

CHUKA



UNIVERSITY

**SUPPLEMENTARY/ SPECIAL EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF  
BACHELOR OF FOOD SCIENCE AND TECHNOLOGY**

**FOST 222: FOOD CHEMISTRY I**

**STREAMS: BSC (FOST)**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 01/02/2021**

**11.30 AM – 1.30 PM**

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**INSTRUCTIONS:**

**SECTION A- ANSWER ALL QUESTIONS**

**Answer all questions in section A and any other 2 in section B**

1. i. Explain the difference between constitutional water and vicinal water. (4Marks)  
ii. Discuss how water activity affects the shelf life of foods. (2 Marks)
2. i. Explain the meaning of sorption isotherm. (2 Marks)  
ii. Using a graph show a generalised moisture sorption isotherm of low moisture range of food. (9 Marks)
3. a. Explain the following carbohydrates giving an example in each case. (8 Marks)
  - i. Monosaccharide
  - ii. Disaccharide
  - iii. Oligosaccharide
  - iv. Polysaccharide
- b. Discuss two methods that can be used to determine protein content in foods. (4 Marks)
- c. Explain flocculation in lipids and how it affects its stability (1 Mark)

**SECTION B- ANSWER ANY TWO QUESTIONS**

4. a. Protein denaturation can be induced both physically and chemically. Discuss the modes of protein denaturation. (12 Marks)
- b. Explain how the denaturation in (a) above can be avoided. (4 Marks)

- c. Discuss sources of protein on foods. (4 Marks)
5. a. Explain the methods used in lipid refining (8 Marks)  
b. Describe chemical and physical properties of fats. (10 Marks)  
c. Discuss methods that can be used to measure lipid oxidation. (2 Marks)
6. a. Describe three groups of non-enzymatic browning in carbohydrates. (6 Marks)  
b. Discuss the functions of polysaccharides in foods. (8 Marks)  
c. Explain the importance of Millard reaction in the food industry. (4 Marks)  
d. Describe any 2 methods used in determination of carbohydrates in food. (2 Marks)
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