

**2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY**

**III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS  
DATABASE MANAGEMENT SYSTEM  
(INFORMATION TECHNOLOGY)**

NOVEMBER 2005

TIME – 3 HOUR  
MARK – 80

Answer any FIVE Questions  
All Questions carry equal marks

1. (a) Explain the following with examples.

i. relational schema

ii. relational database schema

iii. Domain

iv. cardinality of a relation

v. degree of a relation.

(b) What is a domain constraint? Explain with the help of an example.

[2\*5+6]

2. (a) Explain with an example in SQL

i. Unspecified where-clause and use of Asterisk

ii. Exist and not exists

iii. Explicit sets and NULLS

iv. Renaming attributes and joined tables.

[2\*4]

(b) Consider the following scheme for the COMPANY database. The primary keys are underlined.  
Employee (SSN, Fname, Lname, Birthdate, Address, Salary, Dnumber) Department (Dnumber, Dname, Dlocation) Perform the following operations using SQL. Assume the data:

i. Insert a record into employee table

ii. Delete an employee with SSN equal to 10.

iii. Update the Dnumber of the employee tuple having salary greater than Rs 10,000.

iv. Retrieve the name and address of all employees who work for the "XYZ" department.

[2\*4]

3. (a) Construct a B tree of order 2 to maintain the keys 1,9,8,6,4,5 and 10

(b) Show how 4 is replaced by 7 in the tree constructed in the above question.

[8+8]

4. (a) Discuss in detail the steps involved in processing a query.

(b) Explain any one of the algorithms for computing the join of relations. [8+8]

5. (a) Discuss the role of relational algebra equivalences in query optimization.

(b) Explain various steps involved in the query processing. [8+8]

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? [4+12]

7. (a) How does the granularity of data items affect the performance of concurrency control? What factors affect selection of granularity sine for data item?

(b) What is a schedule? What is an interleaved schedule? How is schedule related to the term serializability? Describe with the help of examples. [8+8]

8. (a) What is the difference between

i. Stable storage and disk.

ii. System crash and a media failure.

iii. Check points and fuzzy dumps. [4+4+8]

(b) Give a short note on crash recovery. [6]