

**ASSOCIATION OF CANADA LANDS SURVEYORS - BOARD OF EXAMINERS
WESTERN CANADIAN BOARD OF EXAMINERS FOR LAND SURVEYORS
ATLANTIC PROVINCES BOARD OF EXAMINERS FOR LAND SURVEYORS**

SCHEDULE I / ITEM 5

October 2008

DATA BASE MANAGEMENT SYSTEMS (INFORMATICS)

Note: This examination consists of 8 questions on 2 pages.

Marks

Q.No

Time: 3 hours

Value Earned

1	Give four examples of what you should do in the planning and analysis phases of the system development life cycle.	8	
2	What is a trigger? Name two purposes for which triggers are used.	4 4	
3	For each of the following SQL commands, a) explain what the command does, and b) give the part of SQL (DDL, DML or QL) this command belongs to. 1. CREATE TABLE building (id NUMBER (8), address VARCHAR2(200), function VARCHAR2(100), geometry SDO_GEOMETRY); 2. INSERT INTO building VALUES (102, '45 Main Street, St-John', 'residential'); 3. SELECT * FROM building, ownership WHERE building.id=ownership.id_building AND ownership.start_date > '31/12/2001' AND ownership.end_date < '01/01/2006'; 4. ALTER TABLE building ADD (value NUMBER (8)); 5. SELECT * FROM building WHERE value > 100 000; 6. DROP TABLE building; 7. DELETE FROM building WHERE function = 'Hospital'; 8. UPDATE building SET geometry = (SELECT geom FROM hotel WHERE building.id= hotel.id) WHERE function = 'Hotel';	16 4	

4	<p>A Railway company asks you to build a simple geospatial database that deals with:</p> <ul style="list-style-type: none"> • Railway segment having these attributes: railway gauge (special or standard), railway status (operational or abandoned), railway type (multiple, side track, single) and mapped as a polyline; • Railway station having these attributes: name, address, facilities and mapped as a point; • Trip linking two railway stations, one as the departure and the other as the arrival. For each trip, we need to know: departure date-time, arrival date-time and cost of the trip. A trip is mapped as a polyline. • Municipality having these attributes: name, population and mapped as a polygon. A municipality is included in a province; • Province having this attribute: name and mapped as a polygon <p>How would you describe his demand with a conceptual database schema (CIM level) (you can use UML or Entity- Relationship modeling formalisms)?</p> <p>N.B.1 A railway station is always within a municipality but a municipality may not have a railway station. A railway station can give access to more than one railway segment. A trip takes several railway segments and one segment can be taken by many trips.</p> <p>N.B.2 You must specify in your database conceptual schema what will be represented cartographically and what geometry will be used (point, line, and polygon).</p>	20	
5	<p>Give three examples of spatial integrity constraints you should implement in the spatial database of # 4. For each,</p> <ol style="list-style-type: none"> a) give the spatial operator used, and b) make a scheme of the spatial relationship. 	4.5 4.5	
6	<p>Give five examples of spatial metadata and a brief definition of each.</p>	10	
7	<p>For each conceptual model concept, give the name of the relational database concept(s) created during the translation from the conceptual level to the implementation level.</p> <ol style="list-style-type: none"> a) Entity or class b) Identifier c) Relationship 1-N d) Relationship N-N e) Attribute f) Object 	2.5 2.5 2.5 2.5 2.5 2.5	
8	<p>What is an index and why do we use it?</p> <p>Which kind of field or column must be indexed?</p> <p>Give one type of index structure.</p>	5 2.5 2.5	
	Total Marks:	100	