UNIVERSITY OF SWAZILAND

MAIN EXAMINATION PAPER: DECEMBER 2012

TITLE OF PAPER: CRYPTOGAMIC BOTANY

COURSE CODE: B201

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:
1. THIS PAPER IS DIVIDED INTO FOUR SECTIONS
2. ANSWER A TOTAL OF FOUR (4) QUESTIONS, CHOOSING ONE (1) QUESTION FROM EACH SECTION
3. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS
4. ILLUSTRATE YOUR ANSWER WITH LARGE AND CLEARLY LABELLED DIAGRAMS WHERE APPROPRIATE

SPECIAL REQUIREMENTS: NONE

THIS PAPER SHOULD NOT BE OPENED UNTIL PERMISSION HAS BEEN GRANTED BY THE INVIGILATORS

SECTION A (BACTERIA)

Answer **one** question from this section.

Question 1

(a) Explain the structure, composition and function of Gram-negative bacterial cell envelope. Illustrate your answer using well labelled diagrams. (15 marks)

(b) How can the DNA sequence of a live bacterium be changed by being in the proximity of a dead, broken up bacterim? Use diagrams to illustrate your answer. (10 marks)

[Total = 25 marks]

Question 2

(a) Sketch, describe and cite examples of five bacterial cell shapes besides cocci and bacillus. (5 marks)

(b) Sketch and describe five bacterial asexual processes. Cite examples. (5 marks)

(c) Explain how bacteriophages function as vehicles of change of DNA sequence. Illustrate all relevant steps. (15 marks)

[Total = 25 marks]

SECTION B (FUNGI)

Answer **one** question from this section.

Question 3

(a) Illustrate, describe and discuss the various somatic structures exhibited by fungi. (10 marks)

(b) Explain conidiogenesis and how asexual structures have been used to classify imperfect fungi. Illustrate all fructifications and prepare a dichotomous key. (10 marks)

(c) Discuss the positive economic attributes of fungi. (5 marks)

[Total = 25 marks]

Question 4

(a) Use annotated diagrams to illustrate the life cycle of *Puccinia graminis tritici*. (15 marks)

(b) Write a brief account on "Fungi as biological control agents.' (10 marks)

[Total = 25 marks]

SECTION C (ALGAE)

Answer **one** question from this section.

Question 5

(a) Draw a possible evolutionary tree of the Chlorophyceae. (5 marks)

(b) Discuss the range of vegetative forms observed in the Chlorophyceae. Cite and sketch key examples. (15 marks)

(c) How could the forms discussed in Question 5(b) have arisen from a unicellular Chlamydomonad? (5 marks)

[Total = 25 marks]

Question 6

(a) Prepare a table to compare Ian Morris' Xanthophyta, Chrysophyta and Bacillariophyta using the five classification characteristics. Support Gilbert Smith's stand in lumping them together in one class. (15 marks)

(b) Discuss the oogamous sexual process of the Florideophycidae using a flow chart. (10 marks)

[Total = 25 marks]

SECTION D (BRYOPHYTES)

Answer **one** question from this section.

Question 7

(a) Discuss the life cycle of *Mnium*. Prepare fully labelled diagrams of key stages. (15 marks)

(b) Prepare a table to compare the 3 subclasses of mosses. (10 marks)

[Total = 25 marks]

Question 8

(a) Prepare a table to compare thallophytes and bryophytes. (10 marks)

(b) Discuss the biology of *Anthoceros*. Illustrate the gametangia, gametes and sporophyte. (15 marks)

[Total = 25 marks]

END OF QUESTION PAPER