GGR3A10/03A3

2018 – Memo

SECTION A (Mrs Schoeman)

QUESTION 1

Identify and discuss the different components of a GIS. (10)

Clear & detailed explanation of the following: 2 x 5 = (10)

Hardware

Software

Spatial data

Data management & analysis

People + clear explanation of each component

QUESTION 2

2.1 Distinguish between the different spatial referencing techniques. Also indicate the advantages and disadvantages of each technique. (10)

Geographical co-ordinates – explanation, adv. & disadv. (3)

QTM – explanation (1)

Rectangular co-ordinates – explanation, adv. & disadv. (3)

Non co-ordinates – explanation, adv. & disadv. (2)

Problems to all (1)

2.2 Outline the importance of map projections for GIS applications. (5)

Five implications (5)

QUESTION 3

Distinguish between the different vector data structures. Use sketches to illustrate your answer. (10)

Raster – explanation (3)

Raster sketch (1)

Vector – explanation, should discuss both spaghetti (simple) & topological structures (5)

Vector sketch (1)

QUESTION 4

"A GIS database can link all of your organization's digital data together based on a location, such as address. This could enable all departments of an organization to have access to, and share the same data, and ensure all departments and individuals are using the most up-to-date information. Better access to better quality and time-relevant data may help your organization make better decisions" (Frank Springer & Associates, 2014).

Explain how a GIS database can help to achieve the above. (10)

Advantages of using a DB (4)

Explanation of DB + RDBMS (4)

Linking of data (2)

QUESTION 5

The GIS project you are working on has a satellite image as a data source. You need to capture the satellite image and all the roads on the satellite image into your GIS. You also have a printed list of all the names of the roads of the area that needs to be captured. Explain in detail what data input methods you would use. (10)

Satellite image – electronic transfer (2)

Roads on satellite – digitizing (6)

Attribute data – keyboard entry (2)

QUESTION 6

6.1 You need to calculate the area of all the UJ campuses and the distance between them. Explain how you would do this in a raster GIS. (4)

Vector area (2)

Raster area (2)

6.2 Explain what Thiessen polygons are and how it is created. (4)

Explanation (4) + sketch (1) (5)

6.3 You work for the City of Johannesburg Human Settlement department. Identify and explain THREE GIS analyses that can be used in the planning of new residential areas. Motivate your choices. (12)

Any 3 suitable analysis 3 x 4 = (12)

SUB TOTAL [75]

SECTION B (Me Mugwena)

QUESTION 1

1.1 Explain the computing statement 'garbage in, garbage out'. (2)

1.2 Lineage is a record of data history that presents essential information about the development of data from their source to their present format.

Given the above definition, discuss the basic lineage requirements. (8)

QUESTION 2

2.1 Explain the statement with examples 'Errors can be single and definable or consistent and widespread deviations from the truth'. (5)

2.2 Multi-criteria evaluation (MCE) is a method for combining data according to their importance in making a given decision (Heywood et al., 1995).

Give a description of the MCE approach to modelling the decision-making approach. (10)

Staff member responsible for Section B is no longer employed at UJ and therefore memo cannot be provided.

SUB TOTAL [25]

TOTAL [100]