



# **MAASAI MARA UNIVERSITY**

**SCHOOL OF NATURAL RESOURCES, TOURISM AND  
HOSPITALITY**

**DEPARTMENT OF ENVIRONMENTAL STUDIES,  
GEOGRAPHY AND AGRICULTURE**

**UNIVERSITY EXAMINATIONS  
2020/2021 ACADEMIC YEAR**

**FOURTH YEAR SECOND SEMESTER EXAMINATION FOR  
THE DEGREE OF BACHELOR OF ENVIRONMENTAL  
STUDIES**

**COURSE CODE: EBH 4240  
COURSE TITLE: ECOLOGICAL TECHNIQUES AND  
BIOMETRY**

**DATE: 13<sup>TH</sup> OCTOBER, 2021**

**TIME: 1100-1300 HRS**

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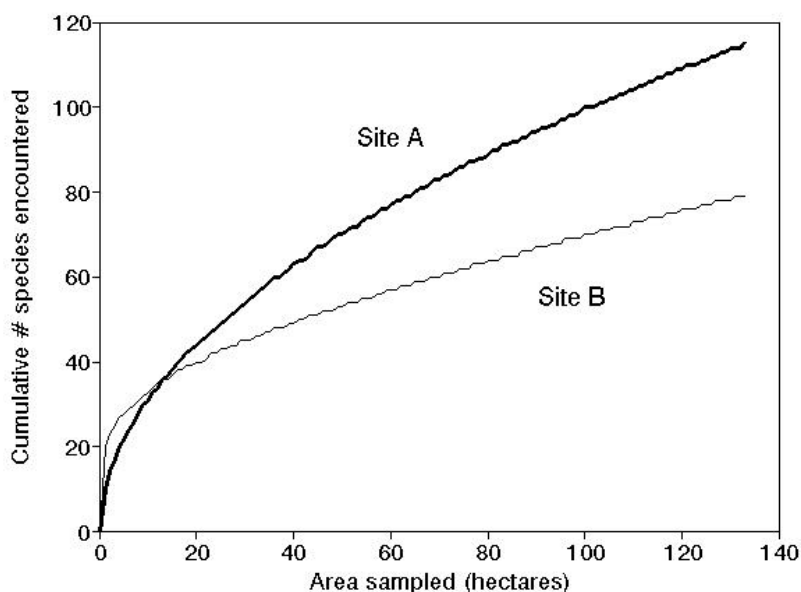
## **INSTRUCTIONS TO CANDIDATES**

- (a) Answer ALL the Questions in Section A**
- (b) Answer ANY THREE Questions in Section B**

## **SECTION A (25 MARKS)**

**Attempt ALL questions in this section.**

1. Explain the differences between;
  - i. Population census and population sampling
  - ii. Descriptive and Inferential statistics
  - iii. Quantitative and Qualitative data
  - iv. Simple Random Sampling and Stratified Sampling
  - v. Beta diversity and Alpha diversity **( 5 Marks)**
  - a. Explain 5 factors that determine choice of an ecological technique **(5 Marks)**
  
2.
  - i. State the two commonly used indices to measure species diversity in a habitat **(2 Marks)**
  - ii. Explain the difference between species diversity and species equitability **(2 Marks)**
  
3. Explain the mark - release - recapture technique in animal population estimation and state any 3 assumptions associated with this technique **(6 Marks)**
  
4.
  - i. What is a species - area curve **(2 Marks)**
  - ii. **Given the Species - Area curve below**



Explain which of the two sites (habitats) have higher species richness **(3 Marks)**

## **SECTION B**

**Attempt ANY THREE questions.**

6. Discuss 5 methods of determining relative population estimates.  
**(15 Marks)**
7. Discuss THREE methods you would employ to undertake population census of elephants in a 10Km<sup>2</sup> area of Maasai Mara Game Reserve grassland habitat  
**(15 Marks)**
8. Describe an ecological study where each of the following data analysis techniques would be employed to analyse and interpret the data;
- i. Linear regression **( 5 Marks)**
  - ii. Analysis of variance (ANOVA) **(5 Marks)**
  - iii. Chi square test **( 5 Marks)**
9. You are undertaking a research project to determine status of aquatic health of Ewaso Ngiro river running through Narok Town. Present a detailed protocol to collect and analyse abiotic parameters  
**(15 Marks)**

**END//**