

**CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS**

**C5 – GEOSPATIAL INFORMATION SYSTEMS**

**October 2019**

**Note: This examination consists of 10 questions on 1 page.**

**Marks**

**Q. No**

Time: 3 hours

Value   Earned

1.	List the key words that you would like to include in a typical definition of GIS.	4	
2.	The “geo-relational data model” is often called a hybrid model. Explain why.	10	
3.	Name and briefly describe the five components of geographic data quality identified by standards such as the one from the US Federal Geographic data Committee.	10	
4.	Briefly describe the advantages and disadvantages of raster geoprocessing as compared with vector-based methods.	10	
5.	What is “geocoding” or “address matching”? Why is geocoding an important vector geoprocessing function? What are the two main datasets needed for geocoding?	10	
6.	What are the advantages of storing digital elevation data in TIN rather than in DEM?	10	
7.	<p>A city plans to build a new park which should at least satisfies the following criteria:</p> <ul style="list-style-type: none"> <li>▪ Within 0.5 miles of Census polygons with a density of more than 120 persons per square mile;</li> <li>▪ Greater than 0.5 miles from an existing park; and</li> <li>▪ Current land use of grass or vacant.</li> </ul> <p>The following vector data layers, which are in the same projected coordinate system and have the same extent, are available for selecting a proper site for the new park using GIS. Draw a flowchart to show each step, including the data input layers and the processing functions:</p> <ul style="list-style-type: none"> <li>▪ Census data: a polygon layer with an attribute for population count</li> <li>▪ Parks: a polygon layer of all existing parks with an attribute identifying each park</li> <li>▪ Land-use: a polygon layer with an attribute identifying land-use type</li> </ul>	14	
8.	Define the following terms in conceptual modeling using the entity-relationship (ER) model: entities, entity types, relations, attributes, and cardinalities of relationships. Include an example ER diagram to show the use of these terms.	12	
9.	Briefly explain at least three key data issues encountered in implementing GIS.	10	
10.	“GIS is no longer a stand-alone technology, but an integral part of mainstream IT.” Explain why or why not.	10	
<b>Total Marks:</b>		100	