

UNIVERSITY OF SWAZILAND

FINAL EXAMINATION PAPER: MAY, 2005
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 AND EXAMPLES

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) Briefly explain the methods of climate classification. (30 marks)
- (b) Explain the importance of climate classification. (10 marks)

SECTION B: ANSWER ANY TWO QUESTIONS**QUESTION 2**

- (a) Discuss the factors that affect the rate of evaporation. (15 marks)
- (b) Explain two approaches that are used to estimate evaporation. (15 marks)

QUESTION 3

- (a) Explain the methods that are used to estimate the spatial average precipitation. (15 marks)
- (b) Describe two methods of discharge measurement and give the disadvantages and advantages of each. (15 marks)

QUESTION 4

Table 1 shows the monthly discharge and frequency of occurrences for the Mtilane river at Lozitha. Draw the flow duration curve and estimate the reservoir capacity required to meet the demand all year round when the discharge is exceeded 50 percent of the time. (30 marks)

QUESTION 5

Describe the characteristics and distribution of water resources in Swaziland

Table 1: Discharge categories and the corresponding frequency of occurrences for the Mtilane river.

Discharge (m ³ /s)	Frequency
23 - 49	10
50 - 99	54
100 - 149	38
150 - 199	16
200 - 249	20
250 - 299	14
300 - 349	10
350 - 399	9
400 - 499	23
500 - 599	11
600 - 699	8
700 - 799	6
800 - 899	5
900 - 999	4
1000 - 1999	20
2000 - 2999	4