

CHUKA



UNIVERSITY

SUPPLEMENTARY / SPECIAL EXAMINATIONS

**SECOND YEAR EXAMINATION FOR THE AWARD OF BACHELOR OF
FOST 222– FOOD CHEMISTRY 1**

STREAMS:

TIME: 2 HOURS

DAY/DATE: MONDAY 16/11/2020

8.30 A.M - 10.30 A.M.

INSTRUCTIONS:

SECTION A ANSWER ALL QUESTIONS (30 MARKS)

1. Explain the following terms as used in food chemistry (5 Marks)
 - a. Water activity
 - b. Mutarotation
 - c. Maillard reaction
 - d. Caramelization
 - e. Optical activity

2. Explain the functional properties of polysaccharides based on their interaction with water (4 marks)

3. a. Ascorbic acid degradation can take place in different ways. Describe these routes. (6 Marks)
b. What are the factors to be considered in the above reactions? (5 Marks)

4. a. Explain the effects of protein denaturation (2 Marks)
b. Discuss the methods which can be used by a Food scientist in protein determination (5 Marks)

- c. Explain the functional properties of lipids (3 Marks)

SECTION B ANSWER ANY TWO QUESTIONS (40 MARKS)

5. a. Draw and give an explanation of the regions in a generalized moisture sorption isotherm for low moisture foods. (10 Marks)
- b. Explain the following types of water in relationship to food systems. (8 Marks)
- a. Bound water
 - b. Constitutional water
 - c. Vicinal water
 - d. Multilayer water
- c. explain hysteresis. (2 Marks)
6. a. Explain 2 skeletal proteins (2 Marks)
- b. State and explain 6 physical and chemical agents that would induce protein denaturation. (12 Marks)
- c. Explain the following functional properties of proteins; (6 Marks)
- i. Hydration
 - ii. Surface properties
 - iii. Stick-land reaction
- 7.
- a. Explain the importance of Maillard reactions. (8 Marks)
- b. Discuss the physical properties of lipids. (5 Marks)
- c. Explain the different methods in which lipid oxidation can be avoided (4 Marks)
- d. Explain emulsion destabilization in lipids. (3 Marks)
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