

UNIVERSITY OF SOUTH AUSTRALIA

DIVISION OF INFORMATION TECHNOLOGY, ENGINEERING AND THE
ENVIRONMENT

School of Natural and Built Environments

Semester 1, 2005

Introduction to Mapping Sciences : GEOE 1009

Time Allowed : 2 hours + 10 minutes reading time

General Instructions to Candidates

Marks for questions are shown at the beginning of each question.

Answer **ALL** questions.

Programmable calculators are permissible.

Please ensure the front of your answer books are completed with your name, student I.D. number, course and section of the examination.

SECTION A

QUESTION 1

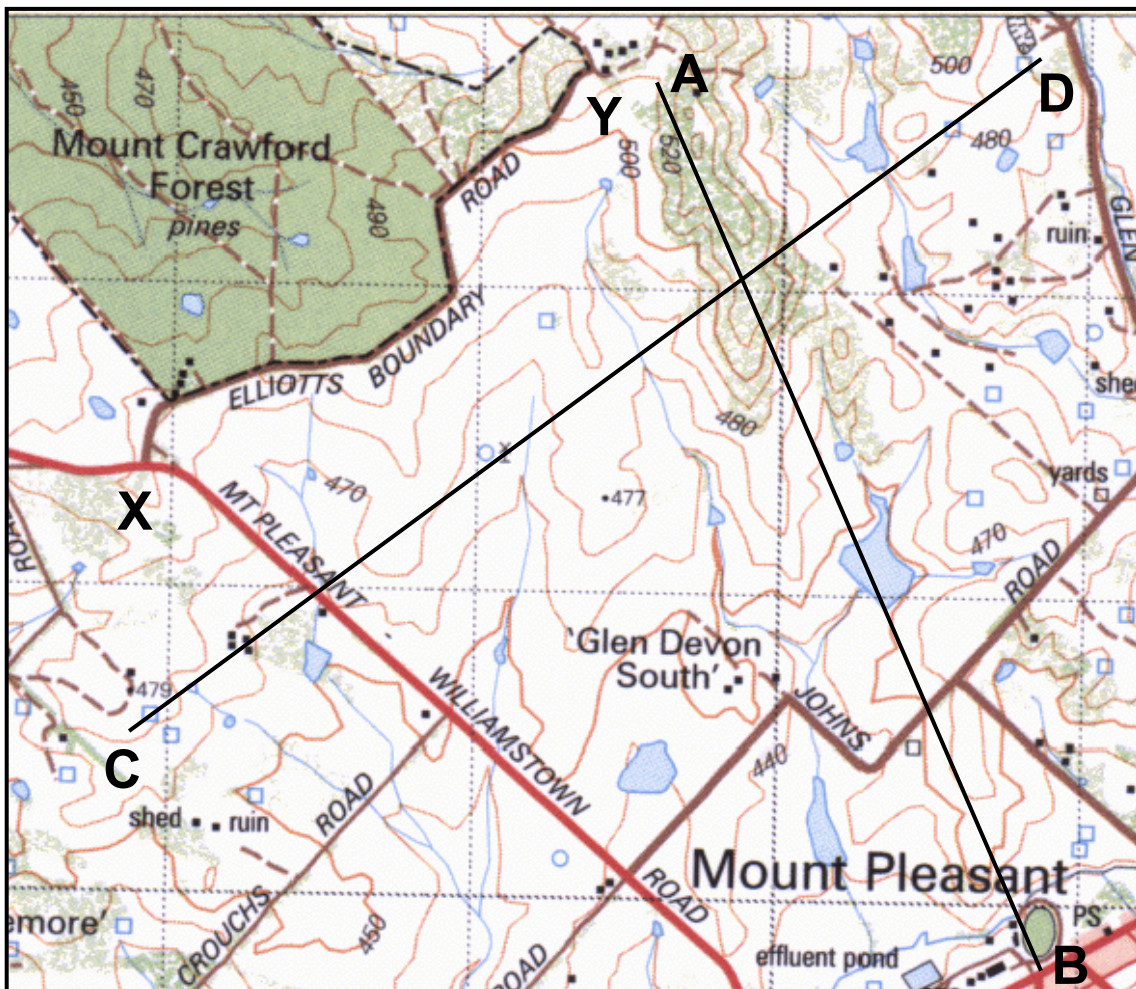
(30 Marks)

During this subject you were introduced to reading and interpreting a 1:50000 topographic map. You would now be aware of the primary aim of a topographic map. You are required to examine the map below and extract some general map information.

- a. You are required to produce two separate profiles (A-B and C-D) with vertical exaggeration of 2 times ? Show all working.

Note: When creating the profiles you must show geographic features along the transect eg. lakes, buildings, etc...

- b. What is the length in metres of “Elliotts Boundary Road” (X–Y) ?
- c. Briefly explain the difference between a general topographic map and an aircraft navigational chart ?



QUESTION 2**(20 Marks)**

You are part of a GIS team within the Department of Human Services. You have been asked to assist in developing a GIS Intranet site for staff within a call centre. The GIS Intranet application is to be used to find and locate general facilities and services which are provided by the department, for their customers.

The application must be able to identify the health services, their addresses and an array of contact details. Additional spatial information is required to give the operator sufficient details to locate the facilities.

The second component of this application is to produce hardcopy maps that will be created by the map server for staff to send out to customers.

- a. Explain why an internet map server and spatial data engine when combined, provide an effective tool for serving maps ? When needed use diagrams.
- b. Why do cartographers / GIS web developers need to be mindful of colours, symbology and text placement when creating web applications that serve maps in digital and hardcopy form ?

SECTION B**(2 Marks each)****Question 1**

The background of a map or document affects the hierarchy/impact of lettering ?

- a. True
- b. False
- c. No impact

Question 2

In which year was colour infra-red aerial photography first used ?

- a. 1930
- b. 1910
- c. 1950
- d. 1945

Question 3

What is the ground distance when the measured distance on a map is 12.8mm and the representative fraction is 1:2500 ?

- a. 320 metres
- b. 54 metres
- c. 32 metres
- d. None of the above

Question 4

What does the term GDA94 refer to ?

- a. Geographic Data for Australia 1994
- b. Geodetic Datum of Australia 1994
- c. Geocentric Datum for Australia 1994
- d. Geodetic Datum of Australia 1894

Question 5

Why is generalisation used in creating a map ?

- a. Reduces complexity
- b. Retain spatial and attribute accuracy
- c. Provides more effective communication
- d. All of the above

Question 6

To create the colour blue within the RGB environment, what values would you use ?

- a. 0,0,200
- b. 0,200,150
- c. 0,0,255
- d. 255,255,0

Question 7

The processing of text sometimes requires you to place text in an ordinal format, what does this mean?

- a. Hierarchy
- b. Location
- c. Arrangement
- d. Indicative class

Question 8

What components makes good map design?

- a. Content
- b. Symbol design
- c. Layout
- d. Photographs
- e. All of the above

Question 9

The term SDE refers to ?

- a. Spatial Data Effectiveness
- b. Spatial Directory Engine
- c. Spatial Data Engine
- d. Software Distributed Enterprises

Question 10

Why is a Internet Map Server useful to a cartographer ?

- a. It has GIS and mapping capabilities
- b. Provides a secure network environment to communicate
- c. Supports a wide range of people
- d. Integrates multiple file types

SECTION C**QUESTION 1****(10 Marks)**

The best two methods to represent the landform surface in maps are contours and hill shading (separately and together).

- a. Discuss and compare the use of contours and hill shading for representing the landform surface ?
- b. To facilitate the interpretation of contours there are several widths and styles, list and briefly explain these ?

QUESTION 2**(5 Marks)**

What are the four basic geographic variables:

- a. Explain each of them and use real world features for examples ?
- b. When tabular data is added to one of the geographic variables, it becomes a different type of variable. What is this called ?

QUESTION 3**(5 Marks)**

The area of a dam is measured from a 1:25,000 scale map to be 298 mm² at map scale. What is the ground area of the dam in hectares (Show calculation steps) ?

QUESTION 4**(5 Marks)**

When maps are created they generally make reference to scale, distance and coordinates, this ensure that the cartographer can reference the map back to a physical point on the Earths surface. Explain the relationship between these metrics ensuring that the discussion encompasses the issues of geodetic datum and map projection ?

QUESTION 5**(5 Marks)**

In 1799 Johann Georg Lehmann developed a method to display hills and mountains on a map. What was this method called ? Explain the advantages and dis-advantages of this method, and give a diagrammatic example ?