

UNIVERSITY OF ESWATINI
DEPARTMENT OF BIOLOGICAL SCIENCES
MAIN EXAMINATION PAPER DECEMBER 2018

TITLE OF PAPER: MODERN TRENDS IN BIOLOGY I

COURSE CODE: BIO 411

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:

1. THIS PAPER IS DIVIDED INTO TWO SECTIONS
2. ANSWER TWO QUESTIONS FROM EACH SECTION. USE TWO SEPARATE ANSWER BOOKLETS FOR EACH SECTION
3. ANSWER A TOTAL OF FOUR QUESTIONS IN THIS PAPER
4. USE 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 any two questions from this section)**Question 1**

Discuss the major reasons for the emergence and re-emergence of new infectious diseases in humans. Discuss the methods that are available for identifying and controlling these diseases.

(25 marks)

[TOTAL MARKS=25]**Question 2**

Write a research proposal to determine whether or not the water from an area in ESWATINI is potable. Indicate in your proposal the criteria and/or standards that you would use to determine the outcome of the study.

(25 marks)

[TOTAL MARKS=25]**Question 3**

- (a) Explain the concept behind precipitation and agglutination reactions in serology. (5 marks)
- (b) Explain what intradermal tests are? (5 marks)
- (c) Explain the following:
- (i) Complement fixation tests (5 marks)
 - (ii) Application of monoclonal antibodies (5 marks)
 - (iii) Immunoelectrophoresis (5 marks)

[TOTAL MARKS=25]**SECTION B (Answer any two questions from this section)****Question 4**

Discuss the use of vascular plant species richness in biodiversity monitoring.

(25 marks)

[Total marks =25]**Question 5**

Discuss the recent advances made in understanding the ecology of grasslands.

(25 marks)

[Total marks =25]**Question 6**

Discuss some of the traits that should be considered when measuring functional diversity and its importance to ecosystem resilience.

(25 marks)

[Total marks =25]**END OF EXAMINATION PAPER**