



FACULTY	AGRICULTURE, ENGINEERING AND NATURAL SCIENCES		
DEPARTMENT	ENVIRONMENTAL SCIENCE		
SUBJECT	GEODATABASE MANAGEMENT		
SUBJECT CODE	GDM 3712		
DURATION	3 HOURS	MARKS	100

SUPPLEMENTARY EXAMINATION

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Internal Moderator: Martin Hipondoka, PhD

INSTRUCTIONS

1. Answer ALL the questions.
 2. Number the answers clearly.
- This paper contain three pages including this cover page.

SECTION A

1. Define the following terms:

- a) Database model (2)
- b) Data Warehouse (2)
- c) Data Clearing house (2)

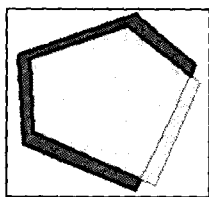
2. The OpenGIS specification contains 2 metadata tables. These metadata tables are available in PostGIS. Explain the contents of each table. (4)

3. PostGIS uses an R-Tree spatial index method. With the aid of a practical example, briefly describe how this works and why spatial indexes are of importance. (4)

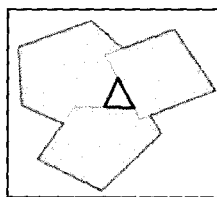
4. Give three definite advantages of storing features within a Geodatabases in comparison to working with simple shape files. (3)

5. Briefly discuss the importance of topology within a GIS. (3)

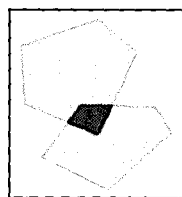
6. Name each type of topology error shown graphically below giving a 'real-world' example for each: (10)



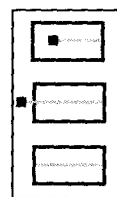
(a)



(b)



(c)



(d)



(e)

7. In your last practical submission you created a PostGIS database and loaded shapefiles. You also created tables from scratch. Name two main ways to input spatial data into our database. (2)

8. The success of the Namibia Spatial Data infrastructure is heavily dependent on metadata. What is metadata and what role does it play in an SDI? (6)

9.

- a) With the help of a real-life scenario, explain why spatial data standards are important in the storage and distribution of spatial data. (4)
- b) With the aid of examples, distinguish between the three types of spatial data standards. (6)

10. GIS objects supported by PostGIS are Simple Features as defined by OpenGIS. There are two ways for representing spatial objects in OpenGIS. Both ways include information about the object type and its coordinates. Mention these two forms. (2)

11. User education is essential in support of the efficient operation of spatial database systems and the effective use of spatial information. Four categories of users, who play relatively distinct roles with different requirements for education, can be identified for the purpose of developing a user education program. State three of these categories of users, outline their role in the efficient operation of a database and explain their educational requirements to achieve this. (9)

12. State and explain at least four common inherent difficulties with understanding user needs. (8)

13. With the aid of a diagram, outline the phases of the project management life cycle. Include two activities for each phase. (15)

14. With the aid of a diagram, illustrate the architecture of a web-enabled spatial database system. (10)

15. A data warehouse is a special type of database system that is set up and maintained separately from an organisation's operational databases that support its daily business. There are three different approaches to implementing a data warehouse. Name two of these approaches and distinguish between them in terms of purpose and systems architecture. (8)