

# UNIVERSITY OF SWAZILAND



## Faculty of Health Sciences

### DEGREE IN ENVIRONMENTAL HEALTH FINAL EXAMINATION PAPER 2005

- TITLE OF PAPER** : WATER TREATMENT
- COURSE CODE** : EHS 543
- DURATION** : 3 HOURS
- MARKS** : 100
- INSTRUCTIONS** :
- : READ THE QUESTIONS & INSTRUCTIONS CAREFULLY
  - : ANSWER ANY FIVE QUESTIONS
  - : EACH QUESTION CARRIES 20 MARKS.
  - : WRITE NEATLY & CLEARLY
  - : NO PAPER SHOULD BE BROUGHT INTO NOR OUT OF THE EXAMINATION ROOM.
  - : BEGIN EACH QUESTION ON A SEPARATE SHEET OF PAPER.

**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED BY THE INVIGILATOR.**

Final Examination.

Question 1.

Physical characteristics of water are one of the main reasons why we treat water, so that we can adjust the levels of the constituents components in the water.

Detail the characteristics elements which have an impact in water quality and also have an effect in water treatment plants. (20)

Question 2.

A) With an aid of a diagram, describe the principal features of a rotary drum micro-strainer. Explain the advantages and disadvantages of a micro-strainer. (10)

B) What is the significance of aeration in drinking water treatment plant? (10)

Question 3.

A) Explain the process of stability of colloidal system in water. (10)

B) What do you understand by tapered flocculation. (10)

Question 4.

A) What do you understand by lamella sedimentation? (4)

B) Discuss the three (3) configuration of lamella sedimentation tanks. (6)

C) List and explain the design points of lamella tanks. (10)

Question 5.

A) What are the good characteristics of disinfectants? (5)

B) What are the properties of chlorine? (5)

C) Discuss the **slug** method in distribution system of chlorination. (5)

D) Discuss the disinfection kinetics. (5)

Question 6.

Describe the mechanism that take place in **slow sand filtration**.

(20)