

II B.Tech I Semester Regular Examinations, November 2006
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

1. (a) What are the types of languages a database system provides? Explain.
(b) What are the five main functions of a Database Administrator? [8+8]
2. (a) What is a foreign key constraint? Why are such constraints important? What is referential integrity?
(b) How many distinct tuples are in a relation instance with cardinality 22? [8+8]
3. For the following relational database, give the expressions in SQL. [16M]
student (stuno, stuname, major, level, age)
Class(Classname, meets_at, Room, fid)
Faculty(fid, fname, deptid)
 - (a) Find the names of all students who are enrolled in two classes that meet at the same time?
 - (b) Find the age of the oldest student who is either a history major or is enrolled in a course taught by I.Teach?
 - (c) Find the names of all classes that either meet in room R128 or have five or more students enrolled?
 - (d) Find the names of faculty members who teach in every room in which some class is taught?
 - (e) Find the names of faculty members for whom the combined enrolment of the course that they teach is less than five?
 - (f) Print the level and the average of students for that level?
 - (g) Print the level and the average of students for that level, for each level except JR?
 - (h) Find the names of student who are enrolled in the maximum number of classes
4. (a) Explain about 4 Nf? Give one Example ?
(b) Explain about 5 Nf? Give one Example ? [8+8]
5. (a) Define the concept of schedule for a set of concurrent transactions. Give a suitable example [8M]
(b) Explain read-only, write-only & read-before-write protocols in serializability. [8M]

6. (a) Discuss the Undo & redo operations & recovery techniques that use each. [6M]
(b) . How the use of 2PL would prevent interference between the two transactions. [5M]
(c) Explain 3 main properties of ARIES Algorithm [5M]
7. Compare the Heap file organization and Sequential file organization. [16]
8. Explain all the operations on B^+ -tree by taking a sample example. [16]

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1. (a) Describe about the three levels of Data Abstraction.
(b) What is Data Independence? Explain the two levels of Data Independence. [8+8]
2. (a) What is a foreign key constraint? Why are such constraints important? What is referential integrity?
(b) How many distinct tuples are in a relation instance with cardinality 22? [8+8]
3. (a) With an example, explain the optimization of nested sub queries: [9M]
(b) For the following relational database, give the expressions in SQL. [7M]
branch_schema (branch_name, branch city, assets) customer_schema (customer name, customer street, customer city) Loan_schema (branch name, loan_number, amount) Borrower_schema (customer name, Loan number) Account_schema (branch name, account_number, balance) Depositer_secham (Customer name, account_number)
 - i. find the names of all customers whos street address include substring ?Main?
 - ii. Find average balance for each customer who lives in Harrison and at least three accounts?
 - iii. Find all customer who have a loan at bank whose names are neither ?smith? non ?jones??
 - iv. Find all customers who have both an account and a loan at perryridge branch?
4. (a) Explain about 4 Nf? Give one Example ?
(b) Explain about 5 Nf? Give one Example ? [8+8]
5. (a) Explain how concurrency execution of transactions improves overall system performance. [8M]
(b) . What are the transaction isolation Levels in SQL. [8M]
6. (a) How deadlock prevention & detection performed related to transaction.[10M]
(b) How is checkpointing done in ARIES. [6M]
7. (a) Explain about software RAID in detail.
(b) Explain about hardware RAID in detail. [8+8]

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Set No. 2

8. (a) Explain about Hash indices with an example.
(b) Explain the differences between Static Hashing and Dynamic Hashing. [8+8]

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1. (a) Explain the Transaction management in a database.
(b) Discuss the Query Processor of Database system structure. [8+8]
2. (a) What is a foreign key constraint? Why are such constraints important? What is referential integrity?
(b) How many distinct tuples are in a relation instance with cardinality 22? [8+8]
3. Describe the multi valued dependency. Is the decomposition in 4NF always dependency preserving and loss less justify your answer with the help of an example. [16]
4. (a) Discuss join dependency ? give example?
(b) Explain 5 NF? [8+8]
5. (a) Define the concept of a transaction. [6M]
(b) Write a short notes on
 - i. Serializability
 - ii. Recoverability[10M]
6. (a) Write a note on Multiversion concurrency control. [8M]
(b) What is Phantom problem? Can it occur in a database where the set of database objects is fixed & only the values of objects can be changed. [8M]
7. If physical OIDs are used, an object can be relocated by keeping a forwarding pointer to its new location. In case an object gets forwarded multiple times, what would be the effect on retrieval speed? Suggest a technique to avoid multiple accesses in such case.
- [16]
8. Explain about Hash File Organization in detail with an example. [16]

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1. (a) Why would choose a database system instead of simply storing data in operating system files ? When would it make sense not to use a database system?
(b) What is logical data independence and why is it important? [8+8]
2. (a) What is a relational database query? Explain with an example.
(b) What are the SQL constructs to modify the structure of tables, views and to destroy the tables and views? [8+8]
3. Decompose the relation R (A, B, C, D, E, F) with the following set of FDs into a BCNF relation FDs of the relation are ABCDE, ABD, DEABCE, EC is the decomposition loss less and dependency preserving? [16]
4. Explain the 4NF. Why is it useful? Explain with example [16]
5. (a) Define Transaction & Schedule with suitable Example. [8M]
(b) With suitable example explain ACID properties. [8M]
6. (a) What are the merits & demerits of using fuzzy dumps for media recovery. [6M]
(b) Explain the phases of ARIES Algorithm. [4M]
(c) Explain 3 main properties of ARIES Algorithm [6M]
7. How does the remapping of bad sectors by disk controllers affect data retrieval rates ? [16]
8. (a) Compare the Ordered Indexing with Hashing.
(b) Compare Linear Hashing with extendable Hashing. [8+8]
