



SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATION 2014/2015

SUPPLEMENTARY EXAMINATIONS FOR THE BACHELOR OF SCIENCE IN HYDROLOGY AND WATER RESOURCES MANAGEMENT

WRM 104: PRINCIPLES OF HYDROLOGY

Date:

Time Allowed: 2 HRS

Instructions:

- a) Answer ALL questions in Section A (30 marks)
- b) Answer any two (2) questions in Section B (40 marks)
- c) Maximum marks for each question are shown.
- d) Illustrate your answers with carefully drawn sketches and diagrams, where necessary.
- e) Time allowed: 2 hours.

SECTION A

1. Explain key features of the hydrological cycle (5 marks)
2. With the aid of diagrams, explain the following:
 - (a) Warm front (2 marks)
 - (b) Cold front (2 marks)
 - (c) Frontal surface (1 mark)
3. Differentiate between the Dry Adiabatic Lapse Rate (DALR) and Saturated Adiabatic Lapse Rate (SALR) (5 marks)
4. (a) What is a cyclonic system? (1 mark)
(b) Briefly, explain the main stages in the formation of a cyclonic system (4 marks)
5. (a) Briefly, explain how dynamic factors influences rainfall formation (2 marks)
(b) State the three (3) main types of rainfall (3 marks)
6. Define the following:
 - (i) Specific humidity (1 mark)
 - (ii) Absolute humidity (1 mark)
 - (iii) Relative humidity (1 mark)
 - (iv) Dew Point temperature (1 mark)
 - (v) Vapour pressure (1 mark)

SECTION B

7. (a) What is greenhouse effect? (5 marks)
(b) Discuss the key features of the heat energy budget of the earth (15 marks)
8. (a) What is a drainage basin? (5 marks)
(b) Discuss the main applications of drainage basin delineation (15 marks)
9. (a) Explain how rainfall is measured (4 marks)
(b) Discuss the four (4) methods that are used in the determination of spatial distribution of rainfall (16 marks)