SCHEDULE I / ITEM 5 **March 2003**

DATA BASE MANAGEMENT SYSTEMS (INFORMATICS)

Note: This examination consists of _6_ questions on _1_ page.   **Marks**

Q. No	Time: 3 hours	Value	Earned
1	Define "Spatial Data Base", "Spatial Data Warehouse", "Spatial Datamart" and explain how they differ.	15	
2	What are the fundamental elements of relational databases (in other words, what is an RDB made of). How do most GIS connect their geometric primitives with the content of an RDB?	15	
3	What is a system lifecycle? What are the steps required to develop a spatial database?	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 specie, 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 describe his demand with a conceptual database schema (you can use UML or Entity-Relationship modeling technique) ? 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 of the same forest, for example for different areas or different purposes). N.B. you must specify in your database conceptual schema what will be represented cartographically and what geometry will be used (point, line, polygon).	20	
5	How would you implement the database described in Question 4 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)? (You can use a relational schema, a textual description or SQL commands)	25	
6	What category of data management tools (GIS, RDBMS, universal server, CAD, OLAP, data mining, query builder, GIS web server, data translator) are the following commercial products: Oracle 9i, Microsoft SQL-Server, Intergraph Geomedia WebMap, Safe FME and Cognos Powerplay?	5	
	Total Marks:	100	0