

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF LANDSCAPE ARCHITECTURE AND URBAN DESIGN
MASTERS IN URBAN DESIGN
2012-2013 ACADEMIC YEAR

PART 1- SECOND BLOCK EXAMINATIONS DECEMBER 2012
BUD 6205 GEOGRAPHIC INFORMATION SYSTEMS

Instructions to candidates

Time: 3hours

Answer Question **ONE** and any **THREE** others

Each question carries 25 marks

Question 1

- a) Differentiate between spatial data and geographical data highlighting two examples in each case. [5]
- b) Demonstrate how you can integrate GIS and remote sensing to assess the growth of a named city in Southern Africa over a period of twenty years. [20]

[25]

Question 2

- a) Compare and contrast between analog and digital mapping processes, citing advantages and disadvantages in each case. [12]
- b) Describe how data on the different geographical features can be collected and transformed in a GIS environment. [13]

[25]

Question 3

Distinguish between raster and vector GIS formats highlighting the strengths and weaknesses of both formats.

[25]

Question 4

Discuss any two spatial data capture methods that can be used for urban GIS applications, citing challenges that can be confronted in both methods and how to overcome these challenges.

[25]

Question 5

In satellite remote sensing, demonstrate how electromagnetic radiation interacts with the following during image acquisition:

- a) Atmosphere. [12]
- b) Earth surface features. [13]

[25]

Question 6

- a) In relation to applications, discuss the basic questions a GIS should be able to answer.[8]
- b) Demonstrate how a GPS can be used for mapping in urban areas. [10]
- c) Discuss GPS errors and suggest how the errors could be minimized. [7]

[25]