



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

**UNIVERSITY EXAMINATIONS FOR THE DIPLOMA IN BUILDING AND CIVIL
ENGINEERING**

3RD YEAR 1ST SEMESTER 2018/2019 ACADEMIC YEAR

CENTRE: MAIN CAMPUS

COURSE CODE: TBC 2314

COURSE TITLE: IRRIGATION AND DRAINAGE TECHNOLOGY

EXAM VENUE: STREAM: DIP BLD & CIVEN

DATE: ../12/2018 EXAM SESSION:

DURATION: 2 HOURS

Instructions

- 1. Answer question 1 (Compulsory) and ANY other two questions**
- 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**

QUESTION ONE (30 MARKS)

- a. As a civil engineering student living in Kenya, explain the importance of irrigation and its possible ill effects. **(6 Marks)**
- b. Explain the following terminologies; **(6 Marks)**
- i. Effective rainfall
 - ii. Consumptive use
 - iii. Available water
- c. Outline the factors influencing time for irrigation and how much water to be applied. **(6 Marks)**
- d. Briefly describe the different methods/techniques that can be used to supply water to the plants mentioning their advantages and disadvantages. **(12 Marks)**

QUESTION TWO (15 MARKS)

- a. Briefly explain the following as applied in irrigation; **(8 Marks)**
- i. Water conveyance efficiency
 - ii. Soil moisture removal
 - iii. Irrigation frequency
 - iv. Net irrigation requirement
- b. An irrigation pump discharges 11,000 l/hr and works for nine hours each day. Estimate the area commanded by the pump if the average depth of irrigation is 9cm and irrigation interval is 12 days. **(7 Marks)**

QUESTION THREE (15 MARKS)

- a. Briefly explain the origin and possible causes of salt build up in the irrigated soils. **(5 Marks)**
- b. Quality of irrigation water is influenced by the constituents of the soil which is to be irrigated. Briefly describe the various types of impurities or parameters that affect irrigation water quality. **(12 Marks)**

QUESTION FOUR (15 MARKS)

a. Briefly describe the variation of crop water requirement and the factors that influence it.

(5 Marks)

b. The following are details from an irrigation farm within Siaya County; **(10 Marks)**

Area of farm 20 acres

Pump working for 10hrs/day

Available moisture holding capacity of soil = 16cm per m soil depth

Depth of Root zone = 90 cm

Irrigation to be done at 55% depletion level.

Water Application efficiency = 75%

Peak Rate moisture used by crop = 5mm

Losses in water conveyance = 0

- i) Determine irrigation period,
- ii) Net depth of water application
- iii) Depth of water pumped per application
- iv) Capacity of irrigation pump in hectare – cm/day

QUESTION FIVE (15 MARKS)

a. Explain what you understand by the term water logging.

(3 Marks)

b. Kano plains is a floods prone area. As a government officer in charge of the area explain how you would handle the situation.

(12 Marks)