

OK
See corrections
H. K. ...
17/1/08



UNIVERSITY OF SWAZILAND
Faculty of Health Science

Department of Environmental Health
Sciences

Final Examination 2008

Title of paper: WATER TREATMENT 1

Course code: EHS 584

Time allowed: 2 hours

Marks allocation: 60 Marks

Instructions:

- 1) Read the questions and instructions carefully
- 2) Answer Three questions
- 3) Each question is weighted 20 marks
- 4) Write neatly and clearly

This paper is not to be opened until the invigilator has granted
permission

Main Examination: December 2008

EHS 584 I

Question 1.

Thermal Stratification is a big problem in lakes and reservoir for water abstraction for domestic use! Discuss the process of this phenomenon, explaining how it affects the quality of water. (20)

Question 2.

For the following water quality parameters, state briefly their significance in Public Health and Water Treatment Techniques used to control their concentrations. State also maximum acceptable levels in drinking water.

- i) Temperature. (5)
- ii) Turbidity. (5)
- iii) Nitrates. (5)
- iv) Bacteria. (5)

Question 3.

“Activated Carbon is one of the materials used in a Conventional Water Treatment Plant”

Discuss in details the properties of this chemical, also state for what purpose is it used for in water treatment and how is it removed from water. (20)

Question 4.

A Water Treatment Plant is to process a flow of $2\ 3520\ \text{M}^3 / \text{d}$. Using the following criteria, Design a system of rectangular horizontal flow sedimentation basin.

- i) Surface Loading should not exceed $30\text{m}^3 / \text{m}^2 / \text{d}$ with all basins in service. (6)
- ii) With one basin out of service or cleaning/ repair the surface loading should not exceed $40\text{m}^3 / \text{m}^2 / \text{d}$. (4)
- iii) Detention time be 1-3 hours. (6)
- iv) Weir loading should not exceed $250\text{m}^3 / \text{m}^2 / \text{d}$. (4)