

**Advanced Diploma in Information Technology (ADIT) /
Bachelor in Information Technology (BIT)**

Term-End Examination

December, 2007

CST-203 : RELATIONAL DATABASE MANAGEMENT SYSTEMS

Time : 2 Hours

Maximum Marks : 50

Note : *There are **two** sections in this paper. Section A consists of objective type questions and short answer type questions. All questions in Section A are **compulsory**. Section A carries 26 marks. Section B consists of three questions. Attempt any **two** questions from Section B. Section B carries 24 marks.*

SECTION A

1. There are 10 objective type questions. There are four choices for each question. Select the best choice. If you feel that none of the given choices is correct, then mark '0' as your answer. Each question carries 1 mark. *1×10=10*
- (i) Strict 2-phase locking has the problem of
 - (a) possible lack of atomicity
 - (b) possible lack of durability
 - (c) possible lack of isolation
 - (d) possibility of deadlock
 - (ii) The degree of a relation is
 - (a) number of different domains in it
 - (b) number of different names of the relation
 - (c) number of attributes in the relation
 - (d) number of tuples in the relation

- (iii) A synonym can be a/an
- (a) alternate name for an attribute
 - (b) alternate name for a relation
 - (c) short name for a tuple
 - (d) All of the above
- (iv) Which set operation is **not** associative ?
- (a) Union
 - (b) Intersection
 - (c) Difference
 - (d) All of the above
- (v) The disadvantage of a star network is
- (a) network partitioning can occur easily
 - (b) vulnerable to failure of one link
 - (c) expensive
 - (d) vulnerable to failure of one node
- (vi) Which file organisation is best for searching ?
- (a) Sequential
 - (b) Heap
 - (c) Index sequential
 - (d) None of the above
- (vii) A dirty read is
- (a) updating a value updated by another transaction
 - (b) reading an uncommitted read
 - (c) reading a committed read
 - (d) None of the above

(viii) To guarantee correct behaviour, recovery must be

- (a) Commutative
- (b) Associative
- (c) Unitary
- (d) Idempotent

(ix) Which of these is a disadvantage of file systems ?

- (a) Low expense
- (b) Fixed queries
- (c) Data independence
- (d) Low redundancy

(x) Which architecture has business logic in a separate tier ?

- (a) File system
- (b) Three tier
- (c) Client server
- (d) Distributed database

- 2.** (a) Explain the domain constraint on an RDBMS. 3
- (b) What is the function of a buffer manager in a database management system ? 1
- (c) What is meant by the update anomaly in a database ? 3
- 3.** Bring out any three differences between the following :
- (a) RDBMS and File Management system 3
 - (b) "Wait-die" and "Wound-wait" deadlock prevention 3
 - (c) Operating system level and Database level security 3

SECTION B

There are three questions in this section. Attempt any two. This section carries 24 marks. Please give to the point answers.

4. (a) Consider a city transport system with buses that ply on routes with a particular schedule. Buses belong to depots. Drivers and conductors are assigned to buses. Describe with an E-R diagram the entities, relations, and primary keys with reasons. Mention and make any required assumptions. 8
- (b) Describe briefly with an example the Optimistic Concurrency Control method. 4
5. (a) Consider a Payroll system with the following relations : 8
- employee (code, name, dept_code, basic, allowances)
department (code, name)
absent (employee, date)
- Write SQL commands for the following :
- * All employees for a particular department.
 - * List departments where employees have been absent in a month.
 - * List basic salary for each employee after deducting for absences in a month.
 - * Department with the highest total salary burden.
- (b) Indicate briefly the advantages of a client-server architecture. 4
6. (a) Describe the various types of fragmentation strategies used in designing a distributed database. Show with the examples where each of these would be useful. 8
- (b) Bring out the meaning of referential integrity in database relations through an example. 4