Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA Integrated - SEMESTER– II• EXAMINATION – WINTER 2015

Subject Code: 4420603 **Date: 04/12/2015**

Subject Name: Fundamentals of Database Management System

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)** Fill in the blanks. **07**

1. A relation is in _____ if an attribute of a composite key is dependent on an attribute of other composite key.
2. The value of the attribute describes a particular _____.
3. Whenever two independent one-to-many relationships are mixed in the same relation, a _____ arise.
4. Dependency preservation is not guaranteed in _____.
5. Relational Algebra does not have _____.
6. Tree structures are used to store data in _____.
7. _____ means that an entity can be a member of at most one of the subclasses of specialization.

(B) (1) What is the difference between logical data independence and physical data independence? **03**

(2) Explain Component of an E-R Model. **04**

Q.2 **(A)** Explain the following terms: **07**

(1) Primary Key
(2) DKNF
(3) BCNF
(4) ANSI
(5) SPARC
(6) Super Key
(7) RDBMS

(B) Explain specialization and generalization in details. **07**

OR

(B) What is data dictionary? Explain its different types. **07**

Q.3 **(A)** Write a detail note on Codd's rule? **07**

(B) (1) Write a short note on Integrity Constraints. **03**

(2) Write relational algebraic forms for the following queries: **04**

Loan (loan_number,branch_name,amount)

(i) Find all loans of over $1200.

(ii) Find the loan number of each loan of an amount greater than $1200.

OR

Q.3 **(A)** Write a details note on components of DBMS. **07**

(B) (1) Justify – All BCNF is in 3NF, but all 3NF is not BCNF. **03**

(2) Write a short note on database language. **04**

Q.4 **(A)** Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient a log of the various tests and examinations conducted. **07**

(B) Write a short note:

(1) Aggregate functions in relational algebra **03**

		(2) Types of relational calculus	**04**
		OR	
Q.4	**(A)**	Construct an E-R diagram for car-insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents.	**07**
	(B)	Write a short note:	
		(1) Lossless join dependency	**03**
		(2) Relational Algebra Operation	**04**
Q.5	**(A)**	Explain between DBMS & File System.	**07**
	(B)	Explain ANSI/SPARC Architecture of DBMS in detail.	**07**
		OR	
Q.5	**(A)**	Explain Components of DBMS with Diagram.	**07**
	(B)	Explain Tuple Relational Calculus giving suitable examples.	**07**

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