CHUKA  **UNIVERSITY**

UNIVERSITY EXAMINATIONS

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

FOST 242: NUTRACEUTICALS AND FUNCTIONAL FOODS

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

DAY/DATE: MONDAY 06/04/2020 **2.30 P.M. – 4.30 P.M.**

INSTRUCTIONS:

- **Answer ALL questions in section A and any TWO questions in section B**
- **All calculations must be shown on the booklet**

SECTION A: ANSWER ALL QUESTIONS (30 MARKS)

1. Define the following terms [6 marks]
   (a) Nutraceuticals
   (b) Functional foods
   (c) Bioactive substances
2. State the conditions that any substance must fulfill for it to be either a nutraceutical or functional food [6 marks]
3. Describe bioavailability, bioaccessibility, and bioactivity of food components with reference to specific bioactive substances [6 marks]
4. Explain the term probiotics and prebiotics and their role in the manufacture of functional foods in the food industry [4 marks]
5. Explain how functional foods affect intestinal nutrient absorption in the human body [4 marks]
6. Explain two methods of encapsulating functional ingredients in the manufacture of functional foods [4 marks]

SECTION B: ANSWER ANY TWO QUESTIONS (40 MARKS)

7. (a) Discuss nutrigenetics and nutrigenomics in relation to bioactive substances in food and the development or control of non-transmissible chronic diseases [10 marks]

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

8. (a) As the head of the product development team in your company, discuss the process of making a functional food with at least 3 (three) bioactive substances, clearly showing their role in your new product [12 marks]

   (b) Discuss the importance of Polyunsaturated Fatty Acids (PUFAs) as potential substances in the formation of functional foods and their disadvantages in such formulations. [8 marks]

8. (a) You are working in a milk processing plant and are required to develop a new symbiotic product. Discuss the substances you would suggest for inclusion into the product outlining their composition as well as their functional role in the new product [12 marks]

   (b) Discuss the mechanisms of action of phenolic and phytochemicals as potential nutraceuticals [8 marks]
