

# UNIVERSITY OF SOUTH AUSTRALIA

DIVISION OF INFORMATION TECHNOLOGY, ENGINEERING AND THE ENVIRONMENT

School of Geoinformatics, Planning and Building

Semester 1, 2001

## **Earth Data Management: 10250**

Time Allowed : 3 hours + 10 minutes reading time

### **General Instructions to Candidates**

Total marks = 100

This examination paper contains two Sections: 1 and 2. Each Section contains three questions. Candidates are required to attempt TWO questions from each Section.

All questions are of equal value.

Please ensure that the front of the answer book is completed with your name, student I.D. number, course, subject name and section of the examination (if applicable).

## SECTION 1

**Attempt any TWO of the following three questions.**

**Question 1 [25 marks]**

- a) What benefits can be expected though the introduction of data custodianship policies? [5 marks]
- b) Describe the “parcellation” or “unique land parcel identification” project and the reasons for its introduction. [7 marks]
- c) What initiatives have been undertaken in SA to develop metadata directories? [8 marks]
- d) Briefly explain 5 key objectives of land information management. [5 marks]

**Question 2 [25 marks]**

- a) What rights and responsibilities apply to data custodians and data users under custodianship principles? [7 marks]
- b) Describe the components of the Survey Database? [6 marks]
- c) Discuss the three elements that form the basis of copyright law. [5 marks]
- d) What are the major elements of data quality? [7 marks]

**Question 3 [25 marks]**

- a) Describe the information privacy principles (listed in Cabinet Administrative Instruction No. 1 of 1989) applicable to South Australian Government information. [10 marks]
- b) Explain why metadata is important to land information management? [5 marks]
- c) Describe the main attributes required for an efficient land parcel identifier and choose an identifier used in SA and assess its strengths and weaknesses in relation to these criteria? [10 marks]

**SECTION 2**

**Attempt any TWO of the following three questions.**

**Question 4 [25 marks]**

- a) Discuss the issue of normalization particularly with respect to spatial data. [8 marks]
- b) What are the key benefits of sharing of databases, and what are the alternatives and their risks? [6 marks]
- b) What types of relationships can exist between entities in an entity-relationship diagram? [6 marks]
- d) List and describe five categories of metadata included in the ANZLIC Metadata Guidelines. [5 marks]

**Question 5 [25 marks]**

- a) Describe and define the basic elements in an entity-relationship diagram. [5 marks]
- b) What function does an index perform? What, if any, are the negative impacts of indices? [5 marks]
- c) Briefly explain the importance of geographic information standards to:
- the integration of information in a GIS environment;
  - the emerging market for mobile location based services.
- [15 marks]

**Question 6 [25 marks]**

- a) Compare and contrast the roles of ISO/TC 211 and the Open GIS Consortium in the development of standards for geospatial information. [15 marks]
- d) Describe how data linkages between tables, databases and systems are created and used. Explain why linkages may be flawed and how this flaw can be minimised. [10 marks]