

UNIVERSITY OF ESWATINI
DEPARTMENT OF BIOLOGICAL SCIENCES
MAIN EXAMINATION PAPER MAY 2019

TITLE OF PAPER: APPLIED BIOLOGY I

COURSE CODE: B405

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:

1. THIS PAPER IS DIVIDED INTO 4 (FOUR) SECTIONS
2. ANSWER 1 (ONE) QUESTION FROM EACH SECTION IN A SEPARATE BOOKLET
3. EACH QUESTION COUNTS 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 (Answer one question)

Question 1

Discuss the different methods used in monitoring change in biodiversity.

(25 marks)

Question 2

Consider the scenario where a fire has recently burnt the vegetation at Malolotja Nature Reserve. Discuss whether this will affect the functioning of the ecosystem.

(25 marks)

SECTION B (Answer one question)

Question 3

Assuming that you are employed by the Eswatini Water Services Corporation, explain how you would ensure that the water bodies in a certain area are healthy for use in terms of microbiological or other factors. (25 marks)

Question 4

Discuss the role of industrial microbiology in the socio-economic development of the Kingdom of Eswatini. (25 marks)

SECTION C (Answer one question)

Question 5

Describe the technological innovations that have been used to produce genetically modified maize and briefly explain the national approval process and biosafety protocol. (25 Marks)

Question 6

Discuss the potential of sorghum (*Sorghum bicolor*) as a staple cereal in Southern Africa in terms of its products. (25 Marks)

Question 7

Discuss the significance of wheat (*Triticum Aestivum*) as a grain crop in Africa, with reference to South Africa and Swaziland. (25 Marks)

SECTION D (Answer one question)

Question 8

Discuss the application of forensic entomology in homicide investigations.
(25 marks)

Question 9

Explain why microsatellites are the preferred molecular markers in human forensic analyses.
(25 marks)

Question 10

Discuss the strengths and weaknesses of palynological analysis as a tool in medico-legal investigations.
(25 marks)

END OF EXAMINATION PAPER