

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA Integrated – SEMESTER – III • EXAMINATION – SUMMER 2018****Subject Code: 4430604****Date: 25-May-2018****Subject Name: Database Management System****Time: 02.30 pm to 5.00 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) Concurrent execution executes the transactions one after other.
 - (ii) Materialized view's contents are computed and stored.
 - (iii) Deferred update technique does not require maintaining the old value in the update log.
 - (iv) Strict 2PL requires all locks to be held until the transaction commits.
 - (v) Audit trail is a special file that automatically keeps track of all operations performed by the users.
 - (vi) Throughput of a Transaction will be improved by concurrent execution.
 - (vii) In database recovery, the point of synchronization between the database and the log file is called checkpoint.
- (b) Do as directed:**
- (i) _____ is a phenomenon in which single transaction leads to series of transaction rollback. **01**
 - (ii) _____ is a mechanism to determine whether the user is valid user or not. **01**
 - (iii) Define Query Optimization. **01**
 - (iv) Write short notes on View serializability? **02**
 - (v) Describe briefly about Shadow paging. **02**
- Q.2 (a) (i) Describe any 3 types of Database Failures. 03**
- (ii) Describe the ACID properties of a Transaction, briefly. 04**
- (b) (i) Why do we need concurrent execution? Discuss. 04**
- (ii) Define Transaction. Describe the various states of a Transaction with a State Diagram. 03**
- OR**
- (b) (i) Explain how the Shadow copy scheme is used to implement the Atomicity and Durability. 04**
- (ii) Give any 3 Equivalence rules of Query Optimization. Describe briefly. 03**
- Q.3 (a) Define Deadlock. Discuss the Deadlock prevention and Detection methods. 07**
- (b) What do you mean by Serializability? Explain Conflict Serializability. 07**
- OR**
- Q.3 (a) Why Database recovery is needed? Explain how Immediate database modification technique is implemented using Log based recovery. Give example. 07**
- (b) Explain how the Query processing is done in sorting. Describe using the External merge-sort algorithm. 07**
- Q.4 (a) Define Lock. Show Lock compatibility matrix and Explain 2PL. 07**
- (b) (i) Describe any 4 Threats to Database security. 04**
- (ii) Write short notes on Phantom phenomenon. 03**

OR

- Q.4 (a)** Define Query Processing. Explain the steps involved in Query processing with a neat diagram. **07**
- (b)** (i) Write short notes on the use of Firewalls in Database security. **04**
(ii) Write short notes on cascade-less schedule. **03**
- Q.5 (a)** Discuss the Features, Advantages and Disadvantages of Object-oriented database. **07**
- (b)** Explain the Discretionary access control in database security. **07**
- OR**
- Q.5 (a)** What is Distributed 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**
