



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF SPATIAL PLANNING**  
**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN**  
**WATER RESOURCE AND ENVIRONMENTAL MANAGEMENT**  
**SEMESTER 2016/2017 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: PWE 3314**

**COURSE TITLE: WATER SUPPLY AND SANITATION I**

**EXAM VENUE:**

**STREAM: SPATIAL PLANNING**

**DATE:**

**EXAM SESSION:**

**TIME: 2 HOURS**

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**Instructions:**

- 1. Answer question 1 ( compulsory ) and ANY other 2 questions.**
- 2. Candidates are advised not to write on the 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.**

**QUESTION ONE**

- a) From the understanding of a hydrological cycle, describe three sources of water supply (6 marks)
- b) Explain any **Three** categories of water demand in a typically mixed urban society (6 Marks)
- c) Describe **Three** reasons why it is necessary to treat water for Domestic Supply (6 Marks)
- d) Describe any **Six** factors to be considered while selecting sites for water intake structures (6 Marks)
- e) Describe any **Six** factors to be considered while selecting the type of public sanitation (6 Marks)

**SECTION B [40 MARKS]**

**Answer ANY TWO questions from this Section.**

**QUESTION TWO**

- a) With the aid of sketch diagrams discuss **Four** network systems of Potable Water Supply and Distribution in a typically planned town set up (8 Marks)
- b) With the help of labeled sketch diagrams, discuss the following water supply systems:
  - i. Gravity system (4 Marks)
  - ii. Pumped system (4 Marks)
  - iii. Dual system (4 Marks)

**QUESTION THREE**

- a) Discuss the following water quality parameters:
  - i. Physical Quality (7 Marks)
  - ii. Chemical Quality (7 Marks)
  - iii. Bacteriological quality (6 Marks)

**QUESTION FOUR**

Discuss in details (and using labeled sketch diagrams) the Potable Water Treatment Process between raw water intake works and consumer service points (20 Marks)

## **QUESTION FIVE**

A funding agency has donated a total of Ksh. 800 Million for the purpose of implementing a major community water supply project in Siaya County. The gravity water supply system is intended to transport water across some 50 km distance to Siaya, Akala and Bondo and Usenge towns through trunk and distribution mains to serve 250,000 people. Discuss the process you would undertake to implement the water supply project from project identification to full implementation stages.

**(20 Marks)**