

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

C5 – GEOSPATIAL INFORMATION SYSTEMS

October 2017

Note: This examination consists of 9 questions on 1 page.

Marks

<u>Q. No</u>	<u>Time: 3 hours</u>	<u>Value</u>	<u>Earned</u>
1.	Describe the ways in which GIS software are different from other computer software.	8	
2.	Define the following terms (3 marks each): a) Conformal projection b) Run-length encoding c) Choropleth map d) Geocoding e) Spatial interpolation	15	
3.	What are the respective advantages and disadvantages of vector data models vs. raster data models in representing GIS data?	10	
4.	What is "topology"? Using a simple diagram, explain three types of topological relationships in geographic data representation.	10	
5.	Define and compare local operation and focal operation in raster data processing. Give an example application for each of them.	12	
6.	What is a triangulated irregular network (TIN)? Describe the advantages of TIN over a regular grid-based DEM.	12	
7.	A city plans to build a new park which should at least satisfies the following criteria: <ul style="list-style-type: none"> ▪ Within 0.5 miles of Census polygons with a density of more than 120 persons per square mile; ▪ Greater than 0.5 miles from an existing park; and ▪ Current land use of grass or vacant. 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 which best depicts the proper analysis given the available data: <ul style="list-style-type: none"> ▪ Census data: a polygon layer with an attribute for population count ▪ Parks: a polygon layer of all existing parks with an attribute identifying each park ▪ Land-use: a polygon layer with an attribute identifying land-use type 	15	
8.	Describe each of the following concepts with reference to documenting spatial data accuracy: positional accuracy, attribute accuracy, logical consistency, and completeness.	10	
9.	Do you think the merging of GIS and mainstream information technology (IT) will lead to the demise of GIS eventually?	8	
	Total Marks:	100	