

# **The National University of Lesotho**

**B.Sc. Examination**

**PG 3401 : Environmental Water Quality**

**December, 2023**

**Marks: 100**

**3 Hours**

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## **Information and Instructions:**

- Answer any **four (4)** questions.
  - Where applicable illustrate your answer with equations and diagrams
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## Question 1

Discuss any five (5) properties of water and explain how each property contributes life.

[25]

## Question 2

Explain how each of the following factors can help in making projections on future water demand for a city or municipality.

- Population growth
- Economic conditions
- Environmental Protection
- Social perspectives
- Technology

(5 each) [25]

## Question 3



This diagram shows a wastewater pipe from an industrial area discharging into a receiving river.

If the wastewater contains a high concentration of organic matter, discuss with the help of a diagram the BOD impact that the wastewater would have on the environment of the river downstream of the effluent.

[25]

## Question 4

- Explain why the process of thermal stratification predominantly occurs in deep surface water bodies outside the tropics. (8)
- With the help of diagrams, discuss the seasonally induced physical behaviour of the water body in 4(a) and explain how the behaviour would influence the water quality. (17)

[25]

## Question 5

Discuss the typical processes in the treatment of raw surface water intended for drinking.

[25]

## Question 6

Discuss some of natural catchment processes and human activities that may subject the impounded raw water of the Metolong reservoir to quality problems. For each case, suggest the 'good practice measures' to curb the situation. [25]