



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY  
SCHOOL OF AGRICULTURAL AND FOOD SCIENCES  
FOURTH YEAR FIRST SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE  
OF BACHELOR OF SCIENCE IN SOIL SCIENCE  
ACADEMIC YEAR 2017/2018  
REGULAR**

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**COURSE CODE: ALS 3411**

**COURSE TITLE: IRRIGATION AND DRAINAGE TECHNOLOGY**

**EXAM VENUE:LR 8**

**STREAM: BSC. Soil Science**

**DATE: 18/12/17**

**EXAM SESSION: 9.00 -11.00 AM**

**TIME: 2 HOURS**

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**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. Name any TWO kinds of irrigation accessories under each of the following sub-components of drip and sprinkler systems
  - a) Pipework (2 Marks)
  - b) General fittings (2 Marks)
  - c) Infield fittings (2 Marks)
  
2. Using sketch diagrams, briefly describe the following surface water extraction and supply systems for irrigation
  - a) Gravity system (2 Marks)
  - b) Pumped system (2 Marks)
  - c) Dual System (2 Marks)
  
3. Describe the three kinds efficiencies that ought to be considered for conformity of irrigation water distribution (6 Marks)
  
4. In a sprinkler irrigation system, the lateral spacing along the mainline is 20 m and sprinkler spacing along laterals is 15 m. The application rate for fulfilling the peak demand of the proposed crop should be 8 mm/d. calculate the discharge rate per sprinkler. (6 Marks)
  
5. Briefly describe the Three kinds of Maintenance Activities to be carried out on irrigation pumps (6 Marks)

**SECTION B [40 MARKS]**

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

6. Discuss the factors that should be taken into account for choice and operation of Sprinkler Irrigation System (20 Marks)
  
7. Describe in details the process recommended for Drip Irrigation System Inspection (20 Marks)
  
8. Irrigation scheduling imply the prediction of when to irrigate and how much is needed by the plant. Discuss the plant and soil aspects of Irrigation Scheduling (20 Marks)
  
9. Discuss the steps involved in developing Fam Irrigation Plan (20 Marks)

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