

UNIVERSITY OF JOHANNESBURG

FACULTY OF SCIENCE

DEPARTMENT OF GEOGRAPHY, ENVIRONMENTAL MANAGEMENT & ENERGY STUDIES

MODULE	GGR8X57 / S2GISQ1 Geo-informatics 1: Geographic Information Systems
CAMPUS	APK
EXAM	JULY 2019

DATE xx/07/2019

SESSION xx:xx – xx:xx

DURATION 3 HOURS

MARKS 100

Internal Examiners

Prof. S.G. Tesfamichael
Ms. T. Mugwena

External Examiner

Dr. E. Adam (Wits)

.....

This paper consists of three pages including cover page

Instruction: Answer **FIVE** questions.

Section A (Ms Mugwena)
Answer question 1.

Question 1

- i. Describe the main characteristics of the relational database model. Why have relational databases dominated GIS? (10)
- ii. Discuss the difference between a georelational data model and an object-based data model (10)

[20]

Section B (Prof Tesfamichael)
Answer any FOUR questions from this section.
Start answering each question on a new page.

Question 2

Discuss the role of GIS in mapping the spatial and temporal distribution pattern of malaria.

[20]

Question 3

GIS plays a critical role in the management of coastal and terrestrial natural resources. Discuss how GIS can be used in the management of wildlife habitats in a given nature reserve.

[20]

Question 4

Assume you are a GIS expert working for the South African Police Service. Select FOUR specific crime types that have spatial nature, and discuss how you would characterize those crime types using GIS.

[20]

Question 5

Wind-generated power contributes significantly in reducing the adverse effects of energy generation from fossil fuel or coal. Discuss how GIS can be used to support the development of a wind-generated power plant.

[20]

Question 6

- i. Spatial interpolation is used to estimate values at locations where measurements are not taken, and thus helps in creating spatially continuous values. Discuss a sampling strategy and a unique interpolation method for each of the following spatial phenomena. Your discussion must justify the choice of the interpolation method.

- Water pollution
- Ground water depth

(10)

- ii. Discuss watershed and viewshed analyses using two examples, and proceed to explain factors determining the qualities of viewshed and watershed outputs.

(10)

[20]