Code No: NR420402 **Set No.1**

IV B.Tech. II Semester Supplementary Examinations, July -2005
DATA BASE MANAGEMENT SYSTEMS
(Electronics & Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain in detail about the conversion of an ER Model into the corresponding Relational model
   (b) What is a foreign key constraint? Why is such constraints important? What is a referential integrity?
2. (a) Discuss the various DDL, DML commands with illustrations in SQL.
   (b) Why are null values not preferred in a relation?
3. (a) Explain the limitations of static hashing. Explain how this is overcome in dynamic hashing.
   (b) Write a note on indexed sequential files.
4. What is
   (a) query evaluation plan
   (b) query execution engine
   (c) catalog information about relations and indices
5. (a) Discuss about cost of sort-merge join.
   (b) Describe conjunctive normal form and explain why it is important in the context of relational query evaluation.
6. (a) What is an E - R model ? Explain entity and entity set with examples?
   (b) The SBI offers the five different types of accounts ; loan, checking, recurring deposits, locker account , and fixed deposits. The bank has a number of branches and a client of the bank can open many accounts. Accounts can be joint and more than one client may operate an account. Identify the entity attributes. What relation ships exist among these entities? Draw the corresponding E−] R diagram.
7. (a) Explain Two phase locking with algorithms.
   (b) What is Transaction? In what ways is it different from an ordinary program (Like 'C').
8. Describe the shadow paging recovery technique. Under what circumstances does it not require a log.

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Code No: NR420402 **Set No.2**

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Consider the following schema
Suppliers(*sid*, sname, saddress)
Parts(*pid*, pname, color)
Catalog(*sid*, *pid*, cost)
The key fields are underlined. Write the following queries in relational algebra
   i. Find the names of suppliers who supply blue part
   ii. Find the sids of suppliers who supply every red part
   iii. Find the pids of parts that are supplied by at least two different suppliers
   iv. Find all the pids of parts supplied by supplier with sid=200
   v. Find the pids of parts supplied by every supplier at less than Rs 500.

   (b) Given two relations R1 and R2 , where R1 contains N1 tuples, R2 contains N2 tuples, and N2 > N1 > 0 , give the minimum and maximum possible sizes (in tuples) for the result relation produced by each of the following relational algebra expressions. In each case, state any assumptions about the schemas for R1 and R2 that are needed to make the expression meaningful.
   i. Selecting all the tuples from R1 where a=5
   ii. Projecting the attribute b from R2
   iii. R1 X R2

2. Explain the various types of aggregate functions with suitable examples in SQL.

3. (a) Define a B-tree. What are the advantages of B-tree.
   (b) Give a B-tree of order 2 to maintain an index for the following set of keys, 2, 5,7,8,10,11,13,14,18

4. Explain the
   (a) decomposition of a query into blocks.
   (b) The first step in optimizing a query block is to express it as a relational algebra expression − Discuss.

5. Show that the following equivalences hold and explain how they can be applied to improve the efficiency of certain updates.
   (a) $\sigma_p(r1 \cup r2) = \sigma_p(r1) \cup \sigma_p(r2)$
   (b) $\sigma_p(r1 - r2) = \sigma_{p(r1)} - \sigma_p(r2)$

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.
7. What is two phase locking protocol? How does it guarantee serializability?
8. Describe the shadow paging recovery technique. Under what circumstances does it not require a log.

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Code No: NR420402 **Set No.3**

IV B.Tech. II Semester Supplementary Examinations, July -2005
DATA BASE MANAGEMENT SYSTEMS
(Electronics & Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain in detail about the conversion of an ER Model into the corresponding Relational model
   (b) What is a foreign key constraint? Why is such constraints important? What is a referential integrity?

2. (a) What is an SQL ? Explain the various aspects of SQL.
   (b) Consider the following schema . The primary keys are underlined.
   Sailors($\underline{sailor-id}$, sailor-name, sailor-rating, sailor-age)
   Boats($\underline{boat-id}$, boat-name, boat-color)
   Reserves($\underline{sailor-id}$, $\underline{boat-id}$, day)

   Write the queries in SQL for the following
   i. Find the names of sailors who have reserved at least one boat.
   ii. Find the ages of sailors whose names begin and end with C and has atleast four characters.
   iii. Find the names of sailors who have reserved a blue or a yellow boat.
   iv. Find the names of sailors who have reserved both a blue and a yellow boat.
   v. Find the names of all sailors who have reserved blue boats but not yellow boats.

3. (a) Write a note on inverted files.
   (b) Distinguish between sparse and dense index

4. Discuss the merits and demerits of hash join, sort-merge join and block nested loops join.

5. Discuss in detail about estimating the cost of an evaluation plan for a query block.

6. (a) Construct an E-R diagram for university registrars office. The office maintains data about each class, including the instructor, the enrollment and the time and place of the class meetings. For each student class pair, a grade is recorded. Determine the entities and relationships that exist between the entities. Also construct the tabular representation of the entities and relationships.
   (b) What is an entity type? What is an entityset? Explain the difference between the entity, entity type and entityset?

7. Describe each of the following locking protocols.
   (a) 2PL.
   (b) Strict 2PL.
   (c) Conservative 2PL.
8. Explain in detail the ARIES recovery method.

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Code No: NR420402 **Set No.4**

IV B.Tech. II Semester Supplementary Examinations, July -2005
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(Electronics & Communication Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain Foreign key constraints with examples.
   (b) Give Properties of Relations with examples.
   (c) Explain General constraints with example.
2. (a) What are views? Discuss the problems encountered in modifying database through views.
   (b) What is an embedded SQL? Give examples.
3. Explain clustering indices.
4. Discuss about the following
   (a) Hybrid hash − join
   (b) Complex joins
5. (a) What is indexing ? Explain with an example.
   (b) Explain about query processing.
6. (a) Explain the difference between week entity and strong entity set? How to represent the strong entity and week entity set through ER-diagrams
   (b) The State Bank of India offers the five different types of accounts : loan, checking, recurring deposits, locker accounts and fixed deposit. . The Bank has a number of branches and a client of the bank can open many accounts. A account can be joint and more than one client may operate an account. Identify the entities , attributes what relationships exist among these entities and Tables. Draw the corresponding E-R diagram
7. (a) Describe the two phase locking protocal with the help of an example ;
   (b) What are the basic properties of a transaction? Explain these properties with the help of an example?
8. Answer the following briefly:
   (a) How is check pointing done in ARIES?
   (b) Can a second end check point record be encountered during analysis phase?
   (c) Why is the use of CLRS important for the use of UNDO actions that are not the physical inverse of the original update?

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