Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA Integrated - SEMESTER–III • EXAMINATION – SUMMER • 2017

Subject Code: 4430604 **Date: 12-05-2017**

Subject Name: Database Management Systems

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) 1. An object database is a database management system in which information is represented in the form of _____. **07**

2. Procedure of choosing a suitable query out of all queries is called _____

3. Query can be represented in the _____form of data structure.

4. In database recovery, the point of synchronization between the database and the log file is called _____

5. _____update technique does not require maintaining the old value in the update log.

6. _____is a special file that automatically keeps track of all operations performed by the users.

7. To perform a write operation _____lock is acquired on a data item.

(b) 1. What is the importance of using Materialized View? **01**

2. What is the difference between demand-driven and producer-driven pipeline. **01**

3. Which are the two methods used for duplicate elimination? **02**

4. What are the measures to calculate cost of query evaluation? **03**

Q.2 (a) Explain Transaction. Draw Transaction State Diagram and explain it in detail. **07**

(b) What is deadlock? Explain Deadlock detection, prevention and recovery from deadlock with example. **07**

OR

(b) What is equivalence rule? Discuss any six transformation rules for query optimization. **07**

Q.3 (a) Consider a SQL query as : select emp_name from employee e, department d where e.salary < 6000 and d.dept_name='Sales' **07**

(i) Draw various forms of query evaluation plan.

(ii) Draw an improved query tree

(b) Write the difference between recovery using Deferred update and Immediate update. **07**

OR

Q.3 (a) 1. Describe the Shadow copy scheme for implementing Atomicity and Durability **04**

2. Mention any 3 types of Database Failures and describe them. **03**

(b) Explain Recoverable schedule and Cascadeless schedule by giving appropriate examples. **07**

Q.4 (a) What is concurrency? Give the reasons for allowing concurrency. Give **07**

appropriate examples for explanation.

	(b)	Define Query Processing. Explain the steps involved in Query processing with a neat diagram.	**07**

OR

Q.4	**(a)**	Explain Phantom Phenomenon with example	**07**
	(b)	Explain how the Query processing is done in sorting. Describe using the External merge-sort algorithm.	**07**
Q.5	**(a)**	Explain different types of Database security issues. Explain Authorisation and Authentication.	**07**
	(b)	Write the advantages and disadvantages of Object Oriented Database Management Systems. Give two main differences between OODM and E-R Model?	**07**

OR

Q.5	**(a)**	Explain in detail about the (a) Audit Trail (b) Firewalls	**07**
	(b)	What are the challenges of ORDBMS design? What are the main features of ORDBMS?	**07**

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