

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**MCA. Sem-II Remedial Examination December 2010**

**Subject code: 620006**

**Subject Name: Database Management System-II**

**Date: 21 /12 /2010**

**Time: 10.30 am – 01.00 pm**

**Total Marks: 70**

**Instructions:**

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

**Q.1 (a)** Define transaction. Explain Atomicity and Durability property of transaction giving an example and show implementation of this property using shadow paging method. **07**

**(b)** Discuss why there is a need of Query Processing and Query optimization for processing SQL. Also write down steps for Query processing. **07**

**Q.2 (a)** Discuss why there is a need for database security. Differentiate between Discretionary Access Control and Mandatory Access Control method. **07**

**(b)** Define Deadlock. Discuss deadlock prevention and detection method. **07**

**OR**

**(b)** Discuss concept of Timestamp, Timestamp Ordering Protocol and Thomas Write Rule for concurrency control method. **07**

**Q.3 (a)** Discuss why there is a need for recovery in transaction. List out various recovery methods and explain in detail Log based recovery method. **07**

**(b)** Define Lock. Show lock compatibility matrix and explain Two Phase Locking protocol **07**

**OR**

**Q.3 (a)** Explain Concurrency control method showing serial and concurrent transaction. Discuss the concept of conflict serializability. **07**

**(b)** What is transaction log? Discuss the concept of checkpoint showing transaction log. **07**

**Q.4 (a)** Discuss various cost components of Query optimization and explain cost function for Select. **07**

**(b)** Explain in brief the concept of Object Oriented databases. **07**

**OR**

**Q.4 (a)** Explain in brief the concept of Distributed Databases. **07**

**(b)** Discuss concept of Heuristic query optimization by drawing query tree. **07**

**Q.5 (a)** Explain in brief Query Decomposition method in query processing technique. **07**

**(b)** Describe briefly Relational Algebra. Explain various Relational algebra operators giving example. **07**

**OR**

**Q.5 (a)** Discuss various transformation rules for query optimization and show how these rules can be implemented in query optimization technique. **07**

(b) Write down Relational Algebra for the given schema.

SOFTWARE(sid,software\_name,develop\_in,selling\_cost,  
development\_cost)

PROGRAMMER(pid, pname, date\_join, dept\_name, sid,  
Salary, gender)

- i. Find out the selling cost average for packages developed in Oracle.
- ii. List details of programmer whose salary is greater than Rs. 10,000.
- iii. Display details of Software develop by “Mr. Ram”.
- iv. How many software has highest development cost.
- v. List details of programmer who join in the current month.
- vi. Retrieve name of programmer who do not involve in any software development.
- vii. Retrieve all male programmers working in ‘MCA’ department.

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