



UNIVERSITY OF SWAZILAND
Faculty of Health Sciences

DEGREE IN ENVIRONMENTAL HEALTH
FINAL EXAMINATION PAPER 2005

TITLE OF PAPER : **HYDROLOGY**

COURSE CODE : **EHS 545**

DURATION : **2 HOURS**

MARKS : **100**

INSTRUCTIONS :

- : **READ THE QUESTIONS & INSTRUCTIONS CAREFULLY**
- : **ANSWER ANY FOUR QUESTIONS**
- : **EACH QUESTION CARRIES 20 MARKS.**
- : **WRITE NEATLY & CLEARLY**
- : **NO PAPER SHOULD BE BROUGHT INTO OR 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 1

1. What is a unit for measuring rainfall depth on the surface of the ground? (3)
2. Describe two methods that are used to quantify the amount of rainfall in a given area. (16)
3. What do we mean by effective run-off? (6)

Question: 2.

With an aid of a diagram describe a psychrometric chart, describing the relationship of vapour pressure in the atmosphere and temperature change during the formation of rainfall in the atmosphere. (25)

Question 3

1. Using a sketch and an equation describe fully the water balance of a dam incorporating human water use. (14)
2. Other than adiabatic cooling what are four conditions that must be fulfilled in order for precipitation to occur? (8)
3. Explain what is adiabatic cooling in the atmosphere means. (3)

Question 4

1. Define the following terms :
 - a. Actual evaporation
 - b. Potential evaporation
 - c. Evapotraspiration
 - d. Flood rooting(8)
2. Describe five factors that affect evaporation in a given area. (10)
3. What are six factors that determine the risk to catchments yield failures? (7)

Question 5

1. What is a unit hydrograph? (5)
2. Draw a unit hydrograph illustrating all the components of a unit hydrograph (10)
3. With the use of a sketch describe the concept of potential run-off yield of perennial, intermittent and ephemeral streams. (10)