Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–II • EXAMINATION – SUMMER 2013

Subject Code: 2620003 **Date: 07-06-2013**

Subject Name: Database Management System (DBMS)

Time: 10:30 am to 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)** Explain the following terms. **07**

1. Attributes
2. Cascading rollback
3. Candidate key
4. Functional dependency
5. Cardinality
6. DML
7. Lock Modes

(b) Draw & Explain Database Architecture. **07**

Q.2 **(a)** What is normalization? Explain 3NF and BCNF with examples. **07**

(b) Explain Lossless Decomposition and Dependency Preservation. **07**

OR

(b) Explain Union and Cartesian Product for relational algebra operations with example. **07**

Q.3 **(a)** What is ERD? Explain its Notation in detail. **07**

(b) What is instance and schema? Explain various categories of data model. **07**

OR

Q.3 **(a)** Explain Entity Sets, Relationship sets and Weak entity set with example. **07**

(b) Consider the following database schema and write relational algebra expression for queries given below. **07**

branch (branch_name, branch_city, assets)
customer (customer_name, customer_street, customer_city)
account (account_number, branch_name, balance)
loan (loan_number, branch_name, amount)
depositor (customer_name, account_number)
borrower (customer_name, loan_number)

1. Find the names of all customers who have a loan at the Baroda branch. (2 Marks)

2. Find all customers who have an account from at least the “Surat” and the “Rajkot” branches.
(3 Marks)

3. Find the names of all customers who have a loan and an account at bank.(2 Mark)

Q.4	**(a)**	Give reasons for allowing concurrent execution. Explain the difference between serial and concurrent schedule.	**07**
	(b)	Explain following. (a) Failure classification (b) Storage types	**07**

OR

Q.4	**(a)**	What is deadlock prevention? Explain different schemes for deadlock prevention and give the significant differences between them.	**07**
Q.4	**(b)**	What is log-base recovery? Explain deferred database modification technique for the same.	**07**
Q.5	**(a)**	What is serializability? Explain view serializability in detail.	**07**
	(b)	Explain Two-Phase locking protocol.	**07**

OR

Q.5	**(a)**	Explain ACID properties and Transaction states.	**07**
	(b)	Explain Deadlock detection and recovery for concurrency control.	**07**

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