Roll No .....

MCTA-104

M.E/M.Tech., I Semester

Examination, December 2014

Advance DBMS

Time : Three Hours

 Maximum Marks : 70

Note: Attempt any five questions. All questions carry equal marks.

1. a) Relational calculus is said to be declarative language, in contrast to algebra, which is a procedural language. Explain the distinction. 7
   b) What does the DBMS do when constraints are violated? What is referential integrity? What options does SQL give application programmers for dealing with violations of referential integrity. 7

2. a) Describe how the algorithm for lossless join decomposition into BCNF can be adapted to obtain a lossless join, dependency preserving decomposition into 3NF. Describe the alternate synthesis approach to obtaining such a decomposition into 3 NF. Illustrate both approaches using an example. 7
   b) What is a decomposition and how does it address redundancy? What problems may be caused by the use of decompositions? 7

3. a) What issues must be considered in optimizing queries over distributed data, in addition to where the data is located. 7

   b) What is a commit protocol any why is it required in a distributed database? Describe and compare Two phase and Three phase commit. What is blocking, and how does the Three phase protocol prevent it? 7

4. a) Discuss deadlock detection in a distributed database. Contrast the centralized, hierarchical and time out approaches. 7
   b) Compare RDBMS with ORDBMS. Describe an application scenario for which you would choose an RDBMS and explain why. 7

5. The multitude of data types in an ORDBMS allow us to design a more natural and efficient database schema but introduces some new design choices. Discuss ORDBMS database design issues and illustrate your discussion using an example application. 14

6. a) Describe how XML data can be stored in a relational DBMS. How do we map XML data to relations? Can we use the query processing infrastructure of the relational DBMS? How do we publish relational data as XML? 7
   b) Explain briefly: 7
      i) Web server
      ii) Web databases

7. a) What is R tree? What is the structure of data entries in R trees? How does concurrency control in a R tree work? 7
   b) Explain briefly multimedia databases. 7

8. Write short notes: 14
   a) Quad tree
   b) Specialization and association
   c) E-R design
   d) Concurrency control

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