

CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

C5 – GEOSPATIAL INFORMATION SYSTEMS

October 2020

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

Marks

Q. No

Time: 3 hours

Value Earned

1.	Describe the difference between a typical computer-aided-design (CAD) program and a true geographical information system.	10	
2.	Briefly describe at least four different approaches of collecting geospatial data required for creating GIS databases.	8	
3.	What four types of distortion may be produced when geographic positions are projected onto two-dimensional maps? Which of these factors does a UTM projection retain?	10	
4.	Name the three types of simple features used in GIS and their geometric properties. Describe how each type of the feature is represented and stored in GIS.	10	
5.	Describe how point-in-polygon overlay works in terms of operation, input and output. Provide an example of a typical point-in-polygon overlay analysis problem.	10	
6.	Define and compare local operation and focal operation in raster data processing. Give an example application for each of them.	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"> ▪ 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. <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 which best depicts the proper analysis given the available data:</p> <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 	12	
8.	What is geocoding and why is it important? What are some of the problems that are commonly encountered when performing address matching?	10	
9.	Describe each of the following concepts with reference to documenting spatial data quality: positional accuracy, attribute accuracy, logical consistency, and completeness.	10	
10.	“GIS is no longer a stand-alone technology, but an integral part of mainstream IT.” Explain why or why not.	10	
	Total Marks:	100	