

**UNIVERSITY OF SWAZILAND**

**FINAL EXAMINATION PAPER 2007**

**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**

Write brief notes about the following.

- a) functions of the cytoplasmic membrane (5 marks)
- b) functions of the bacterial wall (5 marks)
- c) functions of bacterial capsule (3 marks)
- d) advantages of motility in bacteria (3 marks)
- e) two main methods of improving resolution of the microscope? (4 marks)
- f) diagrammatically show the oxygen requirements of various types of bacteria by their growth pattern in a test tube with solid medium.

(5 marks)

**[25 MARKS]**

**QUESTION 2**

- a) Use well-labelled drawings to explain genetic recombination in bacteria, where the donor strand is
  - (i) ss DNA (2 marks)
  - (ii) ds DNA (3 marks)
- b) Use annotated diagrams to explain generalized phage mediated genetic recombination in bacteria. (10 marks)
- c) Draw and label a Gram negative wall. Indicate the approximate dimensions of each part. (10 marks)

**[25 MARKS]**

**SECTION B : FUNGI****QUESTION 3**

- (a) Discuss the general characteristics of fungi. (5 marks)
- (b) Briefly explain the variations that exist in the fruiting structures of fungi as guided by the following terms. Illustrate your answer.
  - (i) sporangium
  - (ii) aethalium
  - (iii) apothecium
  - (iv) acervulus
  - (v) sporodochium
  - (vi) synnema
  - (vii) plasmodiocarp
  - (viii) pycnidium
  - (ix) sclerotia
  - (x) chlamydospore (10 marks)
- (c) Draw the life cycle of Penicillium. (10 marks)

**[25 MARKS]**

**QUESTION 4**

- (a) Prepare a well labeled table to indicate the possible evolutionary relationships of downy mildews. (10 marks)
- (b) Draw and label the life cycle of the oomycete Plasmopara viticola. (10 marks)
- (c) How do downy mildews ensure their survival and spread as plant pathogens. (5 marks)
- [25 MARKS]**

**SECTION C : ALGAE****QUESTION 5**

- (a) Draw a tree to represent possible evolutionary relationships of the various orders of chlorophyceae. (5 marks)
- (b) Discuss the range of vegetative forms exemplified by these groups of algae considering
- (i) how each form could have arisen from the one before it
- (ii) presenting an illustration of a named genus. (20 marks)
- [25 MARKS]**

**QUESTION 6**

Discuss sexual reproduction in the following genera, using well labeled illustrations.

- (i) Zygnema (6 marks)
- (ii) Oedogonium (9 marks)
- (iii) Chara (10 marks)

**[25 MARKS]**

**SECTION D : BRYOPHYTES****QUESTION 7**

Use well illustrated diagrams to discuss the biology of Mnium.

**[25 MARKS]**

**QUESTION 8**

Discuss the variability of the sporophyte in bryophytes. Illustrate named structures and examples.

**[25 MARKS]**