UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2005

TITLE OF PAPER:	**BIOCHEMISTRY & CELL BIOLOGY**
COURSE CODE:	**B203**
TIME ALLOWED:	**THREE HOURS**

INSTRUCTIONS:

1. ANSWER FOUR QUESTIONS, TWO FROM EACH SECTION
2. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
3. ILLUSTRATE YOUR ANSWERS WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE

SPECIAL REQUIREMENTS:

USE SEPARATE EXAM FOLDERS FOR SECTIONS A & B.

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS

BEEN GRANTED BY THE INVIGILATORS

QUESTION 1

(a) What are carbohydrates?   (5 marks)
(b) With reference to carbohydrates describe the difference between a condensation reaction and hydrolysis with examples.   (10 marks)
(c) Explain mutarotation in monosaccharides.   (10 marks)

[TOTAL MARKS = 25]

QUESTION 2

Write a concise essay on each of the following:
(a) Triglycerides or Triacylglycerols   (12 marks)
(b) Lipoproteins   (13 marks)

[TOTAL MARKS = 25]

QUESTION 3

(a) Name the basic unit of proteins and describe its chemical structure and properties.   (8 marks)
(b) Outline the various functions carried out by proteins in living cells.
                                               (7 marks)
(c) Name the various classes of enzymes and explain with examples how each class functions in biological systems.   (10 marks)

[TOTAL MARKS = 25]

QUESTION 4

Write an essay on Nucleic Acids in eukaryotic organisms.   [25 MARKS]

QUESTION 5

(a) Outline the essential steps or features of ß-oxidation pathway of fatty acids and its importance to living organisms.   (10 marks)
(b) Describe in detail the various reactions/steps leading to the complete oxidation of pyruvate to CO_2 in aerobic organisms.   (15 marks)

[TOTAL MARKS = 25]

QUESTION 6

(a) Distinguish between light-dependent and light-independent reactions of photosynthesis. **(10 marks)**

(b) Briefly explain what happens to the products of light reaction of photosynthesis. **(15 marks)**

[TOTAL MARKS = 25]