UNIVERSITY OF SWAZILAND

DEPARTMENT OF GEORAPHY, ENVIRONMENTAL SCIENCE AND PLANNING

RE-SIT EXAMINATION: JULY, 2018

BSc and BSc Ed. II

TITLE OF PAPER : WATER RESOURCES

COURSE NUMBER : GEP232

TIME ALLOWED : THREE (3) HOURS

INSTRUCTIONS : ANSWER TWO QUESTIONS FROM SECTION A

AND TWO QUESTIONS FROM SECTION B

ILLUSTRATE YOUR ANSWERS WITH
APPROPRIATE DIAGRAMS

MARKS ALLOCATED : ALL QUESTION ONE CARRIES EQUAL MARKS

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

SECTION B: ANSWER ANY TWO QUESTIONS

QUESTION 4

a) Explain why water is considered a renewable resource.   (5 marks)

b) Explain why the hydrologic cycle is a water purifying mechanism.   (5 marks)

c) Use the mass transfer method to calculate the evaporation from open water given the following information: U_2 = 8.65 km/hour; e_a 13.8 mm of mercury; e_d = 11.25 mm of mercury.   (15 marks)

(25 marks)

QUESTION 5

a) Describe the factors that influence the rate of infiltration.   (8 marks)

b) Explain the role of infiltration on the resulting runoff hydrograph.   (7 marks)

c) Table 3 presents the discharge measurements for a hypothetical river

i) Draw the rating curve and estimate the river discharge when the water level is 5.4 meters.   (10 marks)

(25 Marks)

Table 3   Discharge measurements for a hypothetical river

Gauge height (m)	Discharge (m^3/s)
0	0
1.25	10.2
1.6	17.1
2.8	49.5
3.5	80.3
4.25	121.3
4.7	186.2

QUESTION 6

(a) Explain the methods of estimating the available water resources of a catchment.   (15 marks)

(b) Discuss the role of hydrology in economic development.   (10 marks)

(25 Marks)