



GWANDA STATE UNIVERSITY
FACULTY OF ENGINEERING AND ENVIRONMENT
DEPARTMENT OF GEOMATICS AND SURVEYING

Principles of Hydrology

GES 1103

Final Main Examination Paper

June 2023

Time Allowed: 3 hours
Total Marks: 100
Special Requirements: None
Examiner's Name: MR. V. NCUBE

INSTRUCTIONS

The paper consists of Six Questions.

SECTION A is Compulsory. Choose any **THREE** Questions from **SECTION B**

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SECTION A

Question 1

- a) Explain why water is considered a renewable resource (4)
- b) Describe any **THREE (3)** methods of measuring infiltration rate (6)
- c) Differentiate between orographic and frontal precipitation (4)
- d) Attempt the following in 1-2 lines
 - i) Give any two fresh water sources (2)
 - ii) What is magmatic water (1)
 - iii) Define water harvesting (1)
 - iv) Define Aquifer (1)
 - v) What is meant by Catchment area (1) [20]

Question 2

- a) Draw a well labeled diagram of the Hydrological Cycle (10)
- b) Explain how humans have affected the Hydrological Cycle (10) [20]

SECTION B

Question 3

Discuss in detail at least **FIVE** factors that affect the run off of a river basin [20]

Question 4

Discuss the importance of the Hydrological Cycle in water resources development [20]

Question 5

Flooding is a global and environmental menace especially in urban centres. Identify causes, impacts and mitigation measures of flooding. [20]

Question 6

- a) Describe the factors that influence the rate of infiltration (10)
- b) Discuss the problems of overexploitation of ground water resources and their remediation (10) [20]

END OF PAPER