

UNIVERSITY OF SWAZILAND

Faculty of Health Sciences

(BSC) IN ENVIRONMENTAL HEALTH

SUPPLEMENTARY EXAMINATION PAPER 2006

TITLE OF PAPER: ENVIRONMENTAL PHYSICS

COURSE CODE : EHS 402

DURATION : THREE HOURS

MARKS : 100

INSTRUCTIONS : ANSWER ONLY FIVE QUESTIONS.

: EACH QUESTION CARRY 20 MARKS.

**: NO QUESTION PAPER SHOULD BE BROUGHT INTO NOR
OUT OF THE EXAMINATION ROOM.**

**: BEGIN EACH QUESTION ON A SEPARATE SHEET OF
PAPER.**

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED
BY THE INVIGILATOR.**

QUESTION ONE

- (a) Name and write short notes on the three major concentric zones of the Earth. (12 marks)
- (b) Briefly describe plate tectonics. (8 marks)

TOTAL 20 MARKS

QUESTION TWO

Taking solar energy as one of the renewable energy resources, discuss under the following themes: (i) its five advantages (5 marks) (ii) its five disadvantages (5 marks) (iii) how can it be managed sustainably on a national level (5 marks) (iv) how can you improve its disadvantages? (5 marks)

TOTAL 20 MARKS

QUESTION THREE

Discuss oil as one of the nonrenewable energy resources under the following themes (i) Its merits (5 marks) (ii) its demerits (5 marks) (iii) how can it be managed sustainably on a national basis (5 marks) (iv) propose solutions to its demerits (5marks)

TOTAL 20 MARKS

QUESTION FOUR

- (a) Consider a box of mass 20 kg allowed to fall freely from rest at a height of 50m above the ground and landed in a hole 25m below the ground. Calculate the work done by this falling box and also find its kinetic energy. Take the acceleration due to gravity as 9.8m/s^2 . How do you compare your answer of the work done to that of the energy kinetic? Explain. (10 marks)
- (b) List five ways that could be adopted in order to improve energy efficiency (5marks)
- (c) Enumerate five reasons why reducing energy waste is so important (5 marks)

TOTAL 20 MARKS

QUESTION FIVE

- (a) How are the scientific laws governing changes of matter and energy from one form to another relate to resource use and environmental degradation? (10 marks)
- (b) Use the molecular theory to explain the three states of matter. (10 marks)

TOTAL 20 MARKS.

QUESTION SIX

- (a) If the volume of a methane gas collected from a tip site at 40°C and pressure of $2 \times 10^5 \text{ Pa}$ was 200 cm^3 , what would the volume of the gas be at room temperature (say 25°C) and a pressure of $4 \times 10^5 \text{ Pa}$? (10 marks)
- (b) Do you agree that the pollution control measures we take have failed and must be replaced with a pollution prevention approach? Explain. (10 marks)

TOTAL 20 MARKS.

GOOD LUCK!!!