



1ST SEM. 2006/2007

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UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER

**PROGRAMME : DIPLOMA IN HOME ECONOMICS
EDUCATION & HOME ECONOMICS
YEAR II**

COURSE CODE : FN 202

TITLE OF PAPER : BIOCHEMISTRY AND NUTRITION

TIME ALLOWED : TWO (2) HOURS

**INSTRUCTIONS : ANSWER QUESTION ONE (1)
AND ANY OTHER (2) QUESTIONS**

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GRANTED BY THE CHIEF INVIGILATOR**

QUESTION 1 [COMPULSORY]

- a) Discuss covalent bonding, ionic bonding and hydrogen bonding by giving examples of molecules involved in the different bond types
[6 marks]
- b) Show the general structure of the following chemical functional groups found in biological molecules.
- i) Aldehyde
 - ii) Ketone
 - iii) Hydroxyl
 - iv) Primary amino
 - v) Phospho
- [10 marks]
- c) Give the general structure of mono-, di- and triglycerides.
[6 marks]
- d) Give the general structure of amino acids and a dipeptide molecule showing the peptide bond.
[8 marks]
- e) What monosaccharide sugar is found in both DNA and RNA and list the nucleosides found in DNA and RNA.
[10 marks]
- [Total = 40 marks]

QUESTION 2

- a) Phospholipids have hydrophilic and hydrophobic groups and they form organized structures in solution. Describe the three structures.
[8 marks]
- b) Discuss protein synthesis showing the role played by DNA, mRNA and tRNA and ribosomes in the process
[12 marks]
- c) Define the terms: Anabolism, Catabolism, Amphibolic, Exergonic reaction and Endergonic reaction
[10 marks]
- [Total = 30 marks]

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QUESTION 3

Discuss the following energy metabolism pathways indicating the end products from each pathway:-

- | | | |
|-------|----------------------------------|------------|
| (i) | Glycolysis | [6 marks] |
| (ii) | Anaerobic glycolysis | [6 marks] |
| (iii) | Anaerobic alcoholic fermentation | [6 marks] |
| (iv) | Aerobic Oxidation | [12 marks] |

[Total = 30 marks]

QUESTION 4

- a) Discuss the food guide pyramid [10 marks]
- b) Discuss the importance of the following vitamins and minerals in food and the deficiency diseases associated with these nutrients
- i. Vitamin A
 - ii. Vitamin C
 - iii. Iron
 - iv. Magnesium

[20 marks]

[Total = 30 marks]