

GUJARAT TECHNOLOGICAL UNIVERSITY**MCA – SEMESTER - I • EXAMINATION – WINTER 2012****Subject code: 610005****Date: 08/01/2013****Subject Name: Database Management Systems - I****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) Define** **07**
- 1) Database Instance
 - 2) Super Key
 - 3) De-normalization
 - 4) Candidate Key
 - 5) Database Schema
 - 6) Redundancy
 - 7) Atomicity
- (b) i) List 4 types of database users. List any 4 responsibilities of DBA.** **04**
- ii) Explain in brief logical and physical data independence.** **03**
- Q.2 (a) i) Define Data, Database and DBMS with suitable example.** **03**
- ii) List various disadvantages of File processing systems.** **04**
- (b) ICC wants to design a database to keep track of the teams playing T20 cricket world cup. A team has a number of players, not all of them participate in each game. We need to keep track of the players participating in each game for each team, the positions they played in that game, the venue of game, the result of the game and performance (score, wickets, catches) of each player in each played game. Design ER schema diagram for this database application, stating any assumptions you make.** **07**
- OR**
- (b) i) Describe Entity, Entity set, Attributes and Relationships with suitable example.** **04**
- ii) Explain in brief Generalization with example.** **03**
- Q.3 (a) i) Why we need normalization?** **03**
- ii) Explain 1NF, 2NF and 3NF with suitable example.** **04**
- (b) Explain in brief the concept of System catalog.** **07**
- OR**
- Q.3 (a) Explain in brief Insert, Update and Delete anomalies with suitable example.** **07**
- (b) What is data dictionary? What types of information is stored in it?** **07**
- Q.4 (a) i) What is BCNF?** **03**
- ii) Explain in brief lossy and lossless join decomposition** **04**
- (b) i) Define Terms:** **04**
- a) Functional Dependencies
 - b) Canonical Cover
- ii) Explain 3-tier architecture.** **03**
- OR**
- Q.4 (a) Explain in brief MVD (Multivalued Dependencies) and 4NF.** **07**
- (b) i) Explain in brief Aggregation with example** **03**
- ii) Explain in brief Data manipulation and Data definition languages.** **04**

