

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MCA - SEMESTER-II • EXAMINATION – SUMMER 2016

Subject Code: 620006

Date: 01-06-2016

Subject Name: Database Management System -II

Time: 10.30a.m. To 01.00p.m.

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)** What is Transaction? List various states of a transaction. Explain why each state transition may occur **07**
- (b)** Define the following **07**
1. Relational algebra
 2. Authorization
 3. Cascading rollback
 4. Check Point
 5. Firewall
 6. Object Identity
 7. Query graph
- Q.2 (a)** Fill in the blanks **07**
1. Two Phase locking protocol ensures _____ serializability
 2. _____ protocol to ensure that system will never enter deadlock state.
 3. The _____ modification technique allows database modification to be output to database while transaction is still in active state.
 4. Single inheritance exists when a class has _____ immediate super class above it.
 5. Synchronization is the coordination of _____.
 6. _____ Parallelism refers to execution of single query in parallel on multiple processor/disk.
 7. RAID stands for _____
- (b)** Define Lock. Explain in brief two-phase locking protocol with its advantages and disadvantages **07**
- OR**
- (b)** What is concurrency control? Explain three main problems of concurrency control **07**
- Q.3 (a)** What is Relational Algebra? Explain Super key, Candidate key and Primary key with proper example. **07**
- (b)** What is threat in a database environment? Explain different threats and types of database security issues. **07**

OR

- Q.3 (a)** Write Relational Algebra for the given queries. **07**
EMP(emp_no, emp_nm, gender, age)
DEPENDENT(emp_no, depend_no, depend_name, relation)
1. List employees with its dependents.
 2. Retrieve name of employees who has no dependent.
 3. List employees whose age >18 and <40
 4. Retrieve name of employee who is youngest.
 5. Retrieve name of all male employees.
 6. Retrieve name of all male employees with older age.
 7. Retrieve name of all employees and its dependents which has only 'mother' as a relation
- (b)** Discuss various types of Access Control Techniques for Database Security. **07**
- Q.4 (a)** Discuss Distributed Data Storage in Distributed Databases. **07**
(b) What do you understand by Query Decomposition? Discuss with Example of Query Analysis phase. **07**
- OR**
- Q.4 (a)** Differentiate between Object Relational Data model and Object Oriented data model in Object Based Databases. **07**
(b) Discuss cost components of Query Execution. List information that is needed for the cost functions **07**
- Q.5 (a)** Describe ACID properties in brief and explain shadow copy technique **07**
(b) Explain forward recovery and backward recovery **07**
- OR**
- Q.5 (a)** What is Serializability? Explain conflict serializability in detail **07**
(b) What is Deadlock? Define principal methods for dealing with deadlock problems and explain deadlock prevention **07**
