Code No: RR220502 **Set No. 1**

II B.Tech II Semester Supplimentary Examinations, Apr/May 2008
DATA BASE MANAGEMENT SYSTEMS
(Common to Computer Science & Engineering, Information Technology and Computer Science & Systems Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the drawbacks of traditional file processing systems with examples.
   (b) Explain the three levels of data abstraction. [7+9]
2. (a) What is a view? Explain the a views in SQL?
   (b) Explain nested queries with example in SQL ? [8+8]
3. (a) Which of the three basic file organizations would you choose for a file where the most frequent operations are as follows,
      i. Search for records based on a range of field values.
      ii. Perform insert and scans where the order of records does not matter.
      iii. Search for a record based on a particular field value.
   (b) Define dense index.
   (c) How does multi level indexing improve the performance of searching an index file. [6+4+6]
4. (a) Explain about projection based on sorting.
   (b) Explain about projection based on hashing. [8+8]
5. (a) What is indexing ? Explain with an example.
   (b) Explain about query processing. [8+8]
6. (a) Explain functional dependencies and multivalued dependencies with examples.
   (b) Consider the relation R(A,B,C,D,E,F) and FD's

   $A \rightarrow BC$ $\quad F \rightarrow A$
   $C \rightarrow A$
   $D \rightarrow E$ $\quad E \rightarrow D$

   is the decomposition of R into R_1 (A,C,D), R_2 (B,C,D) and R_3 (E,F,D) loss less? Explain the requirement of loss less decomposition. [8+8]
7. (a) Define the concept of a schedule for a set of concurrent transactions. Give a suitable example.
   (b) Explain how does granularity of locking affect the performance of concurrency control algorithm. [8+8]

8. Explain WAL Protocol, UNDO algorithm, Check pointing and Media Recovery? [16]

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1. Write short notes on:
   (a) Key constraints
   (b) General constraints
   (c) Relational calculus. [6+5+5]
2. (a) What is a view? Explain the a views in SQL?
   (b) Explain nested queries with example in SQL ? [8+8]
3. (a) Explain the limitations of static hashing. Explain how this is overcome in dynamic hashing.
   (b) Write a note on indexed sequential files. [10+6]
4. (a) Consider the following SQL query for a bank database
   $SelectT.branch - name$
   $FrombranchT, branchS$
   $whereT.Assets$ ¿ $S.assetsandS.branch - city = "HYDERABAD"$
   Write an efficient relational algebra expression that is equivalent to the query.
   (b) Define query optimization and at what point during query processing does optimization occur? [8+8]
5. (a) What is indexing ? Explain with an example.
   (b) Explain about query processing. [8+8]
6. (a) Let R=(A,B,C,D,E) and let M be the following set of multivalued dependencies
   A− >> BC
   B− >> CD
   E− >> AD
   List the nontrivial dependencies in M+
   (b) Describe the properties of normalized and unnormalized relations. [10+6]
7. (a) Explain the concept of transaction atomicity.
   (b) How does the two phase locking protocol ensures serializability? [6+10]
8. Explain in detail the ARIES recovery method. [16]

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Code No: RR220502 **Set No. 3**

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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
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1. (a) What is DBMS? Explain the advantages of DBMS. [2+5=7]
   (b) What is a data model? Explain the relational data model. [3+6=9]
2. (a) Give the various methods of managing data security.
   (b) Describe the "dynamic SQL". [8+8]
3. Discuss the difference between index sequential and hashed file organizations. Compare their storage and access efficiencies. List the applications where each of the file organization is suitable. [16]
4. (a) Consider the following SQL query for a bank database
   $SelectT.branch - name$
   $FrombranchT, branchS$
   $whereT.Assets$ ¿ $S.assetsandS.branch - city = "HYDERABAD"$
   Write an efficient relational algebra expression that is equivalent to the query.
   (b) Define query optimization and at what point during query processing does optimization occur? [8+8]
5. Show that the following equivalences hold and explain how they can be applied to improve the efficiency of certain updates.
   (a) $(r1 \cup r2) \cup r3 = r1 \cup (r2 \cup r3)$
   (b) $r1 \cup r2 = r2 = r2 \cup r3$
   (c) $\sigma_p(r1 - r2) = \sigma_{p(r1)} - \sigma_p(r2)$ [5+4+7]
6. (a) List the three design goals for relational database and explain why they are desirable.
   (b) Consider the relation scheme Emp_Dept(Ename, SSN, Bdate, Address, Dnumber, Dname, DMGRSSN) and the following set of FD's
   F={ SSN− > Ename,Bdate, Address, Dnumber
   Dnumber− > Dname, DMGRSSN}
   Calculate the closer {SSN}+ and {Dnumber}+ with respect to F. [6+10]
7. (a) What information does the dirty page table and transaction table contain?
   (b) Give a short notes on recovery from deadlock. [6+10]

8. Describe the shadow paging recovery technique. Under what circumstances does it not require a log. [16]

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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
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1. (a) What is a Data model ? List the important data models [8]
   (b) Explain
      i. DDL
      ii. DML
      iii. Data sublanguage
      iv. Host language [2+2+2+2]
2. (a) Discuss the various DDL, DML commands with illustrations in SQL.
   (b) Why are null values not preferred in a relation? [12+4]
3. Give algorithms for inserting a new key into a B-tree [16]
4. (a) Discuss about cost based optimization.
   (b) Give a detailed account of heuristic optimization. [8+8]
5. (a) Discuss the reasons for converting SQL queries into relational algebra queries before optimization is done.
   (b) What is meant by query execution plan? Explain its significance. [10+6]
6. (a) Explain the functional dependencies and multi valued dependencies with examples.
   (b) What is normalization? Discuss the 1NF,2NF, and 3NF Normal forms with examples. [8+8]
7. (a) Explain timestamp ordering with an algorithm.
   (b) Explain different locking Techniques for concurrency control. [8+8]
8. (a) When a system recovers from a crash ? In what order must transaction be Undone and Redone? Why is this order important?
   (b) What is a log in the content of DBMS? How does check pointing eliminate some of the problems associated with log based recovery? [8+8]

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