Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA INTEGRATED SEMESTER– III EXAMINATION – WINTER 2015

Subject Code: 4430604 **Date: 08/12/2015**

Subject Name: Database Management Systems (DMS)

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) State True or False: **07**

(i) Materialized view's contents are computed and stored.
(ii) Immediate update technique does not require maintaining the old value in the update log.
(iii) Concurrent execution executes the transactions one after other.
(iv) Audit trial is a special file that automatically keeps track of all operations performed by the users.
(v) Throughput of a Transaction will be improved by concurrent execution.
(vi) Checkpoint is the point of synchronization between the database and the log file, in database Recovery.
(vii) Rigorous 2PL requires all locks to be held until the transaction commits.

(b) Do as directed:

(i) _____ is a mechanism to determine whether the user is valid user or not. **01**
(ii) _____ is a phenomenon in which single transaction leads to series of transaction rollback. **01**
(iii) Define Query Optimization. **01**
(iv) Write short notes on Starvation. **02**
(v) Describe briefly about Shadow paging. **02**

Q.2 (a) (i) List the ACID properties of a Transaction, describe briefly. **04**
(ii) Describe any 3 types of Database Failures. **03**

(b) (i) Explain how the Shadow copy scheme is used to implement the Atomicity and Durability. **04**
(ii) Describe the need of concurrent execution with reasons. **03**

OR

(b) (i) Define Transaction. Describe the various states of a Transaction with a State Diagram. **04**
(ii) Give any 3 Equivalence rules of Query Optimization. Describe briefly. **03**

Q.3 (a) Define Deadlock. Explain the Deadlock prevention and Detection schemes. **07**

(b) Describe how the Query processing is done in sorting. Explain the same using the External merge-sort algorithm. **07**

OR

Q.3 (a) Why Database recovery is needed? Explain the Deferred database modification technique. Give example. **07**

(b) Write short notes on Serializability? Explain Conflict Serializability. **07**

Q.4 (a) Define Lock. Show Lock compatibility matrix and Explain 2PL. **07**

(b) (i) Write short notes on the use of Firewalls in Database security. **04**
(ii) Write short notes on Recoverable schedule. **03**

OR

Q.4	**(a)**	Define Query Processing. Explain the steps involved in Query processing with a neat diagram.	**07**
	(b)	(i) Describe any 4 Threats to Database security.	**04**
		(ii) Write short notes on Phantom phenomenon.	**03**
Q.5	**(a)**	What is Parallel database? Discuss the advantages and disadvantages of the same.	**07**
	(b)	What is Data Encryption? Discuss the various Encryption schemes used in Database security.	**07**

OR

Q.5	**(a)**	Write an essay on Object-oriented database by discussing the Advantages and Disadvantages.	**07**
	(b)	Explain the Discretionary access control in database security.	**07**

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