

USN

--	--	--	--	--	--	--	--	--	--

Second Semester M.Tech Degree Examination, July/August 2004

Computer Engineering

Database Management Systems

Time: 3 hrs.]

[Max.Marks : 100

Note: Answer any FIVE full questions.

1. (a) Explain the following new data types supported in object - database systems:
 - i) Structured types
 - ii) Inheritance

Give an example each and discuss how the example situation would be handled if only RDBMS were available. (14 Marks)
- (b) Illustrate Nesting and unnesting operations. (6 Marks)
2. (a) Describe the new indexing techniques available in OLAP. (10 Marks)
- (b) Explain with an example why association rules cannot be used directly for prediction without domain knowledge. (10 Marks)
3. (a) Explain R-trees. How are the following operations implemented on a R-tree:
 - i) Search
 - ii) Insertion / deletion (15 Marks)
- (b) Write a note on concurrency control in R-Trees. (5 Marks)
4. (a) Explain fragmentation and replication with respect to data storing in a distributed DBMS. (10 Marks)
- (b) Describe the 2PC protocol used in distributed databases. (10 Marks)
5. (a) What is a time stamp? Explain concurrency control based on time stamp ordering. (10 Marks)
- (b) Discuss the optimistic concurrency control technique. (10 Marks)
6. (a) What is meant by heuristic optimization? Discuss the main heuristics that are applied during query optimization. (8 Marks)
- (b) Explain with illustrations heuristic optimization of query trees on the following query:

Q : Select Lname
 from employee, works-on, project
 where Pname = Aquarius and Pnumber = P_{no}

and Essn = Ssn and Bdate. 1957-12-31;

The query lists the last names of employees born after 1957 who work on a project named Aquarius. (8 Marks)

(c) What is a query execution plan? (4 Marks)

7. (a) What are temporal databases? Explain the need for temporal databases. (8 Marks)

(b) How can time be incorporated into relational databases? Discuss. (12 Marks)

8. Discuss:

i) Mobility in databases (10 Marks)

ii) Multimedia databases. (10 Marks)