THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECE 2513: WATER RESOURCES ENGINEERING II

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2012
TIME: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions.
Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Outline the objectives of water planning at the national level.   **(6 marks)**
b) Outline the objectives of water planning at the river basin or project level.   **(2 marks)**

c) Discuss the environmental consequences of water-resource projects. **(22 marks**)

Question Two

a) Discuss the factors that hinder the construction of accurate models in water resources planning and management projects. **(18 marks)**

b) Define the term optimization. **(2 marks)**

Question Three

Show how climate change will exacerbate an already precarious situation, creating a vicious cycle of destructive weather phenomena in the arid and semi-arid Northern Kenya and propose mitigation measures. **(20 marks)**

Question Four

a) Outline the **THREE** parts of a typical complete water code. **(3 marks)**

b) Explain a major role played by water law in the economic aspects of water development.
(1 mark)
c) State the doctrine of riparian rights. **(4 marks)**

d) What serious defects does the riparian doctrine have in modern society? **(12 marks)**

Question Five

a) Discuss the management of reservoir systems **(17 marks)**
b) Outline the major criticisms with precontract problem approach for water supply. **(2 marks)**
c) Mention an alternative to this approach. **(1 mark)**