



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBCE 12M)

EBC 2305: HYDROLOGY

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2014

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer any **THREE** questions of the **FIVE** questions

All questions carry equal marks

Maximum marks for each part of a question are as shown

Use neat, large and well labeled diagrams where required.

This paper consists of **TWO** printed pages

Question One

- a) Define the hydrological cycle. **(3 marks)**
- b) Using illustrations, outline the stages of the hydrologic cycle **(12 marks)**
- c) Explain run-off **(3 marks)**
- d) Outline the parts of a hydrograph **(4 marks)**

Question Two

- a) Outline the main types of precipitation **(8 marks)**
- b) What factors are necessary for precipitation **(3 marks)**
- c) Briefly describe measures for reducing flood damages **(7 marks)**
- d) Define “Pan Evaporation” **(2 marks)**

Question Three

- a) Define a flood **(2 marks)**
- b) Describe a rainfall measuring equipment and its siting. Use illustrations **(8 marks)**
- c) Explain “Return Period” of a storm or flood **(4 marks)**
- d) Outline the “groundwater” zones **(6 marks)**

Question Four

- a) In stream flow, describe the following terms:
 - (i) Influent
 - (ii) Effluent
 - (iii) InsulatedUse Illustrations **(10 marks)**
- b) Describe the procedure for estimating a missing rainfall data. **(8 marks)**
- c) Define an aquifer **(2 marks)**

Question Five

- a) Define “base flow” separation in hydrography. **(4 marks)**
- b) Outline TWO methods of presenting rainfall data. Use illustrations **(8 marks)**
- c) Explain the following techniques for converting precipitation measurements to “Areal” estimates:
 - (i) Arithmetic mean

- (ii) Isohyetal analysis
- (iii) Thiessen polygon

(8 marks)