



TECHNICAL UNIVERSITY OF MOMBASA
FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING
ECE 2405: IRRIGATION ENGINEERING I
END OF SEMESTER EXAMINATION
SERIES: SEPT. 2017
TIME: 2 HOURS

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of five questions.

Answer question ONE (COMPULSORY) and any other TWO questions

Do not write on the question paper.

QUESTION ONE (COMPULSORY)

- a) Discuss natural condition as criteria for choosing the type of irrigation a farmer should adopt (10 Marks)
- b) Outline the general rules of conducting irrigation (4 Marks)
- c) Discuss the main soil moisture sensing instruments commonly used in irrigation scheduling (9 Marks)
- d) Explain briefly the environmental factors that affect the rate of evapo-transpiration (7 Marks).

ATTEMPT ANY TWO QUESTIONS

QUESTION TWO

- a) Discuss general factors about planning of an irrigation system (12 Marks).
- b) Describe the main components of a sprinkler irrigation system (8 Marks).

QUESTION THREE

- a) Explain briefly types of Pressures applied in the calculating pressure heads of an irrigation system (8 Marks).
- b) What are the main advantages and disadvantages of furrow irrigation system (10 Marks).
- c) Define Irrigation (2 Marks).

QUESTION FOUR

- a) Explain how soil – water and lysimetry methods are applied in measuring evapotranspiration (12 Marks).
- b) Discuss the following terms that depict movement of water in the soil:

- i). Saturated flow of water
- ii). Unsaturated flow of water
- iii). Capillary rise of water in soil
- iv). Drainage of water in the soil

QUESTION FIVE

a) Discuss the following important terms used in the management of water in irrigation system.

- i). Reference crop evapotranspiration
- ii). Soil water content or moisture content.
- iii). Permanent wilting point
- iv). Maximum allowable depletion, or MAD
- v). Evapotranspiration, abbreviated as ET (10 Marks)

b) Outline the requirements for border irrigation system (10 Marks)

