

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DIPLOMA IN AGRICULTURE

AGEN 0353: IRRIGATION AND DRAINAGE

STREAMS: DIP. AGRI

TIME: 2 HOURS

DAY/DATE: TUESDAY 09/04/2024

2.30 P.M. – 4.30 P.M.

INSTRUCTIONS

- Answer ALL questions in section I and any other two in section II
- Do not write on the question paper

SECTION 1

1. Discuss briefly the history of irrigation in Kenya (5 marks)
2. Discuss four factors that influence the choice of an irrigation method (12 marks)
3. Define Land drainage (2 marks)
4. List seven steps followed in the design of a land drainage system (4 marks)
5. a) A soil sample was collected from an irrigated field, weighed 240 gms. After drying in an oven for 24hrs at a temperature of 105°C it weighed reduced to 195gms. The weight of the weighing Can was 85gms. Determine the moisture content of the soil sample. (3marks)
- b) Explain the following irrigation efficiencies
 - i. Transpiration efficiency. (2.5 marks)
 - ii. Water application efficiency. (2.5marks)
- 6) List three factors that influence irrigation efficiency (3 marks)
- 7) Give four disadvantages of drip irrigation (4 marks)
- 8) Compute the consumptive use for maize for the month of September. The maize is grown in a

Field located at latitude 41.5 N and for this location. Mean monthly temperature is 23.9°C. The average percentage of the day time hour of the year for September is 10.32. The crop coefficient is 0.6. (2 marks)

SECTION II

- 9) a) Explain Two factors that influence consumptive use of crops (5 marks)
b) Describe the drip method of irrigation (5 marks)
c) By use of a diagram explain how you can directly measure the plant consumptive use by use of a lysimeter (5 marks)

- 10) a) By use of a diagram explain how infiltration rate can be obtained in a rice field by use of a double ring infiltrometers. (6 marks)
b) i) Define the term field capacity and explain how it is obtained in the field (3 marks)
ii) Discuss three contributions of irrigation to the Kenyan National economy (6 marks)

- 11) a) Explain FOUR benefits of irrigation (8 marks)
b) Explain four causes of salts in irrigation water (7 marks)

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