UNIVERSITY OF KWAZULU- NATAL
SCHOOL OF AGRICULTURAL, EARTH & ENVIRONMENTAL SCIENCES
DISCIPLINE OF GEOGRAPHY
EXAMINATION: NOVEMBER 2013
MODULE NAME & CODE: GEOGRAPHIC INFORMATION SYSTEMS (GIS) ENVS211H2

DURATION : 3 HOURS **TOTAL MARKS: 300**

INTERNAL EXAMINERS: **DR R SOOKRAJH AND DR N NGETAR**
INTERNAL MODERATOR: **DR M GEBRESLASIE**

INSTRUCTIONS: SECTION A – ANSWER ALL QUESTIONS (100 marks)
SECTION B – ANSWER ANY TWO QUESTIONS (200 marks)

SECTION A (COMPULSORY): ANSWER ALL QUESTIONS (100 MARKS)

1. Define the following:

    1.1 Graticule
    1.2 Spectral signature
    1.3 Topology
    1.4 Photogrammetry
    1.5 Differential Global Positioning System (DGPS)
    1.6 Quadtree Coding
    1.7 Boolean Operation
    1.8 Temporal resolution (40)

2. Explain georeferencing in relation to the geoid, ellipsoid and datums. (30)

3. With the use of examples compare overlay and network analysis. (30)

[100]

SECTION B: ANSWER ANY TWO QUESTIONS. (200 MARKS)

ALL QUESTIONS CARRY EQUAL MARKS

4. Discuss in detail data as a component of GIS. Include in your discussion the various ways in which data is captured by a GIS and Data Quality. (100)

5. Using a case study, show how GIS can be applied to solve 'Real World" problems. Include in your discussion data capture, management, analysis and contribution to decision making. (100)

6. Provide an overview of the Remote Sensing process, paying particular attention to the importance of Aerial Photography and Satellite Images as a data source to a GIS. (100)

7. Discuss in detail spatial data structure models and database management models. Use diagrams to enhance your discussion. (100)

8. It is often argued that spatial analysis is the core of a GIS, the means of adding value to geographic data, and turning data into useful information. With reference to the types or forms of analyses that can be performed in a GIS, critically discuss this assertion. (100)

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INSTRUCTIONS: SECTION A – ANSWER ALL QUESTIONS (100 marks)
SECTION B – ANSWER ANY TWO QUESTIONS (200 marks)

SECTION A (COMPULSORY): ANSWER ALL QUESTIONS (100 MARKS)

1. Define the following:

   1.1 Stereoscopy
   1.2 Triangulation(Trilateration)
   1.3 Overlay Analysis
   1.4 Topology
   1.5 Boolean operation
   1.6 Active sensors
   1.7 Ground Control Points
   1.8 Nodes and Vertex (40)

2. With reference to aerial photography explain the elements of image interpretation. Use examples to enhance your discussion. (30)

3. Explain the importance of Resolution and discuss the four aspects of resolution applicable to remote sensing. (30)

[100]

SECTION B: ANSWER ANY TWO QUESTIONS. (200 MARKS)

ALL QUESTIONS CARRY EQUAL MARKS

4. Explain how "Real World" features and its attributes are represented and managed in a GIS. Use diagrams to enhance your discussion. (100)

5. Explain the relationship between GIS, Georeferencing and Geodesy**.** (100)

6. Compare and contrast the importance of Aerial Photography and Satellite Images as a data source to a GIS. (100)

7. It is often argued that spatial analysis is the core of a GIS, the means of adding value to geographic data, and turning data into useful information. With reference to the types or forms of analyses that can be performed in a GIS, critically discuss this assertion. (100)

8. Discuss the contention that GIS is a Spatial Decision Support Tool and different from other technologies used by Geographers and environmentalists. Use an application to enhance your discussion. (100)