



MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL SCIENCE

ECD 205: PRINCIPLES OF INTEGRATED WATERSHED MANAGEMENT

DATE: 25/7/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS:

Answer question ONE and any other TWO questions

QUESTION ONE (30 MARKS)

- a) Explain the following concepts
- i. Watershed (2 marks)
 - ii. Integrated watershed management (2 marks)
 - iii. Geographic Information System (2 marks)
 - iv. Physical models (2 marks)
 - v. Lumped hydrological Models (2 marks)
- b) Using the Athi river basin as an example, explain the key elements you would consider in designing a holistic management approach for the basin (20 marks)

QUESTION TWO (20 MARKS)

Discuss the main challenges in the planning and implementation of the integrated watershed management approach in Kenya

QUESTION THREE (20 MARKS)

Watershed modeling is one of the approaches used in the characterization of watershed. Discuss the key steps in watershed modeling process

QUESTION FOUR (20 MARKS)

- a) Citing relevant examples, explain the steps necessary in developing data Quality Objectives for watershed monitoring (14 marks)
- b) Using appropriate examples discuss types of data gaps that collection of additional information during watershed planning and management (6 marks)

QUESTION FIVE (20 MARKS)

Discuss the watershed planning process and the different indicators that can be used in the process