Code No: 154AM

R18

Time: 3 Hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
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1.a) Define data model. Explain the entity-relationship model with a neat diagram.
  b) How can we translate an ER Diagram into SQL statements to create tables? Discuss.

[7+8]

2.a) Describe the set operations of relational algebra, including union (U), set difference (-), and cross product (X). For each, what can you say about the cardinality of their input and output tables?
  b) Compare and contrast the Tuple Relational Calculus and Domain relational calculus.

[8+7]

3.a) Briefly explain the complex integrity constraints in SQL Triggers and active databases.
  b) Why is a table whose primary key consists of a single attribute automatically in 2NF when it is in 1NF? Explain in detail.   [5+10]

4.a) Discuss the Recovery with Concurrent Transactions.
  b) Elaborate the Timestamp Based Protocols.   [8+7]

5.   Compare and contrast the Hash-Based Indexing and Tree-based Indexing.   [15]

6.a) Explain the differences between physical and logical data independence.
  b) Define a trigger. What are the differences between row-level and statement-level triggers?   [8+7]

7.   Give an example that illustrates how a collection of relations in BCNF could have redundancy even though each relation, by itself, is free from redundancy.   [15]

8.a) What is Transaction? List and explain the properties of Transaction.
  b) How does a B+ tree index handle the search, insert and delete? Discuss.   [8+7]

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