



SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATIONS 2014/2015

SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR BACHELOR OF SCIENCE IN HYDROLOGY

WRM 202: WATER AND IRRIGATION

DATE: 20th APRIL 2015

TIME: 2 HOURS

Instructions:

- a) Answer all the questions in section A (30 marks).
- b) Answer any **two (2)** questions in Section B (40 marks).
- c) Maximum marks for each question are as shown.
- d) Illustrate your answers with carefully drawn sketches and diagrams where appropriate;

Section A

1. (a) Name three important factors that affecting the estimation of potential evapotranspiration **(3 marks)**
(b) List two factors which make crop evapotranspiration under normal conditions to differ from the reference crop evapotranspiration under the same climatic conditions. **(2 marks)**
2. (a) Express crop water need in-terms of potential ET and actual ET **(1 mark)**
(b) List four variables which need to be measured in the evaluation of effective rainfall **(4 marks)**
3. (a) Name two soil characteristics which govern the soil pore space and pore-size distribution **(2 marks)**
(b) Rank the following soil texture classes in ascending order (from the smallest to the highest) with regard to plant available water (PAW) holding capacity: sandy loam; sand and; loam. **(3 marks)**
4. (a) List two empirical methods for estimating the evaporation rates of crops **(2 marks)**
(b) List three factors which determine the pan coefficient, K pan. **(3 marks)**
5. In furrow irrigation, the speed of water movement in the furrows is determined by many factors. Name five of them. **(5 marks)**
6. List three objectives of irrigation management **(3 marks)**
Name four functional irrigation schemes in Kenya **(2 marks)**

Section B

7. (a) Compare and contrast surface and drip irrigation methods of irrigation **(10 marks)**
(b) Explain five factors which need to be considered for effective irrigation scheduling **(10 marks)**
8. (a) Discuss three most common soil problems encountered and used as a basis to evaluate water quality in irrigation **(12 marks)**
(b) Explainfour possible drought mitigation strategies **(8 marks)**
9. (a) Discuss five ways of improving efficiency in conveyance of irrigation water **(15 Marks)**
(b) Briefly discuss the importance of monitoring an irrigation system **(5 marks)**