UNIVERSITY OF SWAZILAND
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE
MAIN EXAMINATION [DEC 2014]

COURSE TITTLE	-	ENVIRONMENTAL PHYSICS
COURSE CODE	-	EHS 411
ACADEMIC YEAR	-	2014/2015
TIME ALLOCATED	-	2 HOURS

INSTRUCTIONS

1. ANSWER THREE QUESTIONS. QUESTION ONE IS COMPULSORY AND CHOOSE ANY TWO QUESTIONS FROM THE OTHER SECTIONS

2. BEGIN YOUR ANSWERS TO EACH QUESTION ON A NEW PAGE OF THE ANSWER BOOKLET. ENSURE THAT YOU HAVE NUMBERED YOUR PAGES CORRECTLY.

3. MARKS WILL BE DEDUCTED FOR UNTIDY WORK

4. NO PAPER SHOULD BE BROUGHT INTO THE EXAMINATION ROOM.

5. BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

SPECIAL REQUIREMENTS: NONE

DO NOT OPEN THE QUESTION PAPER UNTIL INSTRUCTED TO DO SO BY THE INVIGILATOR.

QUESTION ONE (COMPULSORY) : 50 MARKS

The earth is endowed with beautiful landforms and has a wide range of natural resources which are a key driver for economic growth. Some of these resources are available only is fixed amounts whilst others have the potential of perpetual usage. However, the exploitation of the natural resources in the pursuit of economic development has contributed immensely to the climate change effects experienced globally.

1. ***"Some of these resources are available only in fixed amounts whilst others have the potential of perpetual usage"***. Define the **classes** of resources referred to by the statement and give an example of each [6]
2. Describe the geological processes that explain the formation of mountain and valleys [5]
3. Explain how human activities contribute to climate disruption, particularly depletion of the O_3 layer [10]
4. In what spectrum of the electromagnetic radiation (ER or EMR) is the clinic X –Ray operation taking place and what are potential effects to human health when a person is directly exposed to it? [5]
5. Describe the energy transformation or conversion during photosynthesis [3]
6. What form of energy is generated by the following actions;
    a. An object in the air is pulled towards the ground by an attraction force [1]
    b. Moving electrons among the atoms of matter [1]
7. Identify and discuss **two** environmental impacts associated with nuclear energy production [4]
8. Photovoltaic (PV) is an energy generation system believed to be environmentally sustainable.
    a. What is the energy input into the system [1]
    b. List four advantages of PV systems [4]
9. Describe **two** types of slope failures associated with Land Slides and Mass Wasting and explain the major factors influencing the slope failure [10]

QUESTION 2 : 25 MARKS

1. There is an observed increase in the Greenhouse Gases (GHGs) principally due to human activities significantly contributing to climate change.
    a. Identify and describe **two** major development sectors that contribute significantly to the increase in the GHGs [4]
    b. Discuss **two** environmental impacts associated with Global Warming [4]
2. What is the greenhouse effect [2]
3. Biomass energy is environmentally friendly and renewable. Give an example of a biomass energy resource and describe its potential uses in industrial operations [5]
4. Hydropower energy generation in some instances can result to the displacement or relocation of people. How? [4]
5. Identify **two** renewable energy resources and provide **two** advantages of each [6]

QUESTION 3 : 25 MARKS

1. Discuss briefly the theory of plate tectonics [5]
2. What is the distinction between converging and diverging of plates [4]
3. Give **two** examples of volcanoes or volcanic landforms which are a result of the nature of the eruption [2]
4. What are the environmental effects associated with volcanic eruptions [3]
5. Describe how earthquakes are formed [3]
6. Discuss **two** environmental impacts associated with mining of minerals [4]
7. List **two** ways in which our valuable minerals can be conserved [2]
8. Give **two** examples of natural disasters other than **Tsunamis, Earthquakes** and **Volcanoes** [2]

QUESTION 4 : 25 MARKS

1. Distinguish between weather and climate [2]
2. The atmosphere is made up of layers varying in temperature and gaseous composition. Name the layers [4]
3. Which of the atmospheric layers is characterised with the increase in temperature with increasing height and what is the common gas found in that layer [2]
4. What is global warming? [3]
5. The increase accumulation of Greenhouse Gases in the atmosphere is believed to have serious repercussions or effects to human health. Identify and describe two effects of global warming to human health. [4]
6. Describe how fossil fuel used in industries contribute to climate change [5]
7. Forest degradation contributes to global warming. How? [3]
8. What can be done to address the problem of forest degradation [2]