GUJARAT TECHNOLOGICAL UNIVERSITY
MCA SEM-II Examination- Dec.-2011

Subject code: 620006   **Date: 20/12/2011**
Subject Name: Database Management System-II
Time: 02.30 pm-05.00 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)** What is Transaction? List various states of a transaction. Explain why each state transition may occur. **07**

(b) Define Lock. Explain in brief two-phase locking protocol with its advantages and disadvantages. **07**

Q.2 **(a)** i) State True/False with valid reason in two lines. **05**
    a. Union, Intersection and division are set-theoretic operations.
    b. Query optimization means always giving an optimal strategy as the execution plan.
    c. Concurrent execution of transactions improves throughput of transaction.
    d. Once transaction has been committed, we can undo its effects by executing a compensating transaction.
    e. Number of tuples in a relation is called degree.

ii) Define: a) Query tree b) Checkpoint **02**

(b) What is Query Processing? List various stages of query Decomposer. Explain in brief Query Analysis. **07**

OR

(b) What is Query Optimization? Explain heuristic query optimization. **07**

Q.3 **(a)** What is database security? Discuss various threats to database security. **07**
(b) What is Relational Algebra? Explain Super key, Candidate Key and Primary Key with proper example. **07**

OR

Q.3 **(a)** What is database security? Explain discretionary access control. **07**
(b) What is Relational Algebra? Explain Projection, Outer join and Division operations in Relation Algebra with example. **07**

Q.4 **(a)** Explain Object Oriented DBMS with advantages and disadvantages. **07**
(b) Explain Serializability. **07**

OR

Q.4 **(a)** What is distributed Databases? List desired properties and functions of distributed databases. **07**
(b) Explain parallel databases with advantages and disadvantages. **07**

Q.5 **(a)** Explain forward recovery and backward recovery. **07**
(b) Discuss cost components of Query Execution. List information that is needed for the cost functions. . **07**

OR

Q.5 **(a)** Explain Deferred update and Immediate update technique. **07**

(b) i) Write down Relational Algebra for the given schema: **04**

Supplier(Sid,Sname, city)
Part(Pid, Pname,Ptype,color)
Catalogue(Pid,Sid,cost)
Product(Ptype,ptypname)

1) Find the names of 'RED' color parts
2) Find the names of suppliers who do not belong to 'BARODA'
3) Find Sid and Pid having cost more than Rs. 1000
4) Find Sid who supplies part 'P01' (pid) and having cost less than 100

ii) Write short note on Deadlock. **03**

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