

**GUJARAT TECHNOLOGICAL UNIVERSITY****MCA - SEMESTER-I • EXAMINATION – WINTER 2013****Subject Code: 610005****Date: 21-12-2013****Subject Name: Database Management System - 1****Time: 02:30 pm TO 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) Explain in brief the disadvantages of file-processing system. **07**  
 (b) What is Data Model? Explain in brief different types of Data Models. **07**

- Q.2** (a) What is E-R Model? Explain different components of E-R Model with suitable example. **07**  
 (b) Explain in brief various functions performed by DBA. **07**

**OR**

- (b) Define the following terms: **07**  
 Transaction, Data Mining, Database Administrator, Storage Manager, Buffer Manager, Instance of the database, Schema of the database

- Q.3** (a) Explain in brief two-tier and three-tier architectures of database applications. **07**  
 (b) What is Mapping Cardinalities? Explain possible mapping cardinalities for a binary relationship with example. **07**

**OR**

- Q.3** (a) Explain different types of attributes with suitable example. Also give symbols used for them in E-R Diagram. **07**  
 (b) Write a short note on Canonical Cover of a set of functional dependency. **07**

- Q.4** (a) What is Normalization? Explain in brief 1NF, 2NF, and BCNF. **07**  
 (b) What is Functional Dependency? What is Closure of a set of functional dependency? List Armstrong's axioms that can be used to find closure. **07**

**OR**

- Q.4** (a) Explain constraints on Generalizations. **07**  
 (b) Explain the process of reduction of E-R Model into database schema with suitable example. **07**

- Q.5** (a) What is Data Dictionary? List different types of information stored in Data Dictionary? **07**

- (b) What is the goal of relational database design? Explain the following undesirable properties with suitable example that can lead to bad database design. **07**
1. Repetition of information
  2. Inability to represent certain information

**OR**

- Q.5** (a) What is System Catalog? Give one possible representation to store system data in relational database and explain it in brief. **07**

- (b) What is De-normalization? Why is it used? Discuss the Materialized View? **07**

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