



MASENO UNIVERSITY
UNIVERSITY EXAMINATIONS 2013/2014

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE OF BACHELOR OF SCIENCE IN EARTH SCIENCE WITH
INFORMATION TECHNOLOGY

(MAIN CAMPUS)

NGA 209: GIS AND MODELING

Date: 7th April, 2014

Time 11.15 a.m. - 1.30 p.m.

INSTRUCTIONS:

- Answer Question ONE and any other TWO questions.
- Sketch maps and diagrams should be used whenever appropriate.

NGA 209: GIS AND MODELING

1. a) Explain how GIS can be used as a decision support tool. (4 marks)
- b) Explain the following as used in GIS:
 - i. Inherent errors (5 marks)
 - ii. Operational errors (5 marks)
 - iii. Connectivity analysis (8 marks)
- c) Explain the benefits derived from implementation of GIS. (8 marks)
2. Discuss the importance of using a database management system for data storage and processing. (10 marks)
- b) Discuss factors that contribute to the failure of a GIS implementation strategy. (10 marks)
3. a) Write short notes on the following:
 - i) Relational data models (7 marks)
 - ii) Topology (8 marks)
- b) Examine the various sources of data in GIS. (5 marks)
4. a) Examine the key future developments and trends in a GIS application (8 marks)
- b) Discuss the major capabilities for manipulation and transformation of spatial data in a GIS application (12 marks)
- 5 a) Explain the salient features an analyst needs to consider for successful implementation of a GIS strategy. (10 marks)
- b) 'GIS is a multidisciplinary science'. Discuss. (10 marks)
6. a) Examine analytical functions utilized in development of models in GIS. (14 marks)
- b) Explore three major features fundamental to the definition of a geographic phenomena. (6marks)