UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER: JUNE 2010

TITLE OF PAPER: CRYPTOGAMIC BOTANY

COURSE CODE: B201

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:
1. ANSWER FOUR QUESTIONS, 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 a generalised growth curve of bacteria. Explain the factors that have contributed to each phase of this graph. (10 marks)

(b) (i) Outline the series of experiments that led to the idea of the existence of a transforming principle in bacteria. (9 marks)
(ii) At the chromosomal level, how was transformation in 1(b)(i) explained? Illustrate all the steps. (6 marks)

[Total marks = 25]

Question 2

(a) Outline the steps involved in endospore formation by bacteria. (5 marks)

(b) Draw and fully label a Gram negative bacterial cell wall. (8 marks)

(c) Explain the functions of the various wall components you have shown in the diagram in 2(b). Use subtitles for each component. (12 marks)

[Total marks = 25]

SECTION B
(FUNGI)

Question 3

(a) Prepare a dichotomous key to help in classifying fungi of the division Deuteromycotina (fungi imperfecti). Draw the diagnostic fruiting structures of some of the orders. (10 marks)

(b) Draw and fully label the life cycle of *Penicillium/Talaromyces*. (10 marks)

(c) (i) Explain why this fungus has two names. (2 marks)
(ii) Explain why members of Deuteromycotina are often re-classified in Ascomycotina or Basidiomycotina and not in any of the lower fungal groups. (3 marks)

[Total marks = 25]

Question 4

(a) Explain the charecteristics and distribution of the various kinds of plasmodia found in lower fungi. Cite scientifically named examples to enhance your answer. (10 marks)

(b) Using well labelled diagrams and brief explanations, differentiate between the following:
(i) a sporodochium and a synnema, (3 marks)
(ii) an ascocarp and an ascostroma, (3 marks)
(iii) a pycnidium and a perithecium, (3 marks)
(iv) a sporangium and an aethalium, (3 marks)
(v) a sporangiophore and a phialide. (3 marks)

[Total marks = 25]

SECTION C
(ALGAE)

Question 5

(a) Smith G,W. has lumped three divisions of algae recognised by Ian Morris into one division. Justify Morris' three divisions using his five criteria. (15 marks)

(b) Prepare a possible evolutionary tree of orders of the division Phaeophyta. Briefly explain what each line represents. (10 marks)

[Total marks = 25]

Question 6

Write an essay on the biology of algae of the division Rhodophyta. Use members of the subclass Florideophycidae to explain sexual reproductive processes.

[Total marks = 25]

SECTION D
(BRYOPHYTES)

Question 7

(a) Discuss the variability of sporophytes among the various bryophyte classes. Illustrate your answer. (15 marks)

(b) What changes in the biology of bryophytes (from liverworts to mosses) have made them better adapted for a terrestrial life? (10 marks)

[Total marks = 25]

Question 8

Discuss evolution within mosses. Illustrate any key stages and cite scientifically named examples.

[Total marks = 25]

END OF EXAM PAPER