TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR DECREE IN:

BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE Y5 S2)

ECE 2513: WATER RESOURCES ENGINEERING II

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
TIME ALLOWED: 2 HOURS

Instructions to Candidates:
You should have the following for this examination
- *Answer Booklet*
- *Pocket Calculator*

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
Use neat, large and well labeled diagrams where required
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) Describe complete with a model the term known as Dynamic Programming **(8 marks)**

b) Describe the General Format of Dynamic Programming **(8 marks)**

c) Outline the possible environmental consequences of water resources projects **(14 marks)**

Question Two

a) Describe the optimization techniques that are available for use **(10 marks)**

b) Outline FOUR factors which hinder the construction of accurate models in water Resource Planning. **(10 marks)**

Question Three

a) Define the following terms:

(i) Dead storage
(ii) Normal pool level
(iii) Useful storage
(iv) Yield
(v) Minimum pool level
(vi) Safe yield **(10 marks)**

b) (i) Describe what a pre-contract problem is meant to achieve in the management of reservoir systems **(5 marks)**

(ii) Describe what a Pre-contract problem is meant to achieve **(5 marks)**

Question Four

a) Define the term Drought **(2 marks)**

b) Outline the importance of water law and National water policy of a region **(15 marks)**

c) A typical complete water code consists of 3 parts, outline them **(3 marks)**

Question Five

a) Define the term optimization **(3 marks)**

b) Define the term planning in the context of planning for water-resource development **(7 marks)**

c) Water codes often specify the procedures to be followed for the administration of water rights, outline 3 of them **(10 marks)**