

THE NATIONAL UNIVERSITY OF LESOTHO

DEPARTMENT OF ANIMAL SCIENCE

PROGRAMME (RANGE RESOURCE ECOLOGY AND MANAGEMENT)

REM4501: ECOSYSTEM MONITORING AND ASSESMENT

FIRST SEMESTER FINAL EXAMINATION 2023/24

JANUARY 2024

TIME: 3 HOURS

MARKS: 100

INSTRUCTION: ANSWER ALL QUESTIONS.

START EACH QUESTION ON A NEW PAGE

QUESTION 1

Describe why the following are considered ecosystem stressors:

Drought,

Pollution,

Overexploitation of resources,

Invasive species and

Climate change. (20)

QUESTION 2

(a) Suppose you visited rangelands for diversity assessment, then you encountered the following plant species: *Hyparrhenia hirta* 9, *Trifolium pretense* 6, *Sporobolus africanus* 15, and *Hypoxis argentia* 3. *Poa binata* 11

Calculate:

(i) Shannon diversity (15)

(ii) Simpson Diversity (15)

(iii) Identify the most abundant and rarest species (2)

(b) Explain FOUR factors you would consider when planning the monitoring and assessment of the rangelands? (8)

QUESTION 3

Describe the properties of core methods for monitoring rangeland ecosystems. (20)

QUESTION 4

Describe how you would assess rangelands using Land Degradation Surveillance Framework (20).