**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**P.O. Box 972-60200 – Meru-Kenya.**

 **Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411**

**Fax: 064-30321**

**Website:** [**www.mucst.ac.ke**](http://www.mucst.ac.ke) **Email:** **info@mucst.ac.ke**

**University Examinations 2014/2015**

THIRD YEAR, FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN PUBLIC HEALTH

**HPP 3314: LIQUID WASTES MANAGEMENT**

**DATE: DECEMBER 2014 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Explain what is meant by the following terms;
2. Waste water (1 mark)
3. Industrial liquid wastes (1 mark)
4. Strength of sewage ( 1mark)
5. Flow equalization (1 mark)
6. Briefly explain the three stages of sewage treatment (3 marks)
7. What is sewage treatment (3 marks)
8. Enumerate four (4) advantages of waste stabilization ponds in liquid wastes management

(4 marks)

1. What roles do plants play in a reed bed? (3 marks)
2. What is the difference between percolating filters and activated sludge processes?

 (4 marks)

1. What hazards are associated with disposal of raw sewage and sludge? (4 marks)
2. Explain how waste water can be recycled (5 marks)

**QUESTION TWO (20 MARKS)**

Discuss pretreatment activities in a waste water treatment plant

**QUESTION THREE (20 MARKS)**

Explain in detail, the options you would recommend for sewage treatment in a college with four thousand students

**QUESTION FOUR (20 MARKS)**

A medical training college has three thousand students who produce 50 litres of waste water per capita per day. The retention period of the waste water is four hours. Calculate the volume of a trickling filter that can treat the wastes.

Take t=as the formular

Where t= time in days

 V= volume of the filter

 Q= amount of waste water per day