



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES**

**THIRD YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE
OF BACHELOR OF SCIENCE IN FOOD SECURITY**

3rd YEAR 1ST SEMESTER ACADEMIC YEAR 2017/2018

REGULAR

COURSE CODE: PWE 3313

TITLE: WATER, HEALTH AND SANITATION

EXAM VENUE: LR 4

STREAM: BSc (Food Security)

DATE: 14/12/17

EXAM SESSION: 2.00 – 4.00 PM

TIME: 2 HOURS

INSTRUCTIONS

- 1. Answer ALL questions in section A and ANY other 2 Questions in section B.**
- 2. Candidates are advised not to write on question paper.**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

SECTION A [30 MARKS]

Answer ALL questions from this Section.

1. On a global basis, fresh water is an increasingly scarce resource. Briefly describe any THREE problems associated with global scarcity in Africa **(6 Marks)**
2. Briefly describe any THREE properties of water that give it a unique role in the environment for suitability of life of plants and animals **(6 Marks)**
3. State any SIX classifications of water demand as applies in water supply **(6 Marks)**
4. Briefly describe any THREE types pollution that occurs in a body of water **(6 Marks)**
5. Distinguish between the following terms as used in the subject of Sanitation **(2 Marks)**
 - i. Food sanitation **(2 Marks)**
 - ii. Environmental sanitation **(2 Marks)**
 - iii. Ecological sanitation **(2 Marks)**

SECTION B [40 MARKS]

Answer ANY TWO questions from this Section.

6. The chemical elements in soil (trace elements) occur at concentrations of less than 100 mg/kg and are important to study due to their effects on plants, animals and humans. Discuss Trace Elements under the following themes: **(20 Marks)**
 - a) Sources
 - b) Mobilization process
 - c) Characteristics
7. There exists competition for water between agriculture and other sectors such as domestic water use, industry and mining. Discuss the following concepts: **(20 Marks)**
 - a) Effect of water use in other sectors on agricultural sector
 - b) Impact of agriculture on water use by other sectors
8. With the aid of sketch diagrams, explain the Irrigation Water Supply System Components between the intake points and typical field application **(20 Marks)**
9. With the aid of sketch diagrams, discuss the following components of potable treatment and distribution system between the point of raw abstraction to the point of safe use: **(20 Marks)**
 - a) Raw water extraction and transport,
 - b) Water treatment and storage,
 - c) Clear water transport and distribution.

- END -