



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF APPLIED SCIENCES
DEPARTMENT OF APPLIED BIOLOGY AND BIOCHEMISTRY

BACHELOR OF SCIENCE HONOURS DEGREE IN APPLIED
BIOLOGY AND BIOCHEMISTRY
PRINCIPLES OF NUTRITION
SBB 4103

EXAMINATION PAPER
DECEMBER 2017

This examination paper consists of 2 pages

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None

INSTRUCTIONS TO CANDIDATES

- 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.**

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1. Poverty, conflict, natural disasters and corruption are some of the leading causes of hunger in the world. Using specific examples, discuss this assertion.

 2. (a) Explain the association between the following:
 - (i) The consumption of high levels of dietary fibre and a low incidence of colon cancer. [5 marks]

 - (ii) The consumption of large quantities of highly refined carbohydrates and a high incidence of obesity and type II diabetes. [8 marks]
 - (b) Dietary triacylglycerols are classified on the basis of whether or not they are saturated, the configuration of groups about C = C double bonds and on the positioning of the C = C bond in the fatty acid chain. Give a detailed description of this classification and highlight its nutritional significance. [12 marks]
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3. (a) Using relevant examples, discuss food fortification as a nutritional intervention programme, highlighting the current status of this approach, challenges faced to date and any future prospects. [15 marks]
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- (b) Describe how biofortification has been used to address some challenges associated with conventional food fortification. [10 marks]
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4. Describe the biochemistry of reactive oxygen species in the human body and their neutralization by the endogenous and dietary antioxidant systems.
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5. (a) Discuss the significance of proper food labelling and its role in fostering safety and healthy eating. [15 marks]
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- (b) Describe, compare and contrast the use of the following approaches to diet planning and healthy eating:
 - (i) Dietary reference values (DRVs). [5 marks]
 - (ii) The food pyramid method. [5 marks]
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6. (a) Give an outline of vitamin A deficiency risk factors. (8 marks)
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- (b) Describe the biosynthesis, metabolism and biological functions of vitamin D in the human body. (17 marks)

END OF EXAMINATION PAPER

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