

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

08 March 2010

TIME: 50 min

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**1. BASIC CONCEPTS AND TERMINOLOGY**

- 1.1 Explain the difference between GIS and GIScience. (2)
- 1.2 Name the five main steps that should be followed when doing a GIS project. (5)
- 1.3 Name the basic functions that GIS software must be able to perform to process geographic data. (5)

**2. DEFINE THE INFORMATION PRODUCT**

- 2.1 Scenario: You are part of a GIS team who must assess the damages caused by a leaking mine to the human population and the environment. The leaking mine will affect all living organisms and water bodies within 2 km from the mine. The soil type and geology will determine the rate at which pollution may spread. The final result must be presented at a community forum. Define a research problem and four criteria for the GIS project. Where is the best route for a the new railway line. The best rout for the new railway line is where the following conditions apply:

(5)

**3. DESINING THE GIS MODEL OF REALITY**

- 3.1 Explain what a longitude and latitude is and how it is used to describe the location of entities on the earth's surface (10)
- 3.2 Explain what a map projection is. Name the map projection mostly used in South Africa. (3)
- 3.3 You need the following spatial data sets for the completion of a project. Name the spatial feature type that you will use to represent each of the following entities in a vector GIS:
- (i) Vegetation
  - (ii) Rivers
  - (iii) Boreholes
  - (iii) Roads
  - (iv) Farms
  - (v) Occurrence of lions in the specific area of study
- The scale of the project is 1:10 000 (5)
- 3.4 Name and explain the different scales of measurement that can be used to record attribute data. (8)
- 3.5 Describe the relational database as a way of modeling attribute data in a GIS. Use a practical example to illustrate the modeling of attribute data in this model.

(6)  
**TOTAL [50]**