UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2005

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) Explain how genetic recombination takes place when the donor is double stranded and when its single stranded. Illustrate your answer. **(5 marks)**

(b) Explain the following processes.

(i) formation of an Hfr **(3 marks)**
(ii) conjugation of F^+ and F^- **(7 marks)**
(iii) generalized transduction **(7 marks)**
(iv) specialized transduction **(3 marks)**

[TOTAL MARKS = 25]

QUESTION 2

Discuss variation in structure and composition of bacterial cell walls & their organelles. **[25 MARKS]**

SECTION B : FUNGI

QUESTION 3

(a) Draw the life cycle of a macrocyclic, heteroecious, plant-pathogenic basidiomycete of your choice. **(18 marks)**

(b) What are the advantages of heteroecism, karyogamy and meiosis in this pathogen. **(7 marks)**

[TOTAL MARKS = 25]

QUESTION 4

(a) Prepare a dichotomous key to help key out division ascomycotina to its classes. **(10 marks)**

(b) Further break down the powdery mildews to their respective genera using a dichotomous key and diagrams. **(5 marks)**

(c) Define and illustrate the following structures.

(i) chlamydospores
(ii) sclerotia
(iii) rhizomorph
(iv) pycnidium
(v) sporodochium
(vi) acervulus

(vii) synemma/coremium
(viii) zygospore of *Phycomyces*
(ix) sporangium of *Pilobolus*
(x) sporangiophore of *Basidiophora*

(10 marks)
[TOTAL MARKS = 25]

SECTION C : ALGAE

QUESTION 5

Using examples and illustrations drawn from as many divisions of algae as possible, discuss the range of vegetative structures in algae.

[25 MARKS]

QUESTION 6

Critically review the criteria used by Ian Morris in classifying algae.

[25 MARKS]

SECTION D : BRYOPHYTES

QUESTION 7

Using diagrams, discuss the biology of *Anthoceros*.

[25 MARKS]

QUESTION 8

Considering only the sporophytes of Bryophyta, explain why *Mnium* is best adapted for a terrestrial existence.

[25 MARKS]