GUJARAT TECHNOLOGICAL UNIVERSITY
MCA Integrated - SEMESTER–II • EXAMINATION – SUMMER • 2015

Subject Code: 4420603   **Date: 01-06-2015**
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)**	Define the following terms. (Each of 1 mark)	**07**

    1. Functional dependencies   5. Cardinality
    2. Database management system   6. Integrity Constraint
    3. Weak entity   7. Composite Key
    4. Information

	(b)	What is E ó R model? Explain in detail. Also explain any 5 E ó R notations.	**07**
Q.2	**(a)**	Explain ANSI/SPARC Database Architecture in detail.	**07**
	(b)	What is normalization? Explain 1NF, 2NF and 3NF with suitable example.	**07**

OR

	(b)	What is Conceptual, Physical and logical Database Model? Explain with diagram.	**07**
Q.3	**(a)**	Explain Dr. E.F.CODDøs Rules.	**07**
	(b)	Explain the components of DBMS in detail.	**07**

OR

Q.3	**(a)**	Explain the problems of File Systems over DBMS.	**07**
	(b)	Explain Hierarchical model with its advantages and disadvantages.	**07**
Q.4	**(a)**	What is relational algebra? Explain notations of relational algebra with suitable example.	**07**
	(b)	List and Explain Armstrong's Axioms and specify how functional dependencies can be inferred from given ones.	**07**

OR

Q.4	**(a)**	Consider the Relational Schema where the primary keys are underlined.	**07**

Sailor(<u>sid</u>,sname,rating,age)
Boat(<u>bid</u>,bname,color)
Reserved(sid,bid,date)
    1. Find name of sailor who have reserved boat # 103. (2)
    2. List the name of the sailor having age less than 35. (2)
    3. Find name of sailors who have reserved a red boat. (2)
    4. List boat having green color.   (1)

	(b)	Explain types of relationships and degree of relationship with suitable example.	**07**
Q.5	**(a)**	What is entity and attributes? Explain different kinds of attributes with suitable example.	**07**
	(b)	Draw an E ó R diagram for library management system.	**07**

OR

Q.5	**(a)**	Why data model is necessary? Discuss relational model with its advantages and disadvantages.	**07**
	(b)	What is generalization and specialization? Explain with example.	**07**

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