DEPARTMENT OF GEOGRAPHY, GEOINFORMATICS & METEOROLOGY
FACULTY OF SCIENCE
GGY283 INTRODUCTORY GIS
SECOND SEMESTER TEST

17 October 2005   TIME: 1 HOUR

1. ACQUIRING THE DATA

1.1 Define the following terminology:

- Data Stream - The whole process of data acquisition, data encoding and data editing is called the data stream.
- Primary Data - Data collected for the first time or data through first hand observation
- Secondary Data - Data collected by another individual or company
- Integrated Data Set - is a database where all the data has been verified, is of high quality and all the layers fit exactly on of each other.
- Data Quality – indication of how good a data set is

(5)

1.2 Name the encoding methods that can be used to capture data from analogue and digital maps. Discuss how the encoding methods will influence the quality of the data sets.

Source	Format	Encoding Method	Quality
1 Maps	Analogue	Manual data encoding	Can be of high quality if coordinates are typed correctly form General Land Surveyor maps or diagrams
		Scanning	Depends on source document
		Digitising	Depends on skills of operator and quality of source document
	Digital	Electronic data transfer	Depends on data stream followed

(8)

2. ANALYSING THE DATA

2.1 Name and explain 5 classification methods that can be used to display attribute data in classes when creating a choropleth map.
Individual values - The different classes are determined according to the attribute values in the data set
Natural breaks - These classes are based on natural groupings inherent in the attribute values. Class breaks are set where there is a big difference in values.
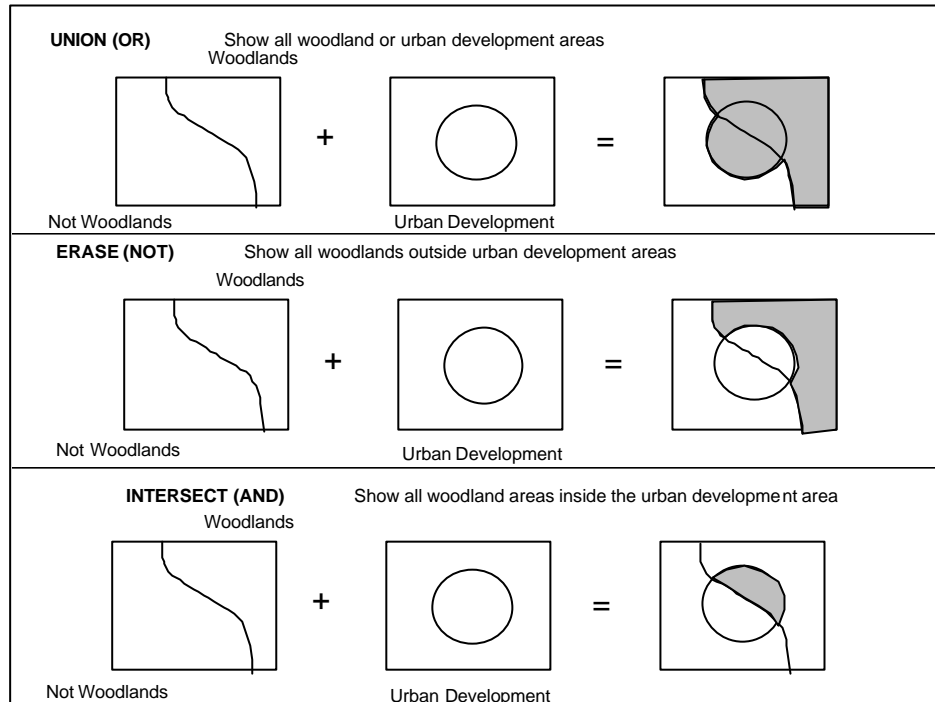Quantile - The data is classified in such a way that each class has an equal number of features in it.

Equal interval - In this classification method each class has and equal range of values
Standard deviation - The mean (or average) of the data set are determined and classes below and above the average is determined.

(10)

2.2 Name and illustrate the use of Boolean operators in a GIS when doing polygon on polygon overlays. Also give a practical example of when you will use each boolean operator.

(9)

2.3 You need to find a farm that can be bought and used for the relocation of a rare and wild animal species.
The following data sets are available:

Data Set	Spatial Data	Attribute Data
Farm Boundaries	Farms	Unique ID Owner Area/size Status (for sale or not for sale)
Rivers	Rivers	Name
Rainfall	Rainfall Areas	Rainfall in mm
Roads	Roads	Road name or number
Vegetation	Vegetation	Vegetation type

PLEASE NOTE THAT THERE CAN BE MORE THAN ONE METHOD TO ANALYSE THE DATA
The area must comply with the following conditions:

a) The area must be within a distance of 2 km from a perennial river.

2 km Buffer around the river. Overlay with farms

b) The area must have an annual rainfall of more than 500mm

Attribute query on rainfall

c) The area must be bigger than 20 ha and on properties that are for sale.

Attribute query on farms. And Boolean operator

d) The area must be covered by indigenous forest.

Attribute query or thematic map of vegetation. Overlay with farms

Explain which analysis method(s) you will use to analyse **EACH** statement.

(8)

3. <u>COMMUNICATING THE RESULTS</u>

3.1 Name and discuss the key map design elements that must occur on a map

1. A frame of reference,
2. the projection used,
3. the features to be mapped,
4. the symbolism used and
5. the annotation used
And write one or two relevant sentences.

(10)

TOTAL/TOTAAL [50]