

UNIVERSITY OF SWAZILAND
FACULTY OF HEALTH SCIENCES
FINAL EXAMINATION PAPER - SECOND SEMESTER – 2010/2011

TITLE OF PAPER : ENVIRONMENTAL PHYSICS TWO
COURSE CODE : EHS 412
TIME : 3 HOURS
MARKS : 100

INSTRUCTIONS

1. ALL FOUR QUESTIONS ARE COMPULSORY.
2. EACH QUESTION IS 25 MARKS.
3. NO FORM OF PAPER SHOULD BE BROUGHT INTO NOR TAKEN OUT OF THE EXAMINATION ROOM.
4. BEGIN YOUR ANSWERS TO EACH QUESTION ON A SEPARATE SHEET OF PAPER.
5. NUMBER ALL ANSWER SHEETS IN ACCORDANCE WITH THE FLOW OF YOUR ANSWERS.
6. WRITE ELIGIBLY; MARKS WILL NOT BE AWARDED WHERE HANDWRITING IS NOT POSSIBLE TO READ.
7. USE OF PROPER ENGLISH LANGUAGE GRAMMAR IS ESSENTIAL; POOR GRAMMAR SHALL RESULT IN LOSS OF MARKS.

QUESTION 1

A 50, 000km² of forest close to your community is dead. Fish in the nearby lake, on which the community has been fishing for the past centuries, have disappeared. A scientific investigation recently undertaken by the SEA, has concluded that coal burning, in industries located on the upper side of the forest, is responsible for the current state of the forest and the lake, through two main pollutants? What are the main findings of the study regarding these two pollutants?

(25)

QUESTION 2

Due to lack of coal and oil resources in Swaziland for energy production, the government's 2011/2012 budget includes the construction of yet another dam, in addition to the recently completed Maguga and Lubovane dams. Instead of venturing to other renewable energy sources, such as solar and wind technologies, the government believes that dams are the only alternative, due to abundance of rivers flowing past Swaziland. As an environmental manager based in the biggest and reputable private environmental management firm, you are fully aware of current literature on challenges associated with dam construction. How would you argue to oppose the government's plan?

(25)

QUESTION 3

In recent years, there has been growing evidence of the occurrence of global warming, as a result continued release of pollutants to the environment, by a number of human activities. Efforts aimed at controlling the release of greenhouse gases (GHGs), which largely contribute to global warming, have so far failed to deliver the necessary cuts in emissions, especially in emerging economies like China, South Africa, etc.

- a) Identify the main greenhouse gases (GHGs) responsible for global warming and their sources.
- b) Discuss the role of the GHGs which results in global warming.

c) In no more than five examples, what is some of the compelling evidence of the occurrence of global warming?

(25)

QUESTION 4

Presently, Swaziland and other developing countries in the region, rely on non-renewable resources (such as coal, oil and natural gas) for most of their energy needs. Considering the fact that these resources will not last forever, there is need to reduce current energy consumption rates, while finding substitutes. Energy efficiency is one strategy that can be applied to reduce energy consumption.

- a) What is energy efficiency?
- b) How can we improve energy efficiency?

(25)