

MAASAI MARA UNIVERSITY

UNIVERSITY EXAMINATIONS 2018/2019 ACADEMIC YEAR FOURTH YEAR SECOND SEMESTER

SCHOOL OF TOURISM AND NATURAL RESOURCE MANAGEMENT BACHELOR OF SCIENCE (ENVIRONMENTAL STUDIES)

COURSE CODE: EBH 411

COURSE TITLE: ECOLOGICAL TECHNIQUES

AND BIOMETRY

DATE: 29TH APRIL, 2019

TIME: 2:30PM - 4:30PM

<u>INSTRUCTIONS TO CANDIDATES</u> ATTEMPT ALL QUESTIONS IN SECTION A AND ANY 3 IN SECTION B

<u>Support your answers with relevant examples and illustrations and clearly</u> show your calculations, where relevant.

This paper consists of 2 printed pages. Please turn over

SECTION A (25 MARKS)

Attempt ALL questions in this section.

- 1. Explain the differences between;
 - i. Ecological survey and ecological monitoring
 - ii. CRBD and RBD
 - iii. Shannon Weiver and Simpson Indices of species diversity
 - iv. One way and two way ANOVA
 - **v.** Beta diversity and Alpha diversity

(5 MARKS).

- 2. Clearly explain and give an example of a multifactorial study design (5 MARKS).
- 3. Explain the use of GIS in describing landscape patterns (5 Marks)
- 4. List 3 abiotic and 2 biotic parameters you would determine when undertaking a study on Maasai Mara University Botanical Garden Reservoirs (5 MARKS).
- 5. Explain, with examples remote sensing and GIS requirements for habitat monitoring in the Masai Mara Game Reserve (MMGR) (5 MARKS).

SECTION B

Attempt ANY THREE questions.

- **6.** i. Explain the mark release recapture technique in animal population estimation (*5 MARKS*).
 - ii. Describe how you would simulate this technique in the lab $\,$

(5 MARKS).

- **iii.** Explain the assumptions made when using this technique in population size estimation. (5 MARKS).
- 7. Describe in detail the methodology you would employ to study community structure of a savanna woodland plant community (15 MARKS).
- 8. Using clear illustrations, discuss an ecological study where data obtained would be analysed using the following data analysis techniques: Linear regression AND Two way ANOVA (**15 MARKS**).
- 9i. Discuss the emerging issues in the use of remote sensing in ecological studies (10 MARKS).
- ii. Discuss 5 advantages of remote sensing over traditional methods of data collection (5 MARKS).