

UNIVERSITY OF ESWATINI
RE-SIT EXAMINATION PAPER: 2018/2019

TITLE OF PAPER: CRYPTOGAMIC BOTANY

COURSE CODE: B201/BIO241

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:
SECTIONS

1. THIS PAPER IS DIVIDED INTO FOUR
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 how bacterial transformation was first observed. For each different experiment used, provide an explanation for the results observed, and the post mortem result. (10 marks)
- b) Explain the mechanism of genetic transformation in bacteria. Illustrate your answer. (10 marks)
- c) How has the knowledge of bacterial genetic transformation been used to improve our lives? (5 marks)

[TOTAL MARKS = 25]

QUESTION 2

- a) What is a plasmid and what does it code for? (5 marks)
- b) Explain and illustrate the sequence of events in an Hfr x F⁻ cross. (10 marks)
- c) Differentiate between an Hfr and a recombinant. Illustrate your answer. (5 marks)
- d) Differentiate between a prophage and a transducing phage. Illustrate your answer. (5 marks)

[TOTAL MARKS = 25]

PTO

SECTION B (FUNGI)

Answer **one** question from this section

QUESTION 3

- a) Draw a fully labelled diagram of the various stages in the life cycle of *Puccinia graminis* var *tritici*: NB:
- (i) Draw all the spores stages. (10 marks)
 - (ii) Indicate the nuclear condition of the fungus at each stage (3 marks)
 - (iii) Name the host at each stage (2 marks)
- b) Explain conjugative nuclear division and the formation of clamp connections. Illustrate your answer. (10 marks)

[TOTAL MARKS = 25]

QUESTION 4

- a) Give at least five characteristics of fungi. (5 marks)
- b) Draw and fully label the life cycle of *Rhizopus stolonifer* (10 marks)
- c) Explain how the morphology of the ascocarp is used in identifying genera of powdery mildews. Use diagram(s) to indicate the ornamentations. (10 marks)

[TOTAL MARKS = 25]

PTO

SECTION C (ALGAE)

Answer **one** question from this section.

QUESTION 5

- a) List the general characteristics of the division Phaeophyta. (4 marks)
- b) Draw a schematic of an evolutionary tree of the orders of the division Phaeophyta. (10 marks)
- c) Briefly describe what the evolutionary lines cyclosporaee, heterogenerataee and isogenerataee imply. (6 marks)
- d) Differentiate between haplostichous and polystichous forms. (5 marks)

[TOTAL MARKS = 25]

QUESTION 6

- a) Draw a typical life cycle that is described as heterogenerataee life cycle. (10 marks)
- b) Describe the various ways of oogonia development in the cyclosporaee. (10 marks)
- c) Use a fully labelled diagram to illustrate a Fucus oogonium in an oogonial conceptacle. (5 marks)

[TOTAL MARKS = 25]

SECTION D (BRYOPHYTES)Answer **one** question from this section**Question 7**Discuss the life cycle of *Mnium* under the following headings:

- a) Gametophyte (morphology and anatomy), (5 marks)
- b) Gametangia (location and form), (4 marks)
- c) Fertilization and the young sporophyte, (3 marks)
- d) The mature sporophyte, (3 marks)
- e) Spore release and spore germination. (5 marks)

[TOTAL MARKS = 25]**QUESTION 8**

- a) Prepare a table to compare bryophytes with thallophytes. (10 marks)
- b) Draw a fully labelled diagram to illustrate the sporophyte of *Anthoceros* on its gametophyte. (10 marks)
- c) Explain why hornworts are better adapted for terrestrial environment than liverworts. (5 marks)

[TOTAL MARKS = 25]**END OF EXAMINATION PAPER**