MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2013/2014

FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN GEO-SPATIAL INFORMATION SCIENCE WITH INFORMATION TECHNOLOGY

(MAIN CAMPUS)

PGS 113: SPATIAL DATA SOURCES AND SPATIAL DATA TYPES

Date: 22nd November, 2013 *Time: 8.30 - 10.30 a.m.*

INSTRUCTIONS:

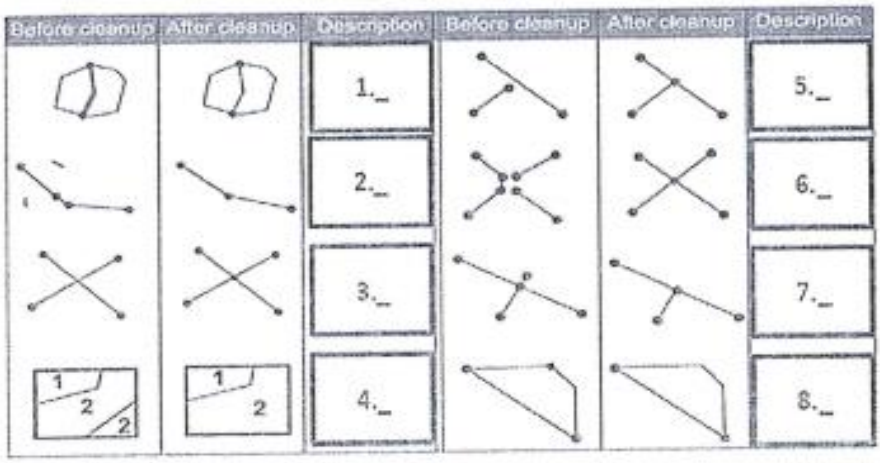
- **Answer Question ONE (COMPULSORY) and any other TWO questions.**
- **Sketch maps and diagrams should be used as deemed necessary.**

QUESTION 1: (GIS DATA SOURCES) [30 Marks]

1. Differentiate between the term data and information [4 Marks]
2. Give three sources of GIS data [6 Marks]
3. What makes data spatial? [4 Marks]
4. Describe two types of geographical phenomena giving two examples of each [6 Marks]

QUESTION 2: (GIS DATA PREPARATION) [20 Marks]

1. List two data format supported by ArcGIS software [2 marks]
2. Describe the steps you can use to convert a raster data into vector data [4 marks]
3. Give two examples of discrete data. [2 marks]
4. State two sources of data errors in GIS [2 marks]
5. In the figure below, fill in the blank spaces labeled number 1 – 8 under the "description column" with the correct description of a data clean up activity illustrated by the drawings under "before cleanup" and "after cleanup" columns. [10 Marks]



QUESTION 3: (GIS DATA TYPES) **[20 Marks]**

1. Using illustrations, explain two ways GIS represents geographic information [6 marks]
2. Differentiate between discrete data and continuous data and give two examples of each? [4 Marks]
3. What is meant by spatial and aspatial data [4 Marks]
4. Briefly explain two kinds of data values [2 Marks]
5. How does GIS represent continuous fields [4 Marks]

QUESTION 4: (GEO-DATABASES) **[20 marks]**

1. What is a database management system? [4 Marks]
2. Give two reason why Database Management System is used in GIS [4 marks]
3. State three types of databases in GIS [6 marks]
4. Define and illustrate the following terms: relation, tuples, attribute. [6 marks]

QUESTION 5: (SPATIAL DATA ANALYSIS) **[20 marks]**

1. Define spatial interpolation. [4 Marks]
2. State two spatial selection queries used in GIS data analysis [4 Marks]
3. List two measurement operation used in GIS [4 Marks]
4. State two spatial selection queries [4 Marks]
5. State two Neighborhood function you can perform using GIS [4 Marks]

QUESTION 6 (SPATIAL REFERENCING) **[20 marks]**

1. Define and list any three classes of map projection [4 marks]
2. Define the following terms [6 marks]
   a. Datum
   b. Datum transformation
   c. Geodetic datum
3. Differentiate between a geoid, ellipsoid and a spheroid [6 marks]
4. Explain and state two types of spatial referencing [4 marks]