Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA. Sem-II Examination July 2010

Subject code: 620006

Subject Name: Database Management System II

Date: 08 / 07 /2010 **Time: 11.00 am – 01.30 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)** (i) Explain the properties of transaction with example. **07**
(ii) Draw and explain state transition diagram for transaction execution.

(b) Explain grant and revoke privileges with example for discretionary access control. **07**

Q.2 **(a)** State whether the following statements are true or false. Justify. No Justification, no marks. **07**

(1) A firewall is a system designed to prevent unauthorized access to or from a public network.
(2) A check point is a point of synchronization between the database and the transaction log file.
(3) The assignment and management of memory blocks is called the buffer management.
(4) Level 1 transaction is the minimum consistency requirement that allows a transaction to be recovered in the event of system failure.
(5) There is no deadlock in the timestamp method of concurrency control.
(6) A candidate key is an attribute which can uniquely identify a row in a table.
(7) Heuristic rules are used as an optimization technique to modify the internal representation of a query.

(b) Consider the following relations: **07**
Suppliers (Sid, S_name, Address)
Parts (Pid, P_name, Colour)
Catalogue(Sid, Pid, Cost)
The key fields are underlined. Write the following queries in relational algebra.

1) Find the names of suppliers who supply some red parts.
2) Find the Pid of parts supplied by every supplier at less than INR 500.
3) Find the Pid of parts that are supplied by at least two different suppliers.
4) Find the Sid of suppliers who supply every part or green part.
5) Find the Sid of suppliers who supply every part.
6) Find the Sid of suppliers who supply some red or green part.
7) Find the Sid of suppliers who supply some red and some green parts.

OR

(b) Explain union, difference and intersection operation in relational algebra with your own suitable example **07**

Q.3	**(a)**	Explain shadow paging as a technique for Database recovery. List the advantages and disadvantages of shadow paging.	**07**
	(b)	Differentiate between deferred update and immediate update with suitable example.	**07**

OR

Q.3	**(a)**	Differentiate between UNDO and REDO types of transaction recovery with suitable example.	**07**
	(b)	Explain optimistic methods of concurrency control with its advantages and disadvantages.	**07**
Q.4	**(a)**	Differentiate between parallel and distributed databases. List advantages and disadvantages of Parallel Databases.	**07**
	(b)	Explain in brief the cost components in query execution.	**07**

OR

Q.4	**(a)**	Explain heuristic rules for query optimization with your own suitable example.	**07**
	(b)	Explain features, advantages and disadvantages of OODBMS.	**07**
Q.5	**(a)**	Explain the problem called 'Dirty read' of Concurrency control with suitable example.	**07**
	(b)	(i) Write a short note on permutable actions. (ii) Explain 2PL.	**07**

OR

Q.5	**(a)**	(i) Explain the concept of deadlock with example. (ii) Discuss different ways for deadlock prevention and detection.	**07**
	(b)	(i) Explain the concept of timestamp with its properties. (ii) Explain the concept of granule timestamps. (iii) Differentiate between authorization and authentication.	**07**

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