B.Tech II Year - II Semester Examinations, April-May, 2012
DATA BASE MANAGEMENT SYSTEMS
(Common to Computer Science and Engineering, Information Technology)

Time: 3 hours   **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1.a) Discuss the reasons for storing data in a DBMS instead of in operating system files.
 b) Indentify the main components in a DBMS and briefly explain what they do. [15]

2.a) What is an ER diagram? Discuss with suitable examples the Binary and Ternary relationships in ER diagrams.
 b) What is meant by aggregation in ER diagrams? Give a suitable example to it. [15]

3.a) What SQL Construct enables the definition of a relation? What constructs allow modification of relation instances?
 b) What are the SQL constructs to modify the structure of tables and destroy tables and views? [15]

4.a) Relational algebra and relational calculus are said to be equivalent in expressive power. Discuss.
 b) Define all the variations of the 'join operation'. Why is the join operation given special attention? [15]

5. Define 1NF, 2NF, 3NF and BCNF, what is the motivation for putting a relation in BCNF? What is the motivation for 3NF? [15]

6. Discuss about Lock – based protocols and validation – based protocols in transaction management. [15]

7. Discuss indetail how we can achieve recovery with concurrent transactions. [15]

8. Explain about Indexed Sequential Access methods (ISAM) and B^+ - trees. [15]

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1.a)   Explain the advantages of using a query language instead of custom programs to process data.
  b)   What is data independence? And how does DBMS support it?   [15]

2.a)   Define the terms: entity, entity set, attribute, key.
  b)   Discuss with an example how we can use ternary relationship instead of aggregation in ER diagrams.   [15]

3.a)   What is a relation? Differentiate between a relation schema and a relation interface.
  b)   What are integrity constraints? Define the terms primary key constraints and foreign key constraint.   [15]

4.a)   Describe the set operations of relational algebra with suitable examples.
  b)   What is the difference between tuple relational calculus and domain relational calculus?   [15]

5.   What is decomposition and how does it address redundancy? Discuss the problems that may be caused by the use of decompositions.   [15]

6.   What is meant by transaction state? Discuss about Timestamp based protocols.
                                                                            [15]

7.   Discuss indetail the Log – based recovery and Remote backup systems.   [15]

8.   Explain with suitable examples the Cluster Indexes, Primary and Secondary indexes.   [15]

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1.a)   Explain the database system structure.
  b)   Discuss weak entity set in ER model.   [15]

2.a)   What is a view? Discuss its role in database security.
  b)   Explain in detail the division operation in Relational Algebra.   [15]

3.a)   Compare nested query and correlated query. Discuss suitable examples.
  b)   What is a trigger? How are integrity constraints enforced?   [15]

4.a)   Describe multi valued dependencies with examples.
  b)   Explain the problems caused by redundancy.   [15]

5.a)   What is a schedule? Explain the distinction between the terms serial schedule and serializable schedule.
  b)   Discuss about the performance of locking.   [15]

6.a)   Explain dead lock prevention policies employed in databases.
  b)   Briefly discuss write ahead log protocol.   [15]

7.a)   What is an index? Differentiate between sparse and dense indices.
  b)   Make a comparison of sorted file organization with heap file organization. [15]

8.a)   Write a detailed note on buffer management.
  b)   Explain delete operation on B+ tree structure.   [15]

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1.a) Explain the functionalities of database administrator.
  b) Discuss class hierarchies and the constraints associated with them.   [15]

2.a) What is an assertion? Discuss suitable examples.
  b) Explain various types of join operations.   [15]

3.a) Discuss comparison operators in SQL with suitable examples.
  b) What is an active database? Explain.   [15]

4.a) Describe functional dependencies and computation of closure of F.
  b) Explain the need of schema refinement in detail.   [15]

5.a) What is a transaction? Explain ACID properties.
  b) Discuss the transaction support in SQL.   [15]

6.a) Explain 2PL and conservative 2PL.
  b) Briefly discuss ARIES algorithm.   [15]

7.a) What is an index? Differentiate between clustered and unclustered indices.
  b) Make a comparison of hash file organization with sorted file organization. [15]

8.a) Write a detailed note on disk space management.
  b) Is extendible hashing a dynamic indexing structure? Justify your answer. [15]

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