



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2018/2019 ACADEMIC YEAR

THIRD YEAR FIRST SEMESTER EXAMINATIONS

FOR DIPLOMA

IN

CIVIL ENGINEERING

COURSE CODE: DCE 079

COURSE TITLE: PUBLIC HEALTH ENGINEERING

DATE: MONDAY 28TH JANUARY 2019 TIME: 9.00AM – 11.00AM

INSTRUCTIONS:

- Answer Question **ONE** and any other **TWO** Questions.
- Marks for each question are indicated in the parenthesis.
- Examination duration is **2 Hours**

MMUST observes **ZERO** tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

QUESTION ONE – COMPULSORY (30 MARKS)

- a) Discuss in details the various distinct phases of bacterial growth (10 Marks)
- b) Discuss any **five** major types of water pollutants (10 Marks)
- c) Manholes are used to access sewers for inspection and cleaning. State the conditions under which they are placed along a sewer line (5 Marks)
- d) Chemicals used for killing pathogens in drinking water are known as disinfectants. Give any **five** requirements of a good disinfectant (5 Marks)

QUESTION TWO (20 MARKS)

- a) State and explain any **four** water related diseases giving examples in each case (8 Marks)
- b) When chlorine is added to drinking water, it proceeds through a series of reactions. Describe these reactions in detail (6 Marks)
- c) Briefly discuss the following unit processes used in wastewater treatment and give appropriate examples in each case (6 Marks)
 - i. Chemical unit processes
 - ii. Physical unit operations
 - iii. Biological unit operations

QUESTION THREE (20 MARKS)

- a) Filtration is the process of passing water through beds of sand or other granular materials. Name any **two** types of filters and further describe the filtration mechanisms (10 Marks)
- b) Differentiate between gravity and pumped systems of water distribution (5 Marks)
- c) State any **two** advantages and **three** disadvantages of open dumping as a solid waste disposal method (5 Marks)

QUESTION FOUR (20 MARKS)

- a) Draw a well labeled diagram of a section through a rectangular sedimentation basin (10 Marks)
- b) State and briefly discuss any **four** water quality characteristics considered for aesthetic purposes (8 Marks)
- c) State **two** advantages of waste stabilization ponds (2 Marks)