



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2011/2012

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (WATER AND ENVIRONMENTAL ENGINEERING)

SET 521: WATER RESOURCES MANAGEMENT

DATE: Tuesday, 29th November, 2011

TIME: 8.00 a.m. – 10.00 a.m.

INSTRUCTIONS:

- A. The Exam script contains **FOUR** questions in total
 - B. Answer Question **ONE** and any other **TWO** Questions
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QUESTION ONE

- 1.1 Using a schematic figure, illustrate and discuss the sources and quality of water resources from the perspective of its use
(8 marks)
- 1.2 Identify and explain any FOUR water sources available within your locality
(8 marks)
- 1.3 Define the following terminologies as applicable in water resources management
 - (a) Water withdrawal
 - (b) Consumptive Use
 - (c) Water demand
(6 marks)
- 1.4 Explain any THREE large scale uses of water resources today
(3 marks)

QUESTION TWO

- 2.1 Discuss into details some of the environmental challenges affecting the quality and quantity of water resources today (10 marks)
- 2.2 Under the “Blue Revolution theory” what are some of the technologies needed for drought-prone areas to attain a reasonable degree of self-sufficiency in terms of food and fodder (6 marks)
- 2.3 Discuss into details the THREE objectives for water resource planning (9 marks)

QUESTION THREE

- 3.1 Define the terminology Integrated Water Resources Management (IWRM) (5 marks)
- 3.2 Using a schematic figure, explain the flow of activities in water resources planning (6 marks)
- 3.3 Explain the FIVE important stages of water resources planning (8 marks)
- 3.4 Integrated water resource management, requires active contribution of various stakeholders. Explain the advantages of Public involvement (PI) in this context. (6 marks)

QUESTION FOUR

- 4.1 Define the terminologies below as relates to water resources management:
(a) River basin
(b) Externalities
(c) Polluter pays philosophy (6 marks)
- 4.2 Discuss the concept of integrated river basin planning and management under the following contexts:
(a) River basin scope and organization
(b) Operational management
(c) Water charges
(d) Water rights (12 marks)
- 4.3 Discuss any three models for integrated water resource management (7 marks)