UNIVERSITY OF SWAZILAND

SUPPLEMENTARY EXAMINATION PAPER: 2014/2015

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 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)

Answer **one** question from this section

Question 1

a) Explain phage mediated genetic recombination in bacteria using annotated diagrams. (15 marks)

b) How is an endospore formed? Illustrate the steps. (5 marks)

c) What are the advantages of genetic recombination and endospore formation in bacteria? (5 marks)

[Total = 25 marks]

Question 2

a) Discuss the discovery of transformation and the explanations scientists of the time presented for the experimental outcomes. (10 marks)

b) Explain our understanding of transformation and the reason why its discoverer could not explain it. (10 marks)

c) Give at least five points of the positive contribution of bacteria to society. (5 marks)

[Total = 25 marks]

SECTION B (FUNGI)

Answer **one** question from this section

Question 3

a) Discuss all variations of somatic structures in fungi. (15 marks)

b) Discuss asexual reproductive structures observed in the fungi imperfecti. Illustrate all the fruiting structures. (10 marks)

[Total = 25 marks]

Question 4

a) Prepare a table to show a possible trend in the evolution of the peronosporales (downy mildew fungi). (10 marks)

b) Write brief notes on the following:

i) Vesicular – arbuscular mycorrhizae (VAM) (3 marks)

ii) The mechanism of parasitism and predation in the zoopagales (3 marks)

iii) Conjugative nuclear division in the growth of a dikaryotic mycelium. Illustrate your answer. (3 marks)

iv) Development of basidia and basidiospores from a dikaryotic mycelium. Illustrate your answer. (3 marks)

v) Spermatization and the production of dikaryotic mycelium. (3 marks)

[Total = 25 marks]

SECTION C (ALGAE)

Answer **one** question from this section

Question 5

a) Discuss sexual reproductive processes observed in subclass Florideophycidae. Draw the cycle. (15 marks)

b) Discuss filamentous forms observed in cyanophyta and their methods of reproduction. (10 marks)

[Total = 25 marks]

Question 6

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

b) Use a table to compare the breakdown of division Chrysophyta (by Smith) to divisions Xanthophyta, Chrysophyta and Bacillariophyta as presented by Ian Morris. (15 marks)

[Total = 25 marks]

SECTION D (BRYOPHYTES)

Answer **one** question from this section

Question 7

a) Compare the various subclasses of mosses. (10 marks)

Discuss the life cycle of a bryophyte of your choice. Illustrate key stages (15 marks)

[Total = 25 marks]

Question 8

a) Discuss the economic importants of
   i) Thallophytes (5 marks)
   ii) Bryophytes (5 marks)

b) Support the statement that in bryophytes gametangia are conserved but sporophytes are variable. (15 marks)

[Total = 25 marks]