MACHAKOS UNIVERSITY

University Examinations for 2018/2019 Academic Year

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCE MANAGEMENT

DEPARTMENT OF ENVIRONMENTAL SCIENCES

SECOND YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF ENVIRONMENTAL STUDIES AND COMMUNITY DEVELOPMENT

ECD 205: PRINCIPLES OF INTEGRATED WATERSHED MANAGEMENT

DATE: 7/5/2019 **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) Adaptive management (2 marks)

iv) Decision support system (2 marks)

v) Distributed hydrological models (2 marks)

b) Using Tana river basin as an example, discuss the key elements you would consider in designing an integrated management approach for the basin (10 marks)

c) Citing relevant examples, evaluate the significance of modern technologies in integrated watershed management. (10 marks)

QUESTION TWO (20 MARKS)

Discuss the general procedure in watershed planning process and different indicators that can be used in each step

QUESTION THREE (20 MARKS)

Watershed modeling is one of the approaches used in the planning and implementation of integrated watershed management. 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 may necessitate collection of additional data during watershed planning and management. (6 marks)

QUESTION FIVE (20 MARKS)

Citing relevant examples, discuss the fundamental constraints and opportunities for the implementation of integrated watershed management in your county.