GUJARAT TECHNOLOGICAL UNIVERSITY
MCA Integrated - SEMESTER–II • EXAMINATION – WINTER • 2014

Subject Code: 4420603   **Date: 04-12-2014**
Subject Name: Fundamentals of Database Management Systems
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)** Fill in the blanks.   **07**
1) The administrative information stored in data dictionaries is known as _____.
2) _____ was the first database model that offered the data security that is provided and enforced by the DBMS.
3) A visual representation of the conceptual model is called a _____
4) _____ is the process of minimizing the differences between the entities by identifying the common features.
5) A _____ is a set of all possible data values.
6) A _____ is a value that is assigned to an attribute when no other value applies, or when the applicable value is unknown.
7) The _____ operation selects certain columns (attributes) from a table while discarding others.

(b) State whether the following statements are true or false.   **07**
1) A schema separates the physical aspects of data storage from the logical aspects of data representation.
2) The DML enabled the manipulation of the database contents.
3) An attribute is viewed as the atomic real world item.
4) Cardinality of a table means the number of columns in a table.
5) A table cannot have more than one attribute which can uniquely identify the rows.
6) Second normal form is the removal of the partial functional dependencies or redundant data.
7) In Domain Calculus the variables represent the values drawn from specified domains.

Q.2 **(a)** (i) What are different types of attributes? Explain in brief.   **04**
(ii) What are weak and strong entities? How are they represented in an E-R diagram?   **03**

(b) Write a note on File-based Data Management. Which are the disadvantages of file-based data management systems?   **07**
OR
(b) What are Codd's rules?   **07**

Q.3 **(a)** (i) Briefly explain the Domain Relational Calculus.   **04**
(ii) Define. Minimality, primary key, alternate key.   **03**
(b) What are the different types of JOIN operations?   **07**
OR
Q.3 **(a)** (i) What is denormalization?   **04**
(ii) Describe Multi-Valued Dependency.   **03**

	(b)	Describe the structure of a relational database with suitable examples.	**07**
Q.4	**(a)**	(i) Explain the integrity constraints included in the relational model.	**04**
		(ii) What is data dictionary? Which are the types of data dictionary?	**03**
	(b)	What do you mean by functional dependency? Explain with example.	**07**

OR

Q.4	**(a)**	(i) Describe the functions of DBMS.	**04**
		(ii) Describe the four possible specialization/generalization constraints.	**03**
	(b)	Explain the ANSI/SPARC database architecture.	**07**
Q.5	**(a)**	(i) Describe the aggregate functions.	**04**
		(ii) Briefly explain the relational calculus.	**03**
	(b)	Explain the third normal form.	**07**

OR

Q.5	**(a)**	(i) What is attribute inheritance? Explain with example.	**04**
		(ii) Describe the logical and physical data independence.	**03**
	(b)	Explain the conceptual, physical and logical database models with the help of a neat sketch.	**07**

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