

# THE BRITISH COMPUTER SOCIETY

## THE BCS PROFESSIONAL EXAMINATION Professional Graduate Diploma

### ADVANCED DATABASE MANAGEMENT SYSTEMS

24<sup>th</sup> April 2002, 10.00 a.m.-1.00 p.m.

Answer THREE questions out of FIVE. All questions carry equal marks.

Time: THREE hours.

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

1. "SQL is very far from being the perfect relational language." (Date 2000)

With reference to the way SQL supports the relational model, justify this statement. **(25 marks)**

2. Many server-side scripting languages (e.g. JSP, PHP and ASP), which are used to construct Web-enabled database applications, allow developers to open and close "sessions". Explain the importance of this facility and compare and contrast two mechanisms that are used to identify sessions. **(25 marks)**

3. "The SQL 3 standards activity will deliver an SQL which incorporates object-relational features." (Jackson 1999)

Discuss the features in the SQL 3 (now SQL/99) standard that achieve this. **(25 marks)**

4. a) In query processing, one of the most expensive operations is the join. Various alternative implementation strategies are possible for the join operation. Discuss three alternative strategies and illustrate the difference that each strategy makes to the number of disk accesses required.

Assume the following relations in your illustration (primary keys are underlined).

r1 (A, B, C)

r2 (C, E)

r1 has 40,000 tuples, and 40 tuples fit into one physical block

r2 has 25,000 tuples, and 25 tuples fit into one physical block

**(18 marks)**

- b) Explain why some relational algebra expressions are more efficient than others. **(7 marks)**

5. Distributed database is a contradiction in terms. Discuss. **(25 marks)**