UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER 2017/18

TITLE OF PAPER: Research Methods

COURSE CODE: BIO607

TIME ALLOWED: THREE HOURS

INSTRUCTIONS:
1. THE EXAMINATION HAS FOUR (4) QUESTIONS. ANSWER ANY THREE (3).
2. EACH QUESTION CARRIES 30 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

QUESTION 1

What is a Generalized Linear Mixed Model (GLMM) and how does it differ from a General Linear Model and a Generalized Linear Model? Explain why the GLMM is a useful tool for ecologists, and provide examples of the sorts of studies it could be used in.

[30 Marks]

QUESTION 2

What is multivariate statistics? And what benefits can it provide to ecologists and conservationists? Use real-life examples to illustrate your answer.

[30 Marks]

QUESTION 3

Gap Analysis provides valuable information on which species are present within protected areas (and therefore enjoy some form of protection), and which are absent (and therefore are not formally protected). Explain how such a Gap Analysis can be conducted using GIS. Provide examples from a well-known mammalian group to illustrate your answer.

[30 Marks]

QUESTION 4

GIS can be very expensive to purchase, and hence various open source alternatives have emerged including QGIS and the program R. How do the open source products compare with ArcMap which needs to be purchased? Provide a critical review of this subject and make sure to include the functionality and costs of each system.

[30 Marks]