

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

13 March 2006

TIME: 50 min

**1. BASIC CONCEPTS AND TERMINOLOGY**

1.1 Draw a diagram to illustrate the important role of information for decision making.

(6)

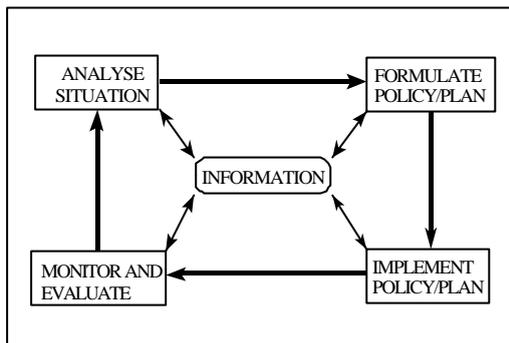


Figure 1.1 The Management Process

1.2 Name the four basic functions that GIS software must be able to perform to process geographic data.

(4)

**Techniques for data input** (converting data into digital format);

**Techniques for data management** (storage, organisation and retrieval of data);

**Methods to analyse data** (basic queries and modelling);

**Techniques for data display and output** (maps, graphs, tables).

**2. DESIGNING THE GIS MODEL OF REALITY**

2.1 Explain what a map scale is.

(2)

The scale of a map is the ratio between distances on the map and the distance on the real earth

2.2 Explain what a longitude and latitude is and how it is used to describe the location of entities on the earth's surface

(10)

**Longitudes** (also called meridians) cut through the poles. If you cut a globe along a longitude you will always divide the globe in half. All longitudes are equal in length. The prime meridian (0) is called Greenwich. (This line cuts through the Royal

Observatory in Greenwich in England.) Lines of longitude are widest apart at the equator and closest at the poles.

**Latitudes** are lines that lie at right angles with lines of longitude. They are concentric circles. Each circle will have a different circumference. The circle with the greatest circumference is called the equator. At the poles a point represents the latitudes.

Are measured from the centre of the earth to surface. Answer is given in degrees

2.3 Explain what a projection is.

(2)

This process of representing the spherical earth on a two dimensional surface is called a map projection

2.4 You need the following spatial data sets for the completion of a project.

Name the **basic** spatial feature type that you will use to represent each entity on computer:

- (i) Geology – Polygons/Areas
- (ii) Forests – polygons/Areas
- (iii) Roads - Lines
- (iv) Farms – polygons/Areas
- (v) Occurrence of giraffes in the specific area of study –

Polygons/Areas

The scale of the project is 1:10 000

(5)

2.5 Name and explain the different scales of measurement that can be used to record attribute data.

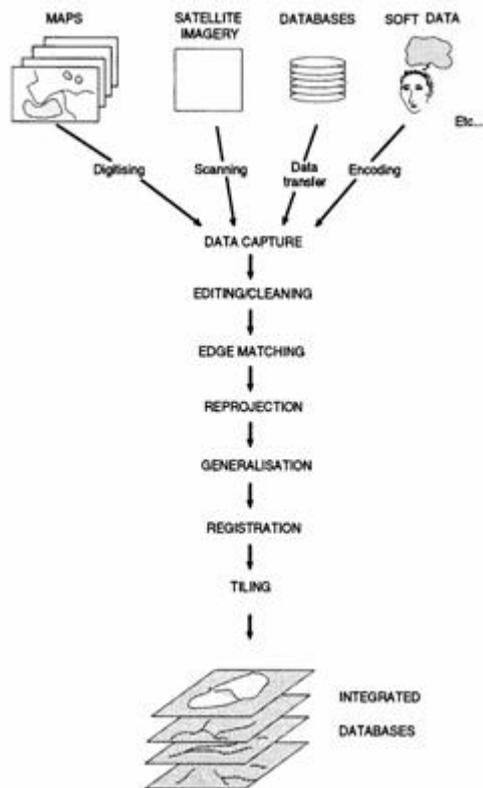
(8)

MEASUREMENT SCALE	PROPERTIES
NOMINAL	Use numbers to establish identify
ORDINAL	Used to establish order
INTERVAL	No absolute zero No real origin Negative values are possible
RATIO	Have an absolute zero No negative values

### 3. ACQUIRING THE DATA

3.1 Illustrate the data stream by means of a flow chart

(10)



3.2 Explain what is meant by the:

(i) consistency - were captured from the same source documents, time period and captured in a similar way.

(ii) compatibility - can be used together sensibly

(iii) and accuracy of a data set. - the faithfulness with which a spatial entity is represented

**TOTAL [50]**<sup>(3)</sup>