Code No: 07A70307 | **R07** | **Set No. 2**

IV B.Tech I Semester Examinations,December 2011
DATA BASE MANAGEMENT SYSTEMS
Common to Mechanical Engineering, Electronics And Computer
Engineering, Electronics And Telematics, Electronics And Communication
Engineering
Time: 3 hours | Max Marks: 80
Answer any FIVE Questions
All Questions carry equal marks
⋆⋆⋆⋆⋆

1. (a) Briefly discuss about locks and lock management in DBMS.

   (b) Explain recoverability in transactions in detail. [8+8]

2. What is redundancy? Explain the different problems encountered by redundancy. [16]

3. (a) What are five main functions of a database administrator? Explain.

   (b) List seven programming languages that are procedural and two that are non-procedural. Which group is easier to learn and use? Explain your answer. [8+8]

4. Consider the relational database given below,
   employee (person-name, street, city)
   works (person-name , company-name, salary)
   company (company-name, city)
   manages (person-name, manager-name)
   where the primary keys are underlined. Give an expression in the relational algebra to express each of the following queries:

   (a) Find the names of all employees who work for First Bank Corporation.

   (b) Find the names and cities of residence of all employees who work for First Bank Corporation.

   (c) Find the names, street address, and cities of residence of all employees who work for First Bank Corporation and earn more than $10,000 per annum.

   (d) Find the names of all employees in this database who live in the same city as the company for which they work. [16]

5. Consider the employee database given below
   employee (employee-name, street, city)
   works (employee-name, company-name, salary)
   company (company-name, city)
   manages (employee-name, manager-name),
   Give an expression in SQL for each of the following queries

   (a) Modify the database so that Jones now lives in Newtown.

   (b) Give all employees of First Bank Corporation a 10 percent raise.

1

(c) Give all managers of First Bank Corporation a 10 percent raise.

(d) Give all managers of First Bank Corporation a 10 percent raise unless the salary becomes greater than \$100,000; in such cases, give only a 3 percent raise. [4+4+4+4]

6. (a) Briefly discuss about static index structure.

   (b) Explain file organizations. [8+8]

7. Design a generalization - specialization hierarchy for a motor-vehicle sales company. The company sells motorcycles, passenger cars, vans, and buses. Justify your placement of attributes at each level of the hierarchy. Explain why they should not be placed at a higher or lower level. [16]

8. ARIES assumes there is space in each page for an LSN. When dealing with large objects that span multiple pages, such as operating system files, an entire page may be used by an object, leaving no space for the LSN. Suggest a technique to handle such a situation; your technique must support physical redos but need not support physiological redos. [16]

⋆ ⋆ ⋆ ⋆ ⋆

Code No: 07A70307 | **R07** | **Set No. 4**

IV B.Tech I Semester Examinations,December 2011
DATA BASE MANAGEMENT SYSTEMS
Common to Mechanical Engineering, Electronics And Computer
Engineering, Electronics And Telematics, Electronics And Communication
Engineering

Time: 3 hours | Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆⋆⋆⋆⋆

1. (a) Explain alternatives in decomposition in BCNF.
   (b) Explain the relationship between BCNF and Dependency preservation. [8+8]

2. (a) Explain concurrent executions of transactions in DBMS.
   (b) What are timestamp-based protocols? Explain. [8+8]

3. Explain the following in SQL with examples.
   (a) Nested Queries
   (b) Correlated Queries
   (c) Group by and Having Clauses
   (d) Triggers [4+4+4+4]

4. (a) Explain about various binary operations with examples in relational algebra.
   (b) What is a domain constraint? Explain with an example. [8+8]

5. Describe how search, insert, and delete operations work in ISAM indexes. Discuss the need for overflow pages, and their potential impact on performance. What kinds of update workloads are ISAM indexes most vulnerable to, and what kinds of workable do they handle well? [16]

6. (a) Explain the difference between a weak and a strong entity set.
   (b) Define the concept of aggregation. Give two examples of where this concept is useful. [8+8]

7. (a) List out the Database system applications.
   (b) Write briefly about instances and schemas. [8+8]

8. For each of the following requirements, identify the best choice of degree of durability in a remote backup system:
   (a) Data loss must be avoided but some loss of availability may be tolerated.
   (b) Transaction commit must be accomplished quickly, even at the cost of loss of some committed transactions in a disaster.
   (c) A high degree of availability and durability is required, but a longer running time for the transaction commit protocol is acceptable. [16]

⋆⋆⋆⋆⋆⋆⋆⋆⋆
3

Code No: 07A70307 | R07 | | Set No. 1 |

IV B.Tech I Semester Examinations,December 2011
DATA BASE MANAGEMENT SYSTEMS
Common to Mechanical Engineering, Electronics And Computer
Engineering, Electronics And Telematics, Electronics And Communication
Engineering
Time: 3 hours   **Max Marks: 80**
Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. (a) Describe the two phase locking protocol with the help of example.
   (b) What are the basic properties of a transaction? Explain these properties with the help of examples. [8+8]

2. Write the SQL Queries for the following
   Sailors $Sailor - id, Sailor - name, Rating, Age$
   Reserves $Sailor - id, Boat - id, Day$
   Boats $Boatid, \quad Boatname, color$

   (a) Find names of sailors who have reserved boat 103.
   (b) Find names of sailors who reserved all red boats
   (c) Find the colors of boats reserved by the sailor lubber and Gilson
   (d) Find names of sailors who reserved red and green boats
   (e) Find names of sailors who reserved red boats. [16]

3. (a) What is a relation? Differentiate between relation schema and relation instance. Define the terms unity and degree of relation.
   (b) What are integrity constraints over relations? How to enforce these constraints? [8+8]

4. Construct and explain an E-R diagram for a car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. [16]

5. (a) Why are some functional dependencies called trivial?
   (b) Discuss how schema refinement through dependency analysis and normalization can improve schemas obtained through ER design. [6+10]

6. Explain the following:
   (a) Recovery with Concurrent Transactions
   (b) Remote Backup systems. [16]

7. If you were about to create an index on a relation, what consideration would guide your choice? Discuss:

4

(a) The choice primary index.

(b) Clustered versus unclustered indexes

(c) Hash versus tree indexes

(d) The use of a sorted file rather than a tree-based index. [16]

8. (a) Write about the people who are dealing with databases.

(b) What is a data model? Explain the relational data model. [8+8]

$\star\star\star\star\star$

JNTUWORLD

Code No: 07A70307   **R07**   **Set No. 3**

IV B.Tech I Semester Examinations,December 2011
DATA BASE MANAGEMENT SYSTEMS
Common to Mechanical Engineering, Electronics And Computer
Engineering, Electronics And Telematics, Electronics And Communication
Engineering

Time: 3 hours   Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks
⋆ ⋆ ⋆ ⋆ ⋆

1. Explain the following:

   (a) Transaction state

   (b) View serializability

   (c) Lock table. [5+5+6]

2. (a) What is meant by repetition of information and inability to represent information? Explain why each of these properties may indicate a bad relational database design.

   (b) Discuss about decomposition into 3NF. [8+8]

3. (a) Explain Heap file with un clustered Tree index.

   (b) Explain data on external storage. [8+8]

4. Design an E-R diagram for keeping track of the exploits of your favourite sports team. You should store the matches played, the scores in each match, the players in each match and individual player statistics for each match. Summary statistics should be modeled as derived attributes. [16]

5. Consider the following schema:
   Suppliers(sid: integer, sname: string, address: string)
   Parts(pid: integer, pname: string, color: string)
   Catalog(sid: integer, pid: integer, cost: real)
   Consider the following schema:
   Suppliers(sid: integer, sname: string, address: string)
   Parts(pid: integer, pname: string, color: string)
   Catalog(sid: integer, pid: integer, cost: real)
   The domain of each field is listed after the field name. Thus sid is the key for Suppliers, pid is the key for Parts, and sid and pid together form the key for Catalog. The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in relational algebra, tuple relational calculus, and domain relational calculus:

   (a) Find the sids of suppliers who supply every part.

   (b) Find the sids of suppliers who supply every red part.

6

(c) Find the sids of suppliers who supply every red or green part.

(d) Find the sids of suppliers who supply every red part or supply every green part.   [4+4+4+4]

6. (a) What are views? Discuss the problems encountered in modifying database through views?

(b) What is an embedded SQL? Give examples.   [10+6]

7. (a) Explain in detail about restart recovery.

(b) Define analysis pass, redo pass and undo pass in Recovery algorithm.

(c) Explain failure with loss of nonvolatile storage.   [5+5+6]

8. (a) Write about data base users and user interfaces.

(b) What is logical data independence and why is it important?   [8+8]

⋆ ⋆ ⋆ ⋆ ⋆