CHUKA UNIVERSITY

UNIVERSITY EXAMINATIONS

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

FOST 242: NUTRACEUTICALS AND FUNCTIONAL FOODS

STREAMS: BSC FOST **TIME: 2 HOURS**

DAY/DATE: MONDAY 05/07/2021 **11.30 A.M. – 1.30 P.M.**

INSTRUCTIONS:

- **Answer ALL questions in section A and any two questions in section B.**

SECTION A: ANSWER ALL QUESTIONS (30 MARKS)

1. Describe the conditions that a food substance must fulfil for it to qualify as functional food. (6 marks)

2. Briefly explain the following terminologies with reference to specific bioactive substances. (6 marks)
   (a) Bio-availability
   (b) Bio-accessibility
   (c) Bio-activity

3. Describe prebiotics and their role in the manufacture of functional foods. (6 marks)

4. Briefly discuss the factors that affect the bioavailability of bioactive substances present in any food that is consumed. (6 marks)

5. Giving examples, briefly describe three ways of categorizing bioactive substances. (6 marks)

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

6. (a) As the head of the product development team in your company, discuss the production process of a functional food with at least two bioactive substances of which one is a phytochemical, clearly showing their role in your new product.

(10 marks)

(b) Discuss the methods employed in the food industry for encapsulating functional ingredients in the manufacture of functional foods. (10 marks)

7. (a) Most foods are processed in a number of ways so as to enhance their quality and safety. Discuss the effect of specific processing techniques on bioactive compounds and their functional properties. (10 marks)

(b) Discuss the application of nutrigenomics in the context of non-transmissible chronic diseases (NTCDs) (10 marks)

8. (a) You are heading the product development team in a dairy processing factory and are required to develop a new symbiotic functional food product. Give a brief overview of your product and discuss the specific substances you would suggest for inclusion into the product outlining their composition as well as their functional role in the new product.
(10 marks)

(b) Discuss the mechanisms of action of phenolic and polyphenolic compounds as potential nutraceuticals. (10 marks)
