glucose. (6 marks)
7. (a) Outline the principles of the following steps in lipid processing;
- (i) Neutralization (3 marks)
- (ii) Bleaching (3 marks)
- (iii) Hydronation (2 marks)
- (b) By using examples; classify carbohydrates. (12 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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