UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2006

TITLE OF PAPER: CRYPTOGAMIC BOTANY

COURSE CODE: B201

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:
1. ANSWER ONE QUESTION 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:

NONE

THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS

BEEN GRANTED BY THE INVIGILATORS

SECTION A : BACTERIA

QUESTION 1

a) Draw and fully label the two types of bacterial walls. (12 marks)
b) Use a table to indicate the differences in bacterial wall components. (8 marks)
c) Explain the various functions of a bacterial cell wall. (5 marks)

[25 MARKS]

QUESTION 2

a) How does bacterial recombination occur when the donor is
   (i) double stranded (2 marks)
   (ii) single stranded (3 marks)
b) Discuss recombination during
   (i) transduction (7 marks)
   (ii) conjugation between Hfr and F^- (7 marks)
   (iii) transformation (6 marks)

[25 MARKS]

SECTION B : FUNGI

QUESTION 3

Using dichotomous keys, and drawings show how fruiting structures have been used in the classification of the following groups.

(i) Ascomycetes (9 marks)
(ii) Powdery mildews (8 marks)
(iii) Fungi Imperfecti (8 marks)

N.B. Cite known genera whenever you can.

[25 MARKS]

QUESTION 4

The basidiomycete Puccinia graminis has been used to indicate the highest level of evolution of the fungi.

(i) Draw the various stages in its life cycle. (15 marks)
(ii) Indicate the cytological condition at each stage. (5 marks)
(iii) Explain the adaptations this fungus has made for success in a terrestrial environment. (5 marks)

[25 MARKS]

SECTION C : ALGAE

QUESTION 5

Discuss the range of morphological forms observed among the algae, using illustrations of named genera in the chlorophyceae.

[25 MARKS]

QUESTION 6

Using illustrations explain the following reproductive processes.

a) Conjugation in the filamentous zygnematales. (6 marks)
b) Oogamy in Oedogonium. (9 marks)
c) Sexual reproduction in the Florideophycidae. (10 marks)

[25 MARKS]

SECTION D : BRYOPHYTES

QUESTION 7

Using diagrams of key features, explain the life cycle of Marchantia and how it differs from that of Riccia, another liverwort.

[25 MARKS]

QUESTION 8

a) Draw and label the sporophytes of Marchantia, Anthoceros and Mnium. (15 marks)

b) Explain possible evolutionary changes that occurred in bryophytes to improve their adaptation to a terrestrial environment. (10 marks)

[25 MARKS]