

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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