



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2009/2010

**FIRST SEMESTER EXAMINATION FOR THE DEGREE OF MASTER OF
SCIENCE IN ENVIRONMENTAL PLANNING AND MANAGEMENT**

EPM 533: COMPUTER APPLICATIONS AND GIS

DATE: Thursday, 29th July, 2010

TIME: 9.00 a.m. – 12.00 p.m.

INSTRUCTIONS:

Answer any **THREE** questions.

Question One

Geographical Information Science and Remote Sensing are two of the important computer application methods for analyzing complex problems and issues in Environmental planning and management.

- a) Explain what you understand by the term “Geographical Information System” and outline the computer components of a geographical information system. (5 marks)
- b) What do you understand by the term ‘Spatial analyses’ as used in computer applications for environmental management? Explain three methods that you would use for spatial analysis. (8 marks)
- c) Describe the major sources of data used for various applications in computer applications in environmental planning and management. (7 marks)

Question Two

- a) Most of the useful data needed for analyses in various applications in GIS and Remote Sensing are not in digital form but in analogue form. Explain the methods and equipments you would use to convert analogue maps, aerial

- photographs and existing reports into digital form for easy computer assisted digital analysis. (10 marks)
- b) Mention and explain some advanced technologies used for primary data acquisition for GIS. (10 marks)

Question Three

- a) Explain the required functions for a spatial database and outline the benefits you would derive from such a database. (10 marks)
- b) Explain five major characteristics of an ideal geospatial information system that can be relied upon in solving various issues and problems in planning and management. (10 marks)

Question Four

- a) Explain four characteristics of satellite remote sensing that makes it ideal and important source of data for analysis of various problems and applications in GIS. (8 marks)
- b) Briefly explain the various stages that you would need to go through while processing data from remote sensing. (6 marks)
- c) Explain how you would create a map document of different layers using ARCGIS. (6 marks)

Question Five

You have been approached by the ministry of tourism as an expert in computer applications in Environmental planning and management to advice on how the ministry can carry out a comprehensive analysis of land use/land cover and wildlife analysis in the Masai Mara game reserve.

- a) In your advice to the Ministry, explain giving reasons the satellite data you would recommend for use in land use/cover analysis for Masai Mara game reserve. (4 marks)
- b) What other data would you use to compliment the satellite imageries? (4 marks)

- c) Briefly outline the methodology you would adopt for your analysis.
(6 marks)
- d) Explain how GIS can be used in the management of this important resource.
(6 marks)