



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2007/2008

SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR
ENVIRONMENTAL PLANNING AND MANAGEMENT

EPM 332: ENVIRONMENTAL SYSTEMS ANALYSIS AND MODELING

DATE: Thursday, 19th June, 2008

TIME: 8.00 a.m. – 10.00 a.m.

INSTRUCTIONS:

Attempt question **ONE** and **TWO** other questions.

Question 1

- a) Explain the term 'environmental modeling' as used in Environmental Planning and Management. (5 marks)
- b) Explain **three** main reasons why Environmental processes are modeled (9 marks)
- c) Discuss the main steps involved in the modeling process. Comment on the key emphasis at each step (16 marks)

Question 2

- a) Explain the following terms:
 - System
 - Systems analysis
 - Systems approach(12 marks)
- b) Demonstrate the application of Systems theory in any one area of the environment of environmental process modeling. Use diagrams to illustrate your answer where appropriate (8 marks)

Question 3

- a) Define the term 'air pollution' (2 marks)
- b) Most African capitals experience acute air pollution challenges. Describe the sources of air pollution in such cities (4 marks)
- c) With regard to air pollution, what do you understand by the term 'emission factors' (2 marks)
- d) In the event you are hired as a consultant to assist in a project to model air pollution in such cities, outline the general principles you would adopt as a guide in executing your assignment. (12 marks)

Question 4

Environmental planners and managers make decisions on environmental issues based on analysis of data collected in the context of spatial location of the phenomenon under investigation. Discuss the sources of spatial data in EPM disciplines, comment on their accuracies, equipment used and relative costs of each data type. (20 marks)

Question 5

Forests are an important natural resource in Kenya; however their rate of depletion seems to far outweigh the reforestation efforts. Discuss a practical method you would propose for the long term monitoring of the forest cover in Nairobi Province. Comment on the reliability of your probable findings. (20 marks)
