



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2014/2015

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER DIPLOMA IN CIVIL ENGINEERING

BCECD315: HYDROLOGY

Date: 8/08/2016

Time: 2:00 – 4:00PM

Instructions:

- This paper comprises five questions
- Question **one** is **compulsory** and carries 30 marks
- All other questions carry 20 marks each
- Answer question **one** and any other **two** questions

TOTAL: 70 MARKS

QUESTION ONE (30 MARKS)

- a) What is hydrology?(2 marks)
- b) Describe the hydrologic cycle (4 marks)
- c) Describe how the evaporation process from a water surface is different from the evaporation process from a moist soil surface (4 marks)
- d) What are the different types or(forms) of precipitation (6 marks)
- e) What are the functions of hydrology in water resources development (6 marks)
- f) Differentiate between mean and media (4 marks)
- g) What do you understand by RUNOFF(4 marks)

QUESTION TWO (20 MARKS)

- a) Give TEN applications of hydrology. (10 marks)
- b) The annual rainfall at a place for a period of 10 years from 1961 to1970 are respectively 30.3, 41.0, 33.5, 34.0, 33.3, 36.2, 33.6, 30.2,35.5, 36.3. Determine the mean and median values of annual rainfall for the place. (10 marks)

QUESTION THREE (20 MARKS)

- a) Explain the hydraulic cycle in nature with the help of a neat sketch, indicating its various phases. (10 marks)
- b) Write short notes on evaporation and transpiration (10 marks)

QUESTION FOUR (20 MARKS)

- a) For a particular rainfall event, you have measured the following flow rates (no base flow) for a 1000-acre watershed. Estimate the runoff depth for this storm. (20 marks)

Time (hr)	Flow Rate (cfs)	Time (hr)	Flow Rate (cfs)
0	0	2.5	750
0.5	500	3.0	300
1.0	1500	3.5	200
1.5	2000	4.0	50
2.0	1000	4.5	0

QUESTION FIVE (20 MARKS)

- a) State and explain FOUR factors that affect floods (8 marks)
- b) Briefly explain Darcy's law (4 marks)
- c) Explain FOUR factors that affect the rate of evaporation (8 marks)