



# **MAASAI MARA UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**2022/2023 ACADEMIC YEAR**

**SEMESTER I**

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

**MASTER OF SCIENCE IN ENVIRONMENTAL  
STUDIES (ENVIRONMENTAL  
HEALTH/BIOLOGY)**

**COURSE CODE: SES 803**

**COURSE TITLE: ECOSYSTEM STRUCTURE AND  
FUNCTION**

**DATE: 7<sup>TH</sup> FEBRUARY, 2023**

**DURATION: 1000 – 0100 HRS**

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**INSTRUCTIONS TO CANDIDATES**

Answer **All** the Questions in Section A and any **THREE** IN SECTION B

*This paper consists of **TWO** printed pages. Please turn over.*

**SECTION A [25 marks]**

1) Citing relevant examples, differentiate between ecosystem structure and function, [5 Marks]

2) a) Differentiate between Gross Primary Productivity and Net Primary Productivity [2 Marks]

b) The following information refers to Energy Budgets of two (2) different ecosystems. Values are in given in KJ/m<sup>2</sup>/Year

Serial Number	Item	Ecosystem A	Ecosystem B
1	Gross Primary Productivity	20,000	5,000
2	Plant Respiration	8,000	2,000
3	Consumer Respiration	1,000	500

i) Calculate the Net Ecosystem Productivity under each ecosystem [2 Marks]

ii) Which of the two sites is likely to have more fauna and why? [1 Mark]

3) Using an illustration, show the flow of energy through the different components of the ecosystem [5 Marks]

4) (a) Explain the significance of studying food chains [2 Marks]

(b) Using appropriate illustrations explain the difference between *pyramid of numbers* and *pyramid of biomass* [3 Marks]

5) (a) Highlight two (2) factors that determine the rate of ecological succession [2 Marks]

(b) Briefly describe the process of bio-magnification and show how it affects species diversity [3 Marks]

**SECTION B (45 MARKS)**

6) Describe the nitrogen cycle and show how anthropogenic activities impact the cycle [15 Marks]

7) Discuss anthropogenic activities influence nutrient and biogeochemical cycles [15 Marks]

8) Several theories are used to describe succession in an ecosystem. Using relevant examples, discuss these theories [15 Marks]

9) Discuss the effects of climatic warming on carbon flux in terrestrial ecosystems [15 Marks]