

**UNIVERSITY OF SWAZILAND
DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL SCIENCE AND
PLANNING**

**FINAL EXAMINATION: DECEMBER, 2007
B.Sc. II**

TITLE OF PAPER : WATER RESOURCES

COURSE NUMBER : GEP 228

TIME ALLOWED : THREE (3) HOURS

**INSTRUCTIONS : SECTION A IS COMPULSORY
ANSWER ANY TWO QUESTIONS FROM
SECTION B
ILLUSTRATE YOUR ANSWERS WITH
APPROPRIATE DIAGRAMS**

**MARKS ALLOCATED : QUESTION 1 CARRIES 40 MARKS
THE OTHER QUESTIONS CARRY 30
MARKS EACH**

**THIS PAPER IS NOT TO BE OPENED UNTIL PERMISSION HAS BEEN GRANTED
BY THE INVIGILATOR**

SECTION A: COMPULSORY QUESTION

Question 1:

- (a) Explain why maximum precipitation occurs below mountain summits in the tropics while in temperate regions it occurs at mountain summits.

(20 marks)

- (b) Discuss the fact that the polar regions do not get extremely cold and the tropics extremely hot.

(20 marks)

(40 marks)

SECTION B: ANSWER ANY TWO QUESTIONS

Question 2:

- (a) Explain why it is important to measure and/or estimate evaporation in water resources planning and management.

(20 marks)

- (b) Estimate the evaporation from a free water surface for the month of December using the following meteorological variables: wind speed $U_2 = 10.5$ km/hour and e_s and e_a are 14.5 and 11.5 mm of mercury, respectively.

(10 marks)

(30 marks)

Question 3:

Explain the assumptions of a unit hydrograph and its practical application. **(30 marks)**

Question 4:

- (a) Explain the importance of knowing the quality of water. (10 marks)

- (b) Explain the parameters that are used to describe the quality of water. (20 marks)

(30 marks)

Question 5:

- (a) Explain the importance of discharge measurement in water resources.

(15 marks)

- (b) Describe two methods of discharge measurement.

(15 marks)

(30 marks)