MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF EDUCATION WITH INFORMATION TECHNOLOGY

(HOMA BAY CAMPUS)

EMA 111: ENVIRONMENTAL EDUCATION

Date: 11th April, 2014   Time: 11.00 a.m. – 1.00 p.m.

INSTRUCTIONS:

- **Attempt QUESTION ONE and any other TWO questions.**

EMA 111: ENVIRONMENTAL EDUCATION

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

Answer question one and two other questions

1a) Define the concept "environmental education for sustainability"   (3marks)

b). Identify five characteristics of a teacher who is capable of promoting environmental education for sustainability.   (5marks)

c) You plan to teach form 2 students about the efficiency of energy transfer in ecosystems. State any four objectives that would appear in your lesson plan

(4 marks)

d) Explain any 3 objectives of environmental education.   (6 marks)

e) Discuss the principles of environmental education in the secondary school curriculum in Kenya within the framework of education for sustainability.

(12marks)

2. 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)**

3. 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)**

Q4a) 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)**

b. 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 $1.8 KJM^{-2}yr^{-1}$

Carnivores $200\ KJM^{-2}yr^{-1}$

Herbivores $2400\ KJM^{-2}yr^{-1}$

Producers $144,000\ KJM^{-2}yr^{-1}$

    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)