



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2014/2015**

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF EDUCATION (ARTS) WITH  
INFORMATION TECHNOLOGY  
(CIT CAMPUS – SCHOOL BASED)

**EMA 111: ENVIRONMENTAL EDUCATION**

*Date: 28<sup>th</sup> February 2014*

*Time: 7.00 - 9.00 a.m.*

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**INSTRUCTIONS:**

**Answer Question ONE and any other TWO questions.**

(SANDWICH-CITY CAMPUS)

EMA 111: ENVIRONMENTAL EDUCATION

Date -----Time-----

**Answer question one and two other questions**

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1. The present state of the environment in Kenya calls for urgent conservation and management measures.

a) How is environmental conservation related to environmental management?

**(4 marks)**

b). Identify and describe any 6 environmental problems facing Kenya highlighting their possible causes.

**(12 marks)**

c). Identify any four measures that the Government of Kenya is taking to improve the environment.

**(4 marks)**

d). Spaceship earth was popularized by American inventor Buckminster fuller (1895-1983). State ten reasons which support the use of the term as related to environmental education.

**(10 marks)**

Q2 a) Explain briefly how

i. Light energy is trapped as chemical energy by producers

ii. Chemical energy is transferred from producers to consumers

iii. Energy is lost at each trophic level in an ecosystem

**(6 marks)**

The information below shows energy transfer in grassland ecosystem involving antelopes, lions and hyenas. Use the information to answer the questions that follow.

Tertiary consumers	$1.8 \text{KJM}^2 \text{yr}^{-1}$
Carnivores	$200 \text{KJM}^2 \text{yr}^{-1}$
Herbivores	$2400 \text{KJM}^2 \text{yr}^{-1}$
Producers	$144,000 \text{KJM}^2 \text{yr}^{-1}$

- i) Calculate the efficiency of energy transfer at each of the following trophic levels
  - a) Producer to herbivores
  - b) Herbivores to carnivores
  - c) Carnivore to tertiary consumers **(6marks)**
- ii) Make two conclusions from the calculations in (a) above. **(2marks)**
- iii) Sketch the food web and energy pyramid of the ecosystem. **(3marks)**

C. Discuss any three ways in which human kind is affecting the natural balance of the earth's environment. **(3marks)**

3. In teaching about environmental issues in Kenya certain special techniques are employed.

- a) Explain four examples of such special techniques. **(8 marks)**
- b) State any four advantages of using such teaching techniques **(4 marks)**
- c) For any one of two techniques, shortly describe how you would employ them to teach the topic "waste management." **(8 marks)**

4. a) Give the definition of ecological crisis and explain 3 of its causes **(5marks)**

- b) Greenhouse gases are increasing their concentration in the atmosphere. This is elevating the temperature in the lower atmosphere and contributing to global warming. Name the principle greenhouse gases and for each, state how it is formed in the atmosphere its effects and how it can be controlled. **(15 marks)**