

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER-I • EXAMINATION – SUMMER 2013

Subject Code: 610005

Date: 06-06-2013

Subject Name: Database Management System - 1

Time: 10:30am to 13:00pm

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) Answer the followings:

07

- (1) Define: Database management system
- (2) Define: Data, Information
- (3) What is data dictionary?
- (4) Define: Candidate key
- (5) Define: Weak entity set
- (6) What is the importance of functional dependencies in database design?
- (7) What is entity and attribute?

(b) Answer the followings:

07

- (1) The following are components of a database except _____
 - (A) User data
 - (B) Metadata
 - (C) Reports
 - (D) indexes
- (2) SQL stands for _____.
 - (A) Structured Query Language
 - (B) Sequential Query Language
 - (C) Structured Question Language
 - (D) Sequential Question Language
- (3) Which type of entity represents an actual occurrence of an associated generalized entity?
 - (A) Supertype entity
 - (B) Subtype entity
 - (C) Archetype entity
 - (D) Instance entity
- (4) SQL views can be used to hide:
 - (A) Columns and rows only.
 - (B) Complicated SQL syntax only.
 - (C) Both of the above can be hidden by an SQL view.
 - (D) None of the above is correct.
- (5) Which of the following is NOT a type of SQL constraint?
 - (A) PRIMARY KEY
 - (B) FOREIGN KEY
 - (C) ALTERNATE KEY
 - (D) UNIQUE

- (6) The SQL ALTER statement can be used to:
 - (A) Change the table structure.
 - (B) Change the table data.
 - (C) Add rows to the table.
 - (D) Delete rows from the table.
- (7) Multivalued dependencies should _____ be eliminated.
 - (A) Always
 - (B) Commonly
 - (C) Seldom
 - (D) Never

Q.2 (a) Draw and explain the database system architecture. **07**

(b) Explain the followings related to E-R diagram: **07**

- (1) Participation Constraints
- (2) Class Hierarchies
- (3) Aggregation

OR

(b) Draw and explain the levels of abstraction in a database management system. **07**

Q.3 (a) Draw an Entity – Relationship diagram for hotel management system. **07**

(b) Explain boyce-codd normal form (BCNF) with suitable example. **07**

OR

Q.3 (a) Draw an Entity – Relationship diagram for library management system. **07**

(b) Explain third normal form (3NF) with suitable example. **07**

Q.4 (a) Define the following terms: **07**

- (1) Relation schema
- (2) Relational database schema
- (3) Domain
- (4) Relational instance
- (5) Relational cardinality
- (6) Relational degree
- (7) Integrity constraints

(b) Solve the followings: **07**

- (1) Give a set of FDs for the relation schema $R(A,B,C,D)$ with primary key AB under which R is in 1NF but not in 2NF.
- (2) Give a set of FDs for the relation schema $R(A,B,C,D)$ with primary key AB under which R is in 2NF but not in 3NF.

OR

Q.4 (a) Define the following terms: **07**

- (1) Referential integrity
- (2) Super key
- (3) Foreign key
- (4) Data definition language

(5) Data manipulation language

(6) Outer joins

(7) Primary key

(b) Solve the followings: 07

(1) Prove that if R has only one key, it is in BCNF if and only if it is in 3NF.

(2) Prove that if R is in 3NF and every key is simple, then R is in BCNF.

Q.5 (a) What is the need for Armstrong rules? Discuss any seven Armstrong rules. 07

(b) Describe different types of information stored in data dictionary. 07

OR

Q.5 (a) Answer the followings: 07

(1) Describes the various disadvantages of File processing systems.

(2) Explain the advantages and disadvantages of DBMS.

(b) Write a short note on: Multivalued Dependency with suitable example. 07
