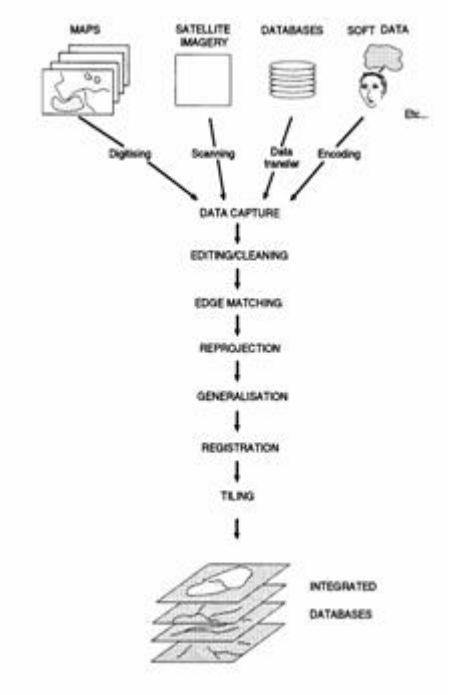
DEPARTMENT OF GEOGRAPHY, GEOINFORMATICS & METEOROLOGY
FACULTY OF SCIENCE
GGY 283 INTRODUCTORY GIS
SECOND SEMESTER TEST

5 October 2006 TIME: 1 HOUR

1. ACQUIRING THE DATA

1.1 Illustrate the data stream by means of a flow chart.

(12)



1.2 Explain what is meant by the:

1. completeness - covers the whole study area in terms of area and time period of interest
2. compatibility - they can be used together sensibly
3. consistency - the same source documents, time period and captured in a similar way.
4. applicability of a data set - The appropriateness or suitability of a data for a set of commands, operations or analyses

(4)

1.4 The following data sets are needed for the completion of a GIS project:

1. Roads
2. Soil types
3. Farms

The scale of the project is 1:10 000. Name one possible data source and one applicable encoding method for each data source. Give your answer in a tabular

form. You are not allowed to use the same source or encoding method more than twice.

(6)

Source	Encoding Method
1 Maps	Manual data encoding
	Scanning
	Digitising
	Electronic data transfer
2. Satellite images	Scanning and heads-up digitising
	Digitising
	Electronic data transfer
3. Aerial photographs	Scanning and heads up digitising
	Digitising
	Electronic data transfer
4. Surveying and GPS	Manual data encoding (Highly unlikely)
	Electronic data transfer
5. Statistical Data	Manual data encoding
	Scanning
	Electronic data transfer
6. Soft Data	Manual data encoding

1.5 Define the following data integration methods:

1. Rubber sheeting - The coverage to be re-projected is stretched to fit the target projection at a number of known control points, nailed into place, and then the rest of the coverage is adjusted accordingly
2. Tiling - It is the process by which the whole database is subdivided into spatial blocks (rather like map sheets)
3. Registration - At the end of all these processes of data integration - editing and cleaning, projection conversion, and generalisation - it is still unlikely that the various data sets that you are collecting will match exactly. Minor discrepancies will tend to remain between the coverages - a product of digitising, differences in the base maps used, or the effects of some of the editing and integration processes that you have been carrying out. These discrepancies often become apparent only when thematic coverages are overlaid on the geographic base. They may then appear as small **misregistrations**

(3)

2. ANALYSING THE DATA

2.1 Name the different analysis methods that can be used to analyse data in a GIS. Give an example of when you will use each analysis method.

(12)

Identify a features
Categorise features (or classification)
Find features based on certain attribute criteria (or attribute queries)
Measure features
Find features according to their location or relationship to other features (or spatial query or overlays)

Buffer

2.2 Name the different boolean operators that can be used when combing more than one attribute query.

(5)

And
Or
Not
XOr
NOR

2.3 Explain the steps that will be used for the development of an analysis model by means of an example.

(8)

The procedure for the development of an analysis model is as follows:

1. Identify the spatial data and attribute data sets that are required.
2. Use clear logic and natural language to develop the process of moving from the available data to a solution.
3. Set up a flow chart with steps to graphically represent the above process.
4. Annotate this flow chart with the commands necessary to perform these operations within the GIS you are using.

TOTAL/TOTAAL [50]