

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

**FOURTH YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF SCIENCE (ENVIRONMENTAL SCIENCE)**

ENSC 402: WATER AND SANITATION

STREAMS: BSC (ENSC) (Y4S1)

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 06/12/2017

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS:

- Answer all the question in section A and any other TWO in section B
- Do not write anything on the question paper

SECTION A (30 MARKS)

1. Outline the fundamental principles of ecological sanitation. [3 marks]
2. Highlight six underlying criteria of sanitation systems. [6 marks]
3. Write short notes on the following terms as used in water and sanitation
 - (a) Biological oxygen demand [2 marks]
 - (b) Algal bloom [2 marks]
 - (c) Fluorosis [2 marks]
4. Outline four methods used in disinfecting drinking water at the tertiary stage of water treatment. [4 marks]
5. Briefly describe the urine Diverting Dry Toilet (UDDT) as one of the modern ecological sanitation technologies. [5 marks]
6. Highlight three bodies formed under the Water Act of 2002 (revised 2016) and indicate their functions. [6 marks]

SECTION B (40 MARKS)

7. Water scarcity affects more than 40 per cent of the global population with Kenya being one of the most affected countries. Discuss the causes, impacts and possible solutions to water scarcity in Nairobi city. [20 marks]

8. (a) Water borne diseases from fecal pollution of surface waters continue to be major cause of illness in developing countries. Polluted water is estimated to affect the health of 1.2 billion people, and contributes to the death of 15 million children annually. Describe five water borne diseases and their causal organisms.
[10 marks]
- (b) Describe the physiochemical factors that affect the survival of pathogens in the environment.
[10 marks]
9. (a) Discuss the merits of using constructed wetlands in the treatment of waste water.
[10 marks]
- (b) Discuss water and sanitation as one of the sustainable development goals.
[10 marks]
-