

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2006

TITLE OF PAPER: APPLIED BIOLOGY

COURSE CODE: B405

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:

1. ANSWER ONE (1) QUESTION FROM EACH SECTION.
2. USE ONE (1) ANSWER BOOKLET FOR EACH SECTION.
3. EACH QUESTION CARRIES TWENTY FIVE (25) MARKS.
4. WHEREVER POSSIBLE ILLUSTRATE YOUR ANSWERS WITH LARGE CLEARLY LABELLED DIAGRAMS.

SPECIAL REQUIREMENTS:

USE FOUR (4) EXAMINATION ANSWER FOLDERS, ONE FOR EACH SECTION [A, B, C AND D]. FOLDERS SHOULD BE PROMINENTLY MARKED TO INDICATE THE SECTION.

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

SECTION A

QUESTION 1

Effective plant disease management requires a sound understanding of the biology of a pathogen. Explain this using a named pathogen of your choice.

[25 MARKS]

QUESTION 2

Discuss methods by which plant pathogens invade their hosts.

[25 MARKS]

SECTION B

QUESTION 3

- a) Explain the term morpho-edaphic index (MEI) and relate it to gross primary production and fish yields in man-made lakes in Africa. (12 marks)
- b) Distinguish between monoculture and polyculture in aquaculture practices. Make a case for a large-scale development of fish-farming in Swaziland. (13 marks)

[25 MARKS]

QUESTION 4

- a) Identify three water-borne parasitic diseases associated with humans in Swaziland and include their intermediate hosts and symptoms. (8 marks)
- b) What pollutants would you expect in a river flowing through Lozitha and Matsapha? Give reasons for the presence of these pollutants in the river and briefly discuss their effects on the flora and fauna of this river system. (17 marks)

[25 MARKS]

SECTION C

QUESTION 5

What factors contribute to population growth? In the context of Swaziland, discuss how population growth impacts on biodiversity and how these impacts can be alleviated.

[25 MARKS]

QUESTION 6

How has increased demand for food contributed to the growth of the pesticide industry? Write out a discussion on one of the dangers posed by some of the pesticides to man and other organisms.

[25 MARKS]

SECTION D

QUESTION 7

- a) Write brief notes on the genome and the gene. (10 marks)
- b) Comment on genetically modified maize and consider any benefits and threats. (15 marks)

[25 MARKS]

QUESTION 8

"Biodiversity conservation is threatened by Genetic Engineering". Discuss the statement.

[25 MARKS]