NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF APPLIED SCIENCE

DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

BACHELOR OF SCIENCE HONOURS DEGREE IN APPLIED BIOLOGY AND BIOCHEMISTRY

PRINCIPLES OF NUTRITION (SBB 4103)

Main Examination Paper

DECEMBER 2024

This examination paper consists of 2 pages

Time Allowed	:	3 hours
Total Marks	:	100
Special Requirements	:	NONE
Examiner's Name	:	MR D. NDEBELE

INSTRUCTIONS

1. Answer four **(4)** questions. Each question carries 25 marks.
2. Where a question contains subdivisions, the mark value for each subdivision is given in brackets.
3. Illustrate your answer where appropriate with large, clearly labelled diagrams.

MARK ALLOCATION

QUESTION		MARKS
1.		25
2.		25
3.		25
4.		25
5.		25
6.		25
TOTAL		100

1. Describe the factors that influence food consumption patterns, and evaluate how these contribute to the nutritional well-being of an individual, family or community.

2. Give a detailed description of the digestion, absorption and metabolism of the following nutrients:
   (a) Carbohydrates. (15 marks)
   (b) Lipids. (10 marks)

3. (a) Outline the factors that reduce the biological availability of vitamins in foods.
   (10 marks)

   (b) Compare and contrast the circulating levels of calcidiol and calcitriol in humans, highlighting the influence of age and season on their circulating levels. (15 marks)

4. (a) Describe the oxidation of polyunsaturated fatty acids by free radicals, highlighting the role, highlighting the role of vitamin E as an antioxidant. (10 marks)
   (b) Discuss the metabolism of alcohol in the human body, and explain how this leads to alcohol liver disease. (15 marks)

5. Write short notes on the following:
   (a) Protein energy malnutrition. (8 marks)
   (b) Dietary Reference Values. (7 marks)
   (c) Anorexia nervosa. (5 marks)
   (d) Acid base balance. (5 marks)

6. (a) Briefly discuss the use of the body mass index (BMI) in the monitoring of weight gain or loss in humans. (5 marks)
   (b) Describe how diet therapy can be used in the management of the following conditions:
   (i) Obesity, (7 marks)
   (ii) Cardiovascular diseases and (7 marks)
   (iii) Cancer of the gastrointestinal tract. (6 marks)

END OF EXAMINATION