CANADIAN BOARD OF EXAMINERS FOR PROFESSIONAL SURVEYORS

C5 – GEOSPATIAL INFORMATION SYSTEMS   March 2022

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

Q. No   Time: 3 hours   Value   Earned

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1.	Briefly discuss the similarities and differences between a GIS and a CAD system.	10	
2.	Topology, as it relates to spatial data, consists of three elements: adjacency, containment and connectivity. Explain what is meant by adjacency, containment and connectivity with simple sketches.	10	
3.	Describe how the raster and vector approaches are used to construct point, line and area features for representation in the computer. In each approach, what is the main factor that determines the data storage size?	6 4	
4.	Point-in-polygon search is a method that determines if a point fall into a polygon. Given a set of points and a set of polygons, explain the use of minimum bounding rectangle (MBR) in point-in-polygon search.	10	
5.	How do GIS "analytical" functions differ from "retrieval" functions? Give examples to illustrate your explanation.	10	
6.	What is a triangulated irregular network (TIN)? Describe the advantages of TIN over a regular grid-based DEM	10	
7.	Propose a methodology, using GIS data analysis techniques, for the selection of a site. The site must be located so that the following conditions are all met: 1) not on existing agricultural land, 2) within 2000 ft. of roads, 3) located beyond 500 ft. but within 3500 ft. of existing railroads, 4) within industrial zone, and 5) with at least 45 acres. Land use map, road map, railroad map, and zoning map are provided.	14	
8.	Describe each of the following concepts with reference to documenting spatial data accuracy: positional accuracy, attribute accuracy, logical consistency, and completeness.	10	
9.	It has been argued that the Internet has dramatically changed GIS. What are your arguments for and against this view?	10	
10.	What are *de facto* and *de jure* standards? Give an example GIS-related standard of each.	6	
	Total Marks:	100	