

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA - SEMESTER-I • EXAMINATION – WINTER • 2014****Subject Code: 610005****Date: 26-12-2014****Subject Name: Database Management System - 1****Time: 10:30 am - 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)** Define the following terms: **07**
1. Database system
 2. Entity integrity Constraint
 3. Closure set of FDs
 4. Aggregation in E-R model
 5. Dependency preservation
 6. Assertion
 7. trivial and non-trivial dependencies
- (b)** What is DBMS? Explain merit and demerit of database Management Systems. **07**
- Q.2 (a)** Explain Three level architecture ? If we change physical level do we require to change any higher levels? **07**
- (b)** Distinguish between a weak entity set and a strong entity set. Explain how a weak entity set can be converted into a strong entity set and how it can participate in relationships, giving suitable examples. **07**
- OR**
- (b)** What is E-R model. Draw the E-R Diagram of Banking Enterprise System. **07**
- Q.3 (a)** Explain Referential Integrity constraints with example ? **07**
- (b)** Define the concept of aggregation in E-R model. Give two examples where aggregation is useful. **07**
- OR**
- Q.3 (a)** Distinguish between entity sets and relationship sets. Also, compare binary relationship sets and n-ary relationship sets. **07**
- (b)** State Armstrong's axioms to find logically implied functional dependencies. Use these axioms to prove the soundness of the decomposition rule. **07**
- Q.4 (a)** Define the constraint multivalued dependency. Explain fourth normal form (4NF). Why is 4NF more desirable than BCNF ? **07**
- (b)** Explain Functional dependency and Trivial functional dependency with examples. **07**
- OR**
- Q.4 (a)** Explain Canonical cover and Extraneous Attributes with examples. **07**
- (b)** In case of bad database design, what anomalies may arise ?. Explain with example. **07**
- Q.5 (a)** What is UML ? Explain the parts of UML ? Show the UML class diagram notations for its equivalent E-R diagram constructs. **07**
- (b)** Describe different types of information stored in data dictionary. **07**

OR

- Q.5 (a)** Explain what is meant by “repetition of information “ and “ inability to represent information”. Explain why each of these properties may indicate a bad relational database design. **07**
- (b)** Compare the terms primary key, candidate key and super key, giving suitable examples. Also, explain the mapping cardinalities that can exist between two entity sets in a binary relationship. **07**
