ASSOCIATION OF CANADA LANDS SURVEYORS - BOARD OF EXAMINERS
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SCHEDULE I / ITEM 5 **October 2003**

DATA BASE MANAGEMENT SYSTEMS (INFORMATICS)

Note: This examination consists of 5 questions on 1 page.

Time: 3 hours

Q. No		Marks Value	Marks Earned
1	What are the similarities and differences between "Data Warehouse" and "Datamart"?	10	
2	What are the fundamental elements of relational databases (in other words, what is an RDB made of). In particular, how does the relational model handle one-to-many and many-to-many relationships between tables (ex. between a table "house" and a table "person"? How does it handle recursive relationships? How does it handle relationships between semantic tables and tables dealing with geometric primitives?	25	
3	In formal system design methods, what are the steps required to develop a spatial database that corresponds to users' needs?	20	
4	If a client in forestry asks you to build a simple geospatial database that deals with forests (name, total area, perimeter, % of unexploitable land, average area of included forest stands, mapped as polygon), individual forest stands (number, area, perimeter, exploitable::yes/no, trees dominant specy, mapped as a polygon), Buildings (camp name, building number, use, mapped as a point), Building owners (name, address of residence, category::private/public), ownership of the forests and exploitation rights (ownership and exploitation rights may be different for a same forest), How would you implement the database described above with an RDBMS and a GIS of your choice (what would be the tables and columns required, how would you create the link with the map)? N.B. A Forest may have no Building on it. One owner may own several buildings, but there is no co-ownership. Ownership is unique for a forest, but there may be several rights allowing the exploitation a same forest, for example for different areas or different purposes).	23	
5	For your database above, write SQL commands for the following queries: - Find all owners of private buildings in Forest A. - Find all rights allowed for Forest A. - Find the dominant specie of the forest stand where building #14 is located.	12	
6	Name one data management tool for each of the following categories: GIS, universal server, OLAP, web mapping, mobile mapping.	10	
	Total Marks:	100	